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Indicators of Sustainability Reporting and Performance of Non-Financial Companies in Nigeria



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ABSTRACT: This research looked into the indicators of sustainability reporting and the performance of non-financial Companies in Nigeria. The researchers looked at the impact of sustainability reporting indicators on the Return on Asset (ROA), Return on Equity (ROE), and Net Profit Margin (NPM) performance indicators all at the same time. Ex-post facto design was used in this study. Out of 168 non-financial companies listed on the Nigerian Stock Exchange, a total of 64 listed enterprises were researched, and secondary data was taken from their yearly financial statements as presented in the fact book. The data was analyzed using the ordinary least squares (OLS) regression model. The probability value p-value was the statistical technique used to assess the hypotheses. Findings from this study show that Sustainability reporting indicators impacted positively but not statistically significant on Return on Asset (ROA), Return on Equity (ROE) and Net Profit Margin (NPM) of non-financial companies investigated. Companies are therefore, encouraged to align sustainability disclosure objectives with other performance and shareholders profit maximization objectives of the firm.

1. INTRODUCTION

The concept of sustainability disclosure is gaining traction around the world. A firm's ultimate goal is commonly thought to be to increase profit and provide greater value to its shareholders in a normal range. To attain these objectives, the business sector frequently breaches company policies, harms the environment and ecological system, and jeopardizes employee safety (Skouloudis et al., 2019). Customers, suppliers, governments, and employees should all be worried. All of these parties compel management to go above and above in terms of being more ethical and socially responsible. Businesses are increasingly being criticized for the negative impacts of their actions on society, employees, and the environment, putting these stakeholders at danger. Extortion of employees and bookkeeping are to blame.

All business enterprise systems, including the organization's strategic, legal, people, and functional management areas, are covered by sustainability. The institutionalization of ecological initiatives and the corporate governance policies of business organizations are reflected in sustainability responsibilities. Corporate reports are used by executives to communicate their actions to a wide range of stakeholders who are not directly involved in the day-to-day operations of businesses. Some of these companies' operations will have an impact on society, the environment, and the economy in the future, affecting future generations' ability to meet their needs. As a result, the public wants to know which corporations it can trust and, more crucially, which it should avoid based on disclosures. Sustainability reporting is concerned with measuring and disclosing various non-financial information and firm performance in relation to the goal of sustainable development. It frequently overlaps with various terms/approaches such as triple bottom line reporting, corporate responsibility reporting, and ESG reporting. It entails incorporating environmental, social, and governance considerations into investment analysis, security selection, portfolio development, and risk management processes (Khan, 2019).

Unfortunately, the traditional corporate report lacks the information necessary for investors to assess all of the key risks associated with a company's operations. Many value drivers go unaccounted for in traditional business reports. There has been growing concern that the current corporate reporting structure lacks transparency and no longer provides all of the information stakeholders require to assess the company's performance and worth. The existing financial reporting approach has been criticized and found to have shortcomings in numerous studies (Feyitimi, 2014). Accounting innovations are the consequence of an organization's growth, development, and transformation processes. Sustainability accounting is a new accounting concept that arose from organizational change. As the demand for openness from their communities develops, organizations are adopting

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innovation to offer new means of exposing information to their constituents. Accounting innovations are the product of organizational growth, development, and transformation processes. Organizations build accounting processes over time that, among other things, contribute to maintain functional stability and performance (Chen; Feldmann & Tang, 2015). Organizations develop accounting processes throughout time that, among other things, serve to preserve functional stability and performance. Transformational changes are required by evolutionary processes, which necessitate structural and systemic alterations. The present accounting rules and regulations are being overhauled, and new accounting rules and processes are being born as a result of these changes. Sustainability accounting is a relatively recent accounting concept that arose from organizational change. As the demand for openness from their communities develops, organizations are adopting innovation to offer new means of exposing information to their constituents (Ringelet al., 2018).

Meanwhile, global climate change and the resulting depletion of natural resources, as well as the financial and economic meltdown, have raised fundamental questions about how capital markets work and how well existing corporate disclosures highlight systemic risks and the true cost of doing business in today's world. The apex of the critique is the crisis of confidence and credibility that has characterized the investment scene since the collapse of well-known corporations in developed and developing countries, as well as the resulting loss of confidence in the capital markets (Abubakar, Garba, Sokoto, & Maishnu, 2014). To address the critiques of the traditional corporate report and the resulting lack of trust, many are now advocating for the implementation of a reporting model that presents a strategic picture of the company, focused on the triple bottom line.

1.2 Objectives of the Study

The main purpose of this study is to examine the indicators of sustainability reporting and performance of non-financial companies in Nigeria. The study focused on various secondary research objectives that supported the achievement of the primary aim in order to attain the primary goal. The supplementary questions are intended to;

1. Examine the association between indicators of sustainability reporting and Return on Asset (ROA) of non-financial companies in Nigeria.
2. Examine the association between indicators of sustainability reporting and Return on Equity (ROE) of non-financial companies in Nigeria.
3. Examine the association between indicators of sustainability reporting and Net Profit Margin (NPM) non-financial companies in Nigeria.

1.3 Research Hypotheses

The following hypotheses were developed in null form:

Ho1: indicators of sustainability reporting has no significant association with Return of Asset (ROA)

Ho2: indicators of sustainability reporting has significant association with Return on Equity (ROE)

H03: indicators of sustainability reporting and Net Profit Margin (NPM) are not significantly associated

2.0 LITERATURE REVIEW

2.1 Conceptual and theoretical Framework

The key technique for sharing unbiased knowledge about the organization in an instructive manner is through sustainability reports. Investors, creditors, regulators, and other financial report users use business reports to make informed economic decisions. The adaptation of corporate processes and strategies to sustainable development is referred to as corporate sustainability. Reporting on how a corporation displays itself responsibly in terms of environmental, social, and governance issues is what sustainability disclosure is all about. Previously, the term was used to describe a company's voluntary efforts to reduce its environmental and social impact while also increasing its positive contribution to society (Khan, 2019). Quantitative and qualitative data are frequently combined in sustainability statements. There are several standards and guidelines by various organizations regarding the form and quality of sustainability reporting in order to improve comparability and reliability of sustainability disclosures. Companies reporting their sustainability operations using a variety of frameworks has resulted in not only a lack of uniformity, but also a considerable heterogeneity in the structure and substance of such reports (Cortez & Cudia, 2011).

Sustainability issues are complicated, and quantifying them presents numerous challenges, as there are no standard measurements available, such as those for financial transparency; nonetheless, prior studies have employed a variety of indicators and principles. Specific sustainability disclosures will be measured using ESG dimensions for the purposes of this study. Sustainable Asset Management (SAM) is a comparable concept that focuses on eco-efficiency and environmental reporting, as well as industry-specific standards (Delmas & Blass, 2010). In keeping with the overall tendency, governance is employed in place in the economic dimension. The governance dimension is equally significant because it entails enforcement procedures. It's no surprise that

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Osioma (2013) defines it as the method by which a company's stakeholders exercise influence over corporate managers and provide general direction to the corporation. Observing the significance

Investors' perceptions of the firm's managers' ability to anticipate and respond to future changes in the firm's economic environment are influenced by investors' perceptions of the firm's managers' ability to anticipate and respond to future changes in the firm's economic environment, according to Emeka and Nwokeji (2019). Tobin's q is a forward-looking, capital market-based measure of a firm's value that was used in this study. Tobin's q is a measure of how investors perceive a company's market worth in relation to its book value. Tobin's Q is the ratio of total assets to market value of equity (fiscal year-end price times number of outstanding shares) plus book value of debt (total assets minus book value of equity) (Albuquerque, Durnev, & Koskinen, 2013). It is an excellent proxy for firm value since it reflects the market's expectations for future earnings (Campbell & Mnguez-Vera, 2008).

The theories of agency, stakeholders, and legitimacy provided essential theoretical foundations for sustainability disclosure research and are utilized to explain the purpose for this study. The study's underlying assumptions are that providing sustainability-related information is critical to a firm's ability to reduce information asymmetry between agent and principal (agency), accommodate information needs of a variety of stakeholders with sometimes conflicting demands (stakeholders), and operate within society's bounds and norms (legitimacy) to gain acceptance while improving overall value of the firm.

2.2 Empirical Review of Literature

For well over a decade, sustainability reporting has been a feature of corporate reporting in both established and emerging nations. There has been a significant growth in academic literature on sustainability reporting in industrialized nations over this time, however empirical investigations on responsibility/sustainability reporting in Africa are few and far between (Fifka & Meyer, 2013). Because there is a scarcity of literature on aggregate sustainability disclosure and company performance, empirical references will be gathered from both aggregate sustainability disclosure studies and component of sustainability (environmental, social, and governance)

Xie H. & Bilal A. et al (2020), examined Sustainability Reporting and Firm Performance: The Demonstration of Pakistani Firms. The goal of this study was to look at the level and scope of sustainable financial reporting for non-financial companies in Pakistan, as well as the influence of sustainable financial reporting on business performance. For the year 2013 to 2017, data was gathered from the sustainability reports and annual reports of 50 non-financial public limited firms listed on the Pakistan Stock Exchange. A content analysis approach was used to create the sustainability reporting index, which was based on 42 indicators. Environmental, health and safety, and social characteristics were used to create the index. The findings show that all three individual indicators, as well as the composite version of the sustainability reporting index, have a favourable impact on company performance.

The impact of sustainable accounting and reporting on financial performance was investigated by Nnaman, Onyekwelu, and Ugwu (2017). To measure sustainability reporting, the study employed the social responsibility cost and total personal cost to turnover ratio, as well as Return on Assets and Return on Equity to reflect financial performance. According to the findings, the total equity to total asset ratio has no bearing on the return on asset.

Usman and Amran (2015) investigated the link between CSR disclosure aspects and corporate financial performance (CFP) among Nigerian publicly traded companies. As a metric of sustainability disclosure, the study looked at environmental disclosure, community engagement disclosure, human resource disclosure, and product disclosures. The findings suggest that providing environmental information in a corporation's annual report lowers both accounting and market-based financial performance. This suggests that environmental disclosure among Nigerian businesses may be detrimental to their value. The research also discovered a large positive association between community participation disclosure and accounting-based performance (Return on Assets), but a minor negative relationship with market-based performance indicators (Share Price). Human resource disclosures have a large positive link with ROA, but a neutral relationship with share price.

Garg (2015) used five-year data from significant Indian corporations to examine the impact of sustainability reporting on firm performance. The study found that a company's sustainability reporting methods had a negative influence on both ROA and Tobin's Q in the short term, but have no effect on both metrics in the long run. Using the sustainability materiality index, sustainability immaterial index, and accounting performance indicators to investigate the relationship between sustainable business practices and financial performance. The study discovered that companies with high ratings on material sustainability issues perform better in the future than companies with low ratings on the same issues. Furthermore, organizations with good material issue ratings and bad immaterial problem ratings have the best future performance.

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Aondoakaa (2015) examines the impact of sustainability reporting on the financial performance of a group of Nigerian publicly traded companies. For reasons that have not been fully explained, the study uses four measures to mimic company performance (ROA, ROE, Net Profit Margin (NPM), and Earnings Per Share (EPS)), but only one measure to proxy sustainability reporting (SRI) for the four models studied. Sustainability Reporting is favorably associated to ROA, according to research. ROE and NPM are favorably associated to sustainability indexes. Sustainability reporting has a positive relationship with EPS, however the environmental index has a negative relationship with EPS. Nwobu (2015) studied the relationship between corporate sustainability reporting and profitability in Nigerian banks. The study provided empirical evidence that the small positive correlation between sustainability reporting index and Profit After Tax (PAT). The study also found a small positive correlation between sustainability reporting index and shareholders fund.

Bhatia and Tuli (2014) used companies that provide separate sustainability reports to analyze the extent and level of sustainability reporting in India. The study revealed that the inter-industry disclosure ratings are not significantly different. The mean disclosure scores of several industrial groupings revealed no statistically significant variance, according to one-way ANOVA.

Eccles, Ioannou, and Serafeim (2014) found a positive and significant relationship between Tobin's Q and the predicted component of the ESG disclosure in a study on the effects of mandatory corporate sustainability reporting, implying that the effect of mandating sustainability reporting is, on average, value enhancing rather than value destroying for the treated firms in our sample. According to Tobin's Q. Study, increased disclosures are linked to higher firm valuation.

Eze, Nweze, & Enekwe (2016) examine the effects of environmental accounting on a developing nation with emphasis on Nigerian and discovered that Environmental information in the annual report is positively related to a firm's size.

Bhatia and Tuli (2014) used companies that provide separate sustainability reports to analyze the extent and level of sustainability reporting in India. Plumlee, Brown, Hayes, and Marshall (2015) use both cost of equity capital and projected cash flow components to analyze the link between environmental disclosure quality and firm value. In order to distinguish between numerous possible causes for the sometimes-contradictory findings from earlier research, the study controls for environmental performance and partitions environmental disclosures by type and substance in the analysis. They show that the cash flow and cost of capital components of voluntary disclosure have a positive relationship with firm value.

Hussain (2015) investigated the impact of sustainability performance on financial performance of Global Fortune corporations, concluding that economic sustainability has no meaningful association with both market performance and financial performance.

On a sample of 168 firm-year data from South Africa and Morocco from 2004 to 2009, Khlif, Guidara, and Souissi (2015) utilize a coding index approach to quantify the level of annual reports' social and environmental disclosure and its relationship on a sample of 168 firm-year observations. They show that social and environmental disclosure has a considerable positive impact on corporation financial performance.

Nnamani et al (2017) investigated the impact of sustainability accounting and reporting on financial performance using data from the Nigerian brewery industry from 2010 to 2014. To measure sustainability reporting, the study employed the social responsibility cost and total personal cost to turnover (TPCT) ratio, as well as Return on Assets and Return on Equity to indicate financial success. Total equity to total asset (TETA) was discovered in the study.

Vujcic (2015) investigated the connections between corporate social responsibility and financial performance as measured by stock returns for a sample of US companies over a two-year period. The study compares the outcomes to an overall corporate social responsibility score using a set of disaggregated social responsibility metrics for the environment, community, and employment. In both aggregate and individually evaluated measures, the study finds that enterprises with higher social responsibility scores have lower stock returns.

4. METHODOLOGY

The study's population consists of non-financial companies that are listed on the Nigerian Stock Exchange (NSE) floor as of 2019 and have consistently submitted annual reports to the NSE since 2005. According to the NSE fact book 2019, there are 168 firms in this category. Some of these businesses are multinational, and as a result, they have adopted worldwide best practices for sustainability disclosure. In their yearly reports, they include information on sustainability. From the 168 companies, a sample for this study is selected using the formula (Yamane, 1967)

$$n = \frac{N}{1 + N(e)^2}$$

where;

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n = sample size

N = Population size

e = Level of precision (margin of error)

Given a population of 168, the researcher assumes a margin of error of 5%. Therefore;

$$n = \frac{168}{1+168(0.05)^2}$$

$$n = \frac{168}{1.42}$$

$$n = 118.32$$

$$n = 118 \text{ approx.}$$

The selection of the 118 companies out of the 168 follows judgmental or purposive non-probability sampling technique. Out of this 118 select 64 listed companies for easy analysis.

4.1 Model Specification

The following model (Regression model) was used for the respective variables and hypotheses in order to test for the relevance of the hypotheses regarding sustainability disclosure and firm value of companies listed on the Nigerian Stock Exchange, as described by Onwumere (2009). This model examines the relationship between a dependent variable and two or more regressors or independent variables.

$$Y_t = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \mu_t \dots\dots\dots (1)$$

Where Y is the dependent variable which describes sustainability performance indicators such as;

- ◆ Return on asset
- ◆ Return on Equity and
- ◆ Net profit margin

X is the independent variables which represent the components of Sustainability disclosure;

X₁ = Economic sustainability disclosure

X₂ = Social sustainability disclosure

X₃ = Environmental sustainability disclosure

u is the error term capturing other explanatory variables not explicitly included in the model. b₀ is the intercept of the regression.

b₁, b₂ and b₃ are the coefficients of the regression.

From the above three models will be formulated.

$$ROA_t = \beta_0 + \beta_1 ECN_t + \beta_2 SOC_t + \beta_3 ENV_t + \mu_t \dots\dots\dots (2)$$

$$ROE_t = \beta_0 + \beta_1 ECN_t + \beta_2 SOC_t + \beta_3 ENV_t + \mu_t \dots\dots\dots (3)$$

$$NPM_t = \beta_0 + \beta_1 ECN_t + \beta_2 SOC_t + \beta_3 ENV_t + \mu_t \dots\dots\dots (4)$$

Secondary data was used in this study. Annual reports and accounts of companies selected from the Nigerian stock exchange were used as data sources for this study. Textbooks, magazines, and the internet are some of the other resources available. Ordinary Least Square (OLS) regression analysis is the data analysis approach.

5. ANALYSIS AND DISCUSSION OF FINDING

In this section, the critical or table values are compared with the computed t value to decide whether to reject or accept a hypothesis

H₀₁: Sustainability disclosure does not impact positively on return on assets of companies listed on the Nigeria Stock Exchange.

Table 5.1 Regression Result of Sustainability Reporting Indicators and Return of Asset (ROA)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.043436	0.389787	-0.111434	0.9116
ECN	0.071893	0.197282	0.364419	0.7168
SOC	0.029342	0.035103	0.835875	0.4065
ENV	-0.017234	0.037896	-0.454772	0.6509
R-Square = 0.019143, F-Stat = 0.390339, Prob(F-statistic) = 0.760372, Durbin-Watson stat = 1.730114				

Source: Authors own computation using E View 10

ROA, is shown in Table 5.1. It demonstrates that if one unit of the economic index is increased while the others remain unchanged, ROA will improve by 7.2 percent. It also shows that increasing the social index by one unit while keeping the rest fixed increases

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ROA by 2.9 percent. A unit increase in the environmental index, on the other hand, reduces ROA by 1.7 percent. Overall, economic and social indices have a favorable impact on ROA, whereas environmental indices have a negative impact on ROA. As shown in Table 5.1, the p-values for all of the Sustainability disclosures employed in this study are statistically insignificant at the 5% level of significance. Furthermore, the R-Square reveals that the Sustainability disclosure index explains just 2% of the variation in ROA, while the remaining 98% is explained by factors other than the Sustainability disclosure index. The regression result is not well-fitting.

Decision

Since the p-value of sustainability disclosure index are greater 5%, the null hypothesis is accepted at 5% level of significance implying that, Sustainability disclosure has not impacted significantly on return on assets of companies listed on the Nigeria Stock Exchange

H₀₂: Sustainability disclosure does not impact positively on return on equities of companies listed on the Nigeria Stock Exchange.

Table 5.2 Regression Result of Sustainability Reporting Indicators and Return on Equity (ROE)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.045906	1.278472	1.600274	0.1148
ECN	-1.082858	0.647069	-1.673481	0.0994
SOC	0.139888	0.115136	1.214976	0.2291
ENV	0.040643	0.124295	0.326987	0.7448
R-Square = 0.058971, F-Stat = 1.253321, Prob(F-statistic) = 0.298535, Durbin-Watson stat = 2.091139				

Source: Authors own computation using E View 10

The regression result of Sustainability disclosure and ROE is shown in Table 5.2. It illustrates that if the economic index is increased by one unit, the return on investment (ROI) will fall by 108 percent. If the social index rises by one unit and all other factors remain constant, the return on investment (ROI) will rise by 14%. It also demonstrates that increasing the environmental index by one unit raises ROE by 4%. Overall, an increase in the economic index will lower the performance of sustainability disclosure, whereas an increase in environmental and social factors will boost ROE. Furthermore, the R-Square demonstrates that the Sustainability disclosure index explains just 6% of the variation in ROE, while the remaining 94% is explained by factors other than the Sustainability disclosure index. The regression result is not well-fitting.

Decision

Since the p-value of sustainability disclosure index are greater 5%, the null hypothesis is accepted at 5% level of significance implying that, Sustainability disclosure has not impacted significantly on return on equities of companies listed on the Nigeria Stock Exchange.

H₀₃: Sustainability disclosure does not impact positively on net profit margin of companies listed on the Nigeria Stock Exchange.

Table 5.3 Regression Result of Sustainability Reporting Indicators and Net Profit Margin (NPM)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.713155	0.760009	-0.938351	0.3518
ECN	0.284858	0.384661	0.740543	0.4619
SOC	0.017167	0.068445	0.250823	0.8028
ENV	0.024309	0.073889	0.328996	0.7433
R-Square = 0.015854, F-Stat = 0.322184, Prob(F-statistic) = 0.809291, Durbin-Watson stat = 2.273843				

Source: Authors own computation using E View 10

The regression result between sustainability metrics and NPM is shown in Table 5.3. It reveals that a one-unit increase in the economic index causes NPM to fall by 2.8 percent, whereas a one-unit increase in the social index causes performance (NPM) to rise by 2%. An increase in the environment index, on the other hand, will result in a 0.2 percent increase in NPM. Furthermore, the R-Square demonstrates that the Sustainability disclosure index explains 2% of the variation in NPM, whereas the remaining 98% is explained by factors other than the Sustainability disclosure index. The regression result is not well-fitting.

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Decision

Since the p-value of sustainability disclosure index are greater 5%, the null hypothesis is accepted at 5% level of significance implying that, Sustainability disclosure has not impacted significantly on net profit margin of companies listed on the Nigeria Stock Exchange.

The findings of the study can be summarized as:

- 1) Environmental sustainability disclosures have positive effect on performance of Non-financial firms in Nigeria, but not statistically significant
- 2) Social sustainability disclosures have positive on performance of Non-financial firms in Nigeria. but not statistically significant
- 3) Environmental index of sustainability has positive effect on performance Non-financial of firms in Nigeria. but not statistically significant

CONCLUSION AND RECOMMENDATIONS

The performance of Nigeria's non-financial companies is driven by sustainability disclosures. According to the report, the long-term financial benefits of engaging in sustainability disclosure policies outweigh the costs. Companies that score well on sustainability indicators are more long-term oriented and hence more appealing to long-term investors and other stakeholders. The study found that if a company discloses environmental issues, shareholders and other stakeholders place a high value on it. Increased social sustainability disclosure ensures a rise in the market value of non-financial companies in Nigeria. This is evidenced by the findings, which show that social sustainability disclosure has a favourable but minor impact on corporate performance.

According to the findings, companies in Nigeria should establish and declare sustainable friendly policies since it demonstrates their commitment to reaching the aim of sustainable development. In a similar spirit, organizations are encouraged to link their sustainability disclosure goals with their other performance and shareholder profit maximization goals. Economic, social, and environmental sustainability should be included in annual reports since it influences how investors evaluate a company's ability to generate profits in the future. Because a strong sustainability disclosure sets a company apart from its competitors, organizations should incorporate sustainability indicators into their business model and strategy to create higher sustainability and long-term value development. Care should be taken with business operations aimed at gaining public respect.

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Governance Structure and Quality of Accounting Reports in Covid 19 Era



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ABSTRACT: This article investigated the impact of governance structure on the quality of accounting reports produced by firms operating in Nigeria during the pandemic. The study was carried out using the ex-post facto research design. The information was derived from the annual reports and accounts of firms listed on the Nigeria Exchange Group between 2011 and 2020. The correlation between corporate governance indicators of board structure (size-BRDSZ and independence-BRDID), audit quality (audit committee size (ADCMZ), the quality of external audit (EADTQ as measured by the presence of an auditor among the big-4), board experience (i.e. experience-BRDEX), and financial reporting quality is 93.47 percent, according to econometric analysis. The independent variables can explain 54.29 percent of the variance in the FRQDA. There is general relevance among the metrics assessing financial reporting quality, such as corporate discretionary accruals (FRQDA). The COVID-19 pandemic has a beneficial influence on board structure (BRDSZ), board experience (BRDEX), and external audit quality (EADTQ). Furthermore, as a consequence of the COVID-19 epidemic, independent directors on the board of company (independence-BRDID) and audit quality (audit committee size (ADCMZ) have a detrimental impact on financial reporting quality as evaluated by the firm's discretionary accruals (FRQDA). As a result, the research advised that a higher emphasis be placed on corporate governance indicators in order to achieve global standard financial reporting in the Nigerian growing market for investment opportunities.

KEYWORDS: Corporate, Reporting, Board size and structure, Committee, Companies, Quality, COVID-19.

1.1 INTRODUCTION

There are extraordinary health, economic, and social issues throughout the globe, as the 2019 Covid-19 Pandemic has shown. The pandemic was very disruptive in terms of mortality toll, several infected patients, and globally severe economic ramifications included considerable job losses, company bankruptcy, and a global recession of around 3 per cent. (IMF, 2020). While protracted shutdowns of enterprises' production facilities threaten their viability, the extent of the losses these businesses would suffer due to the interruption is not yet clear. There is no doubt that many organisations will be referred to as 'patients' in the aftermath of the catastrophe. It is yet unclear if the relief measures put in place by governments and businesses throughout the globe will be successful. Scholars will be spurred to action by the enormity of the implications for public health and the economy, as well as the associated uncertainty. Organisations big and small, for-profit and not-for-profit and governmental, all around the globe will have financial accounts that show indicators of a downturn. Short sales will significantly impact the net income and book value of the stock, putting further stress on the company's ability to access short-term financing. Impairment of goodwill, inventories and other assets, and premeasurement of goods valued at fair value may result in subjective non-cash charges under current accounting rules, reducing net income and equity even more. Debt-covenant breaches and bankruptcy filings may be triggered if a company's equity falls below a specific level. It is difficult for investors to predict future cash flows and company values and for auditors to keep track of the stated amounts in this climate. Economic actors are reacting to the continued uncertainty in a variety of ways. We believe the following questions are fundamental and pertinent to answer these issues empirically.

The economic and financial impact of the Covid-19 epidemic has already been felt throughout the world (Goodell, 2020). According to (Arabsalehi and Ziaee, 2010) Corporate Governance Code of Nigeria, 2003) was regarded as a standard in corporate entities. To eliminate mismanagement, fix any governance shortcomings, avoid power abuse, and adequately manage risks, they assist firms (Jouini, 2013). If these guidelines are followed, its reputation and shareholders' interests will be protected, so they are crucial for a sound governance structure. When it comes time for investors to evaluate a company's directors, quality and trustworthy information (particularly on the activities of the directors) has become a commodity that must be paid for. Corporate governance

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measures (agency costs) are thus supported by both direct and indirect investments from shareholders to raise shareholders' trust in financial reporting quality. Directors can act opportunistically since shareholders (i.e. the Principal) have little rationality (i.e. agent). Because shareholders and other external stakeholders evaluate directors' performance via the same financial reports, this indicates a discrepancy between shareholders' need for information and their degree of trust in the quality financial reports provided by the company's directors.

For starters, these economic turbulences and diet instability would further impact the trust of companions' financial performance and thus, cause different financial difficulties for organisations. This is crucial (KPMG, 2020). auditors will be unable to discover substantial errors if the audit procedure is not consistent (Lenz & Hahn, 2015). Investing in a firm is riskier, and the cost of equity capital is higher if a company does not assure that its audit procedures are of the highest quality (Gerged et al., 2020). Earnings fluctuate and decline due to a loss of investor confidence during times of economic uncertainty (Arthur et al., 2015).

Consequently, determining the impact of the Covid-19 eruption on their financial performance is an urgent priority for businesses in various countries, from rising economies to developing economies, to meet their fiscal year-end data needs for a wide range of stakeholders (Shahzad et al., 2018). Auditor and corporate organisations confront enormous practical hurdles in many sectors, and this unique position might lead some companies to either falter or begin manipulating their profits data. Accurate financial statements may help investors make better decisions about the trustworthiness of financial markets (Gerged et al., 2020; Shahzad et al., 2018; Tarek et al., 2017).

In a specific notice posted on March 22nd, the Financial Reporting Council (2020) gives auditors guidance on the effects of social distancing measures on audit quality. When the WHO initially discovered the coronavirus virus in Wuhan, China, it was determined to be a disease. However, the business determined that its total rate was high. It had expanded to over 190 countries where the United States had been labelled a pandemic, a steady increase. During this period, the virus outbreak was relocated from China to Italy, the United States, until April 2020. The alarmingly high prevalence of infection in Europe is a cause for concern (Jackson et al., 2020; McKibbin & Fernando, 2015).

Consequently, a policy of restriction was implemented to prevent the spread from lowering demand all over the globe. The auditor's function was diminished, and his or her obligations were undermined and harmed. This epidemic has a vast and severe influence on the world's second-largest economy, which is anticipated to contribute to one-third of annual global economic growth. The major European nations are making efforts to combat it. So the coronavirus epidemic in China will disrupt worldwide demand and supply (Bouey, 2020), as well as Nigeria and Angola's primary African oil exports (Bouey, 2020).

COVID-19, according to the Financial Reporting Council (2020), must be considered by auditors in this period: The auditor's risk assessment and whether it has to be revised. A new audit technique may emerge, prompting the need for new audit processes, such as in-group audit engagements, which are a particular focus of an auditor's work. It is required for the audit committee to determine whether or not an alternate way of travel limitation is possible to disclose or suggest changes in auditors' opinions. The auditor's appraisal of the present company prospects is complex because of the uncertainty in the global economy and the auditor's worry about the future of firms.

Covid-19's influence on business and management disclosure adequacy is based on the possibility of how firms affected by it stay represented, and the high degree of insecurity acknowledged, such that users are directed on the quality of financial reporting. As a result, auditors need to re-evaluate their audits before the auditor's report is signed because of the fast-changing environment. It is expected that management would offer different papers and data. Consider marking this as a potential audit problem and explaining it in the report if the present situation has had a significant influence on the audit is performed. For example, The Council of Financial Reporting has suggested (2020) that we analyse the effect of COVID-19 on audit quality using a desk research technique. As a result, our study intends to fill this vacuum in auditing research and enhance the existing body of prior studies by examining how the COVID-19 outbreaks may affect corporate governance and financial reporting quality in Nigeria. This pandemic's potential impact on the following five aspects of audit quality is specifically examined: Audit costs, human resource audits, and this pandemic might all impact the quality of audits. Audit fees, audit staff salaries, and audit procedures are all included. Thus, our research gives a complete picture of the likely effect of social distance on the quality of financial reporting for future scholars, investors, and auditors. As a result, the following are the study's goals:

1. To determine the relationship between board size and quality of accounting reports in Covid 19 era in Nigeria?
2. To evaluate the relationship between audit quality and quality of accounting reports in Covid 19 era in Nigeria?

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2.0 LITERATURE REVIEW

2.1 CONCEPTUAL FRAMEWORK

2.2 Corporate Governance: Despite Zain-aldini and Maymand's (2011) thorough definition of corporate governance as an organisational system for managing the company's operations and producing value for shareholders, there is still much confusion about corporate governance is. However, the concept of corporate governance that we will use for this research will include a broader view (i.e., the viewpoint of the shareholders). The term "corporate governance" is used to describe the collection of rules and regulations that regulate how a company's resources are managed and controlled to safeguard its shareholders' interests. The way a business is controlled is determined by these structures, conventions, rules, laws, and processes. Keeping these frameworks in place necessitates expenditures (agency costs) to lead directors away from self-serving and opportunistic behaviour while simultaneously safeguarding the interests of shareholders (Mehrani and Safarzade, 2011). Investing in the corporate governance system allows shareholders to ensure that the board reasonably pursues their interests (i.e., maximising profits). The variety of the board's backgrounds and experience and the high quality of the audits are all evidence of this commitment. Investment in these areas is expected to help shareholders raise performance and improve the quality of financial reporting, which is a requirement of regulators (Mehrani and Safarzade, 2011). When financial reports provide high-quality information, investors are more likely to place their faith in them.

Financial reporting quality will define the amount of shareholder trust in the COVID-19 age, and this study attempts to understand how the corporate governance structure impacts that level. This research examines the composition of the board (focusing on its size and independence), the board's flexibility (focusing on the credentials and experience of its directors), and the audit's overall quality (with emphasis on the presence of an internal audit committee and the use of an external auditor among the big four).

2.3 Quality of Financial Reports: For evaluating the quality of financial reporting, prior research has proposed many ways. The accrual models, the earnings relevance model and other models used qualitative data (Jouini, 2013). Managers' use of discretionary accruals to transfer reported revenue across fiscal periods was previously studied as an essential part of financial reporting quality. Discretionary accruals are calculated by subtracting non-discretionary accruals from total accruals. According to Dechow, Ge, and Schrand (2010), "Non-discretionary accruals may reveal adjustments that reflect underlying performance, whereas discretionary accruals capture distortions generated by the application of earnings management or the accounting rules". As a result, we will utilise the modified Jones model of accrual presented in the study of Dechow and Dichev (2002).

2.4 Quality of Financial Reporting and the Board's Structure

Board structure examines issues such as the number of directors, their independence, and the size of the board. Conflicting evidence exists on the relationship between the size of the board, level of independence and the level of quality in the financial reporting provided by public companies.

When a company just has a small number of directors, it is easier for them to coordinate their efforts with management, according to Jensen (2013) and other pioneering studies. According to Bradbury, Mark, and Tan, a large board might lead to managerial entrenchment (2006). As coordination and communication problems deepen, directors cannot keep an eye on management. According to Adams, larger boards have increased profits management while diminishing income transparency (2006). However, according to Byard, Li, and Weintrop (2006), having a large board size assures the value of financial statements.

Prior studies have shown that independent boards are less likely to engage in profit management (Klein, 2002 and Peasnell et al., 2000). The quality of information increases as the number of independent directors increases (Vafeas, 2005; Vafeas & Karamanou, 2005 and Bushman, Chen and Engel and Smith (2004). According to Dimitropoulos and Asteriou (2010), having an independent board of directors has increased the profitability of Chinese enterprises. Nesrine and Abdelwahid (2011) concluded that board independence improves profits quality, but the low number of independent directors and high frequency of CEO duality in Tunisian firms may make this unfeasible. In contrast, studies conducted by Petra (2007), Bradbury et al. (2006), and Ahmed, Hosain and Adams (2006), concluded that independent directors do not have the skills necessary to supervise the managers, and their position on the board does not strive to assure the quality of financial reporting on the company. According to studies by Cornett, McNutt, and Tehrani, board independence has a negative link with financial reporting quality.

2.4.1 Quality of Financial Reporting and Board Experience

Including the "board flexibility" measure of extra corporate governance is one of the study's distinguishing aspects. There are only professional and experienced directors on the board for the interest of the shareholders. This study will look at the director's credentials and expertise concerning the quality of financial reporting as a measure of board adaptability.

2.5 Accounting and Financial Reporting Quality

An influential internal audit committee and an external auditor from one of the Big Four is essential in assessing the quality of accounting report. It is the audit committee's job to make sure that the reporting process and the financial statements are audited

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to the highest standards. When it comes to practical corporate governance, the role played by the internal audit committee is pivotal, particularly in ensuring that the accounting process is accurate (Rezaee & Riley, 2010). Prior studies found that audit committees and the frequency of their meetings helped reduce the incidence of financial reporting difficulties (Erena & Tehulu 2012; Kent & Stewart, 2008 and Farber, 2005). Also, Greco (2012) and Parwit, Smith, and Wood (2009) found that organisations with vital internal audit quality functions do not support income manipulations, resulting in lower accrual values. Having an external auditor from the big 4 is a way for the company's owners (shareholders) to ensure that financial statements are presented accurately and fairly, which boosts their confidence in the financial reports they receive. There is a strong correlation between having an external auditor in the top four and the quality of the financial disclosures made by directors (Leung, Morris & Gray, 2005).

2.5.1 Audit Fees and COVID-19

For an audit of an organisation's finances, auditors charge a fee (Walid, 2012). Because of this, Chen et al. (2019) postulated that audit companies and their clients should change the ground in light of economic difficulties brought on by the pandemic since audit fees would be affected by the firm's risk, liquidity, and efficiency. Specifically, there is a danger that the company may breach the contract agreement terms, resulting in the bankruptcy of individual businesses. For example, auditors would be compelled to employ more extensive audit methodologies and spend more time assessing the assumptions of the corporation's continuing concern due to rising risk levels and creditor difficulties (Noh et al., 2017; Chen et al., 2019).

Auditor working hours will increase as audit litigation rises because of the increased agitation during this outbreak (Karim & Zijl, 2013; Yuen et al., 2013). Reduced fees and lower incumbency fees at the beginning of future expenses have destroyed the independence and quality of the auditor, so lowballing is not an option to compromise audit efficiency. Meanwhile, a reasonable proposal and competitive answer are made to anticipate these technical advantages. However, in most cases, this is likely to be incorrect. According to Xu et al. (2013), audit fees in Australia rose throughout the financial crisis, studied by the researchers. According to the authors, consumers' growing concern about corporate risk is to blame for the rise in audit activity. As a result of the global financial crisis, several earlier research has shown that corporations may negotiate lower audit fees (Alexeyeva & Svanström 2015; Bozec & Dia 2017, Chenec et al. 2018, Chen et al. 2019, Karim & Zijl, 2013; Krishnan & Zhang 2014; Krishnan et al. 2015). Home-based work has become the 'new normal,' increasing hours worked and commitment of auditors due to the COVID19 epidemic. Companies (Clients) are more likely to seek lower audit fee balances due to this trend (Chen et al., 2019). Because of this external COVID-19 shock, auditors may lower their efforts to ameliorate the loss of commitment; hence, clients may demand auditors to reduce audit fees during the crisis. Consequently, This pandemic epidemic seems to have had a significant influence on the competence of auditors.

2.5.2. Audit Procedures

The efficiency of systematic techniques, forming an essential component of the auditing process, is another problem impacting the current pandemic (Messier et al., 2013). Because audit preparation, information gathering, appraisal, reporting phases, and analytical techniques are used (Messier et al., 2013; Noh et al., 2017; Trompeter & Wright, 2010). As many businesses will go bankrupt or fudge their stated profits during the COVID-19 outbreak during this time, analytical techniques must be used more frequently by auditors since they are the least expensive and easy to measure (Rose et al., 2019). When it comes to costs, analytical audit techniques are desirable, and they can be applied to direct and equip auditors with delicate bits of submission backing their findings. Usually, these procedures require a diagnostic method that identifies the origin of account balance fluctuations or the possibility of serious misrepresentation discovered throughout the audit plan (Rose et al., 2017; Rose et al., 2019). The issue of fraud is a possible challenge to auditors is associated with producing multiple explanations (Rose et al., 2019). They considered that many alternative theories' development does not trigger a critical idea and may straighten work in the other direction (Hirt et al., 2004; Kadous et al., 2006). Meanwhile, auditor engagement should allow a complete awareness of the financial statement, thus involving several comprehensive checks that are more costly and attract a more extended period to take into consideration since the majority of communications are by email in this epidemic era of covid-19 (KPMG, 2020). To ensure the auditor's findings are accurate, the critical issue of an auditor is the signal of accuracy. If the information reported lacks merit or insufficient consistency, then a higher risk of audit job is observed, forming an incorrect audit opinion (Rose et al., 2017). Therefore, the work-from-home strategy will affect audit evidence's adequacy and reliability and, consequently, impact audit quality (KPMG, 2020).

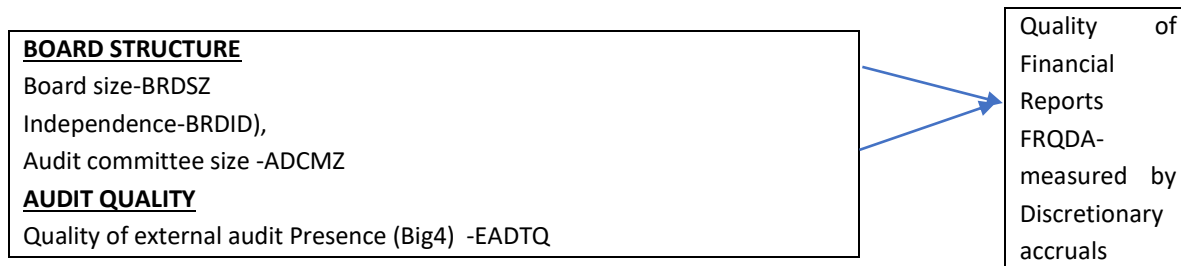
2.5.3 Audit Staff Remuneration

A report on audit staff remuneration and covid-19 say that because of many changes in the public accounting business, there is much uncertainty and more work for auditors, making their pay important (Persellin et al., 2018). Since the start of covid-19, many new steps have been taken to help staff and businesses in this time. Some businesses have talked about cutting wages or giving employees unpaid leave (Deloitte, 2020). When it comes to how the audit staff is paid, it is unclear how that relates to how well the audits are done. The theories of efficiency wages say that higher salaries can help audit workers be more productive by working harder or attracting better-quality audit workers (Hoopes et al., 2018). As a result, the epidemic could affect the audit staff's

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wages, making them less motivated to do their jobs well and efficiently. So, we think that if the wages of audit staff were to go down, it could affect the quality of audits.

2.5.4 Governance Structure Variables



2.6 Theoretical Framework

Throughout the ages, theories on corporate governance theory have been tested and refined. Theories such as Stewardship and stewardship theory are also included in this list of theories: The Agency Theory was chosen to best describe this work for this investigation.

2.6.1 Agency Theory

This theory is used as a theoretical framework in this study. In the context of an agency relationship, one person, known as the principle, assigns responsibilities to another, known as the agent. It is possible that the agent may not act in their best interest or that they will only act partially in their best interest while operating on behalf of their client due to the agency relationship's inherent opportunism or self-interest.

Concerning corporate control and governance, the board of directors is seen as a crucial monitoring instrument under agency theory to ensure that any issues arising from the principal-agent relationship are minimised. According to Blair (1996), management is meant to be the "agent" of a company's "owners," but managers must be overseen, and institutional structures must provide certain checks and balances to guarantee that they do not abuse their position. Agency is a concept heavily influenced by the division of ownership in organisations. In the context of corporate governance, this link is sometimes referred to as an agent-principal relationship.

2.7 Empirical Literature

Prior studies into the relationship between governance structure and the quality of financial reporting have produced mixed results. Abdulkadir and Noor (2013) analyse the connection between audit committees and higher financial reporting quality using the Dechow and Dichev (2002) model. They found that the audit committee's presence improves the quality of financial reporting. Also, the study revealed that a committee with a chairman that is independent and has expertise influences the quality of financial reports positively.

Shehu (2013) also looked at monitoring, and the quality of financial reporting in Nigerian publicly listed manufacturers. Having independent directors and an audit committee are essential variables in determining the capacity of a corporation to be checked for them by using a modified Dechow-Dichev (2002) model, which includes 32 firm-years longitudinal data of 160 observations. According to the research findings, monitoring elements are favourably connected with financial reporting quality. Investors in Nigerian manufacturing companies should guarantee that the board of directors is structured to ensure that the board can oversee management's manipulative accounting while putting up financial statements, according to the authors of the study.

Kajola (2008) focuses on four governance measures (the size of the board, composition, the status of the CEO and the audit committee). Board composition does not seem to have a statistically significant association with Return on Equity or Profit Margin. As a result, it can be deduced that there is no correlation between the financial success of the tested companies and the presence of an outside director on the board.

According to Yau and Emmanuel (2013), a sample of 35 publicly traded Nigerian companies' annual reports spanning 1999-2009 provided data on the influence of governance structure on publicly traded firms' voluntary disclosure of information. There were significant discrepancies in information disclosures in Nigeria before and after the introduction of corporate governance standards, and Nigeria's publicly listed firms have seen a meaningful increase in the level of voluntary disclosure, they explained. Nigeria's Consumer Goods Industry was the focus of Garba's (2013) research on the influence governance structure has on financial reporting quality. In December 2012, a random sample of five publicly listed Nigerian companies was selected and monitored for five years (i.e. 2008-2012). Correlation and regression were used to analyse data from annual reports and financial statements. According to the results, financial reporting in Nigeria's consumer products business is improved by the size and

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makeup of the company's board. As a result of this company's size, an audit committee of five to six members is recommended. Increase the number of non-executive directors to have a more diverse range of perspectives. It would increase the accuracy of financial reports prepared by the firm.

The financial reporting quality and governance structure of Foods and Beverages company in Nigerian was examined by Dalhatu (2012). Primary and secondary methods were used to get the data. The Chi-square method of data analysis was used to examine the results. According to a study, food and Beverage companies' information disclosures may be influenced by a Code of Corporate Governance. To ensure that investors and other stakeholders are provided with enough information, this research found that frequent reviews of the Nigerian Stock Exchange's Code of Corporate Governance practice were essential. Considering the effect of corporate governance on the quality of financial reporting by Nigerian publicly traded manufacturing firms, Baba (2011) conducted research. More than half of Nigerian manufacturing organisations were represented in this study by the data acquired from 12 representative sample firms. Multiple regressions were used to analyse the data in this study. The results demonstrate a strong connection between effective corporate governance and accurate financial reporting in Nigerian publicly traded industrial companies. It is suggested that the authorities should, among other things, step up their enforcement of the disclosure and transparency of financial statements for NSE-listed companies.

When examining the effect that governance has on financial reporting quality on a global scale, a study of industrial businesses listed in Amman Financial Market was conducted by Jamil, Mohamad, Mamdouh, and Hassan (2013). Data were collected from both primary and secondary sources using a questionnaire sent to all participants in the study. Some of the findings were as follows: a thorough understanding of corporate governance by designers and consumers of financial statements, together with a framework for its implementation in assisting Jordanian industrial enterprises listed on the Amman Financial Market. In community research, it was discovered that the successful adoption of corporate governance principles improves the quality of financial reporting. In addition, it was discovered that financial statement creators and consumers should be thoroughly conversant with the corporate governance concept and the underlying principles of its implementation in industrial businesses listed on the highly regarded Amman Financial Market. According to the research, that is not all, which found that sound corporate governance principles had a positive impact on financial reporting quality.

Heirany, Sadrabadi, and Mehrjordi (2013) looked at the relationship between a company's operating ratio and the quality of its accounting income to see how corporate governance systems affect financial reporting quality. Corporate governance methods like power concentration, institutional shareholder ownership percentages, and board independence have all been considered in this research. Sixty businesses from the Tehran Stock Exchange were chosen as a representative sample between 2006 and 2010. The study ideas were put to the test using multiple regressions. According to the study's findings, robust corporate governance systems are linked to higher reported profitability.

Another study found that corporate governance traits have influenced financial reporting quality in Tehran Stock Exchange (TSE) listed businesses from 2003 to 2011 (Challaki, Didar, and Riahinezhad 2012). For financial reporting quality assessment purposes, the study used McNicols (2002) and Collins and Kothari (1989), which included consideration of corporate governance factors. According to the conclusions of this study, corporate governance characteristics such as board size, independence, the concentration of ownership, and institutional ownership have little impact on the quality of financial reports. No association seems to exist between audit size, company size, age and financial reporting quality (such as financial reporting).

However, Gonçalves (2010) investigated the relationship between the composition and aspects of corporate governance and the financial reporting quality of Portuguese firms. All publicly listed companies in Portugal are included in the study's population. Over six years, there were 234 observations each year based on evidence from 39 firms and linked to the sample period. The data from the sample may be analysed using descriptive statistics. According to the research, changing board composition and independence did not affect the quality of financial reporting in publicly traded Portuguese companies. There was a positive correlation between board size and the degree of accounting discretion, with a giant board producing better financial reporting. Also, in 2010, the effect of corporate governance on financial reporting disclosures in Bangladesh corporations was examined by Hasan, Hossain, and Swieringa (2010). There were 40 people in all, with a sample size of 20, or half of the total. The data was analysed using Descriptive Statistics. There was a substantial correlation between the degree of financial disclosures made by companies and the presence of an external auditor, a factor in corporate governance that was examined. The amount of financial transparency is not significantly influenced by other factors such as board independence, the board size, dominating personality, institutional ownership, or the general public. As a result, Bangladesh's corporate governance system is not up to snuff.

3.0 RESEARCH METHOD

The descriptive research approach will be employed for this study, spanning ten (10) years between 2011 and 2020. Throughout the research, all of the companies listed on the Nigerian Stock Exchange comprise the study's population. For this study, a purposive

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selection approach was used to choose a sample of five enterprises from each of the three major economic sectors (manufacturing, service and banking). Granger causality econometric tests were used to analyse the variables.

3.1 Specification of the model

The Jones Model has been used in a large number of prior researches. Non-discretionary accruals in the event year are often referred to as the Jones Concept for non-discretionary accruals in the event year by Jones (1991), who developed the model. In contrast, this research model is based on the following formula:

$$FRQ = \beta_0 + \beta_1 BRDSZ + \beta_2 BRDID + \beta_3 BRDEX + \beta_4 ADCMZ + \beta_5 EADTQ + \mu_t \dots\dots (3.1)$$

Where: FRQ = financial reporting quality as defined by company discretionary accruals

BRDSZ = the number of directors on the firm's board of directors

BRDIDi = is the percentage of independent directors on the firm's board.

ADCMZ = denotes the size of the audit committee in the business.

EADT = the existence of an internal audit committee and the employment of an external auditor among the main four.

BRDEX = the presence of competent and experienced directors on the firm's board of directors.

Previous portions of this research dealt with all of the dependent variables, including the structure of the board (BRDSZ and BRDID), quality of audit (audit committee size (ADCMZ), and external audit quality (EADTQ as evaluated by the inclusion of an auditor among the big-4) and board experience (BRDEX). Many researchers have used discretionary accruals as a proxy for "financial reporting quality".

4.0 RESULTS AND DISCUSSION

The three most critical dependent factors are board structure (BRDSZ and BRDID), audit quality (ADCMZ and BRDID), and board experience. The model's predictions are heavily influenced by these factors, which have been described in detail in the model's specification. In this study, many researchers have used "financial reporting quality" as a proxy for discretionary accruals. The model estimate has a feeling of direction because of the diagnostic tests.

Table 1: Diagnostic Check for Residual

Residuals	Test	Value	P-value	Conclusion
Normality	JB-test	0.6200	0.7334	Not Normal
Serial	LM-test	1.5084	0.3986	Not Serially Correlated
Heteroskedastic	ARCH	0.3236	0.5871	Presence of homoskedasticity
Stability	Ramsey Ret	8.6587	0.0099	Stable

Source: Authors own Computation using E view 10

Corporate governance model variables are not regularly distributed when tested in a diagnostic test. Homoscedasticity is present in the series, but there is no link between them. Because the OLS's assumptions are not met, Granger Causality should be used as the suitable model estimate for this investigation.

According to the findings of Granger causality tests

The R², t-test, and F-test are significant in the decision-making process about the direction of causation in causality connections. It has been observed that even when fundamental mistakes are uncorrelated and share common variance, the OLS residuals used in all diagnostic tests are correlated and heteroscedastic. Table 6.3 shows the results of Granger causality testing.

Table 2: Granger Causality Test Result

Null Hypothesis:	Obs	F-Statistic	Probability
BRDSZ does not Granger Cause FRQDA	8	0.39041	0.70681
FRQDA does not Granger Cause BRDSZ		22.1538	0.01597
BRDID does not Granger Cause FRQDA	8	4.06461	0.13995
FRQDA does not Granger Cause BRDID		13.1674	0.03270
BRDEX does not Granger Cause FRQDA	8	1.35617	0.38059
FRQDA does not Granger Cause BRDEX		1.03383	0.45548
ADCMZ does not Granger Cause FRQDA	8	0.46649	0.66619
FRQDA does not Granger Cause ADCMZ		26.4637	0.01242
EADTQ does not Granger Cause FRQDA	8	0.18718	0.83829
FRQDA does not Granger Cause EADTQ		0.42388	0.68845

Source: Authors own Computation using E view 10

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According to the causality test findings provided in table 2, board structure measurements of board size (BRDSZ) and independence (BRDID) do not granger cause financial reporting quality as discretionary accruals for COVID-19 era enterprises. Financial reporting quality (FRQDA) and firm discretionary accruals (FRQDA) are examples of corporate governance metrics. FRQDA has not been exacerbated in the near term by audit quality (as evaluated by the existence of an auditor among the big-4) or board experience (i.e. experience-BRDEX). External auditing standards and audit committee size (measured by the presence of an auditor among the big-4). As far as audit quality and board experience go, FRQDA grange is not to blame for either (the size of the audit committee, ADCMZ) (i.e. experience-BRDEX). In the short run, financial reporting quality in Nigeria is impacted by corporate governance metrics and audit quality. – The quality of a financial report will be defined by the level of confidence that shareholders have in the financial reports. According to Dabor and Adeyemi (2009), this is less probable if people have less faith in corporate governance structures, norms, and institutions. "Insider trading" may occur due to shareholders who are unsatisfied with the financial report of the directors and are willing to pay to learn more about their internal operations. If other shareholders are obliged to pay more for the company's knowledge, which has become a commodity, they may transfer their equity.

5.0 CONCLUSION AND RECOMMENDATIONS

The global financial crisis is a strong indicator that this health crisis will intensify and that the impact of the COVID-19 pandemic will be the most difficult for auditors and their clusters since many people believe that this epidemic is an issue that affects companies' money. This paper examines how the COVID-19 outbreak has influenced audit efficiency, providing advice for future auditors and researchers after this external shock.

According to Abbas (2011), Alzoubi (2012), and Hassan (2013), the corporate governance system of Nigerian firms serves as a means of encouraging directors to act in the best interests of shareholders by influencing the quality of financial reporting. This study has thus established empirical links between the corporate governance system and shareholder confidence in financial reporting quality, which is consistent with these studies. According to this study, the financial reporting of Nigerian companies may be affected by the level of corporate governance indicators and audit quality. Nigeria's Guarantee Trust Bank Plc's financial reporting performance (size-BRDSZ) and audit committee size are better than those of the other four companies in the study (ADCMZ).

The research has harmed an audit report by the epidemic, which has resulted in low-quality financial reporting by companies throughout the nation.

According to the findings, Nigerian companies should take corporate governance indicators seriously to enhance the quality of financial reporting under COVID-19. A company's financial reporting quality is directly impacted by the number of members on the audit committee (ADCMZ) and the number of independent directors (BRDID). Efforts must be made to improve corporate governance procedures in Nigeria's rapidly expanding market in order for the country to meet international accounting standards.

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Research on Data Visualization Technology Based on Python

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ABSTRACT: This study aims to research on data visualization technology using Python language. Python is an open-source programming language developed with the community-based model. In this paper, different visual presentation types are introduced, such as visualization of text data, network visualization, and visualization of spatial information. Additionally, common data visualization techniques are presented in this paper. Finally, some data visualization tools (Smartbi, D3, Google Chart API, Processing, and Rapidminer) are described in this paper.

KEYWORDS: Visualization Technology, Python, Data Visualization Tools

I. INTRODUCTION

Python is easy to learn as well because of its simple syntax, which has a powerful interactive network visual information management library with numerous information visibility optimization libraries. It is an open-source programming language developed with the community-based model. It's free to use, and since it's open-source supports multiple platforms and can be run on any environment. For example, 2D and 3D information visualization optimization libraries Matplotlib, Seaborn and Pandas, Folium, Basemap, MapBox, GeoPlotlib, PyechartsMap, etc. Information visualization management library of social Service Network networkX, Wordcloud, a library for information visibility optimization of dictionaries and cloud images, and WordCloud from Pyecharts.

The Matplotlib library is Python's third-party data visualization library and the most widely used data visualization drawing library in Python. It is very convenient to get the general information of the data. The Numpy library is Python's base for data processing and is the foundation of high-performance scientific computing and data analysis. Because it provides a large number of mathematical function libraries for data operation, it can be used to store and process large matrices, supporting a large number of dimensional arrays and matrix operations. Pandas is a well-known data analysis library for Python. It includes a large number of databases and standard data models and provides the tools needed to efficiently manipulate large data sets. The main function is to do a lot of data processing but also can draw the efficient completion of the drawing work. The Seaborn library is a graphical visualization Python package based on Matplotlib that allows to creation of beautiful charts with just a few lines of code. The advantage is that it provides a highly interactive interface for statistical visualization. It has a high-level interface that can draw attractive statistical graphics. The visualization results obtained from Seaborn are often faster and more beautiful. The Bokeh library is an interactive visualization library for modern Web browser rendering capabilities. It is the use of Python through a simple and fast way to provide high performance of the interaction of large data sets to get multi-functional visualization. Pyqtgraph is a pure Python graphical GUI library based on PyQt4/PySide and Numpy libraries. It is written entirely in Python. However, due to the internal use of the NumPy library and QGraphicsView framework, it can carry out a large number of digital processing and rapid display [1].

II. VISUAL PRESENTATION TYPE

At present, there are all kinds of data analysis and visualization applications on the network. These visualization technologies can be divided into three categories from the technical perspective: text data visualization, network visualization and spatial information visualization [2].

(1) Visualization of text data

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Text visualization covers the process of information collection, text information mining, visual rendering and interaction design. The results of visual analysis such as tag cloud, text map, network graph and overlapping graph can be obtained by using word bag model, feature mapping, text clustering, lexical and syntactic analysis to text content or data

In the text visualization, the general is the visualization type of the chart class, such as bar chart, pie chart, broken line chart, bubble chart, etc., these are the visualization of the chart class. However, there are three types of visualization that are widely used in the field of text, namely, visualization based on text content, visualization based on text relations, and visualization based on multi-level information.

(a) Visualization based on text content. At present, this kind of visualization is mainly applied to word frequency and word distribution, and we are familiar with word clouds and various distribution maps.

(b) Visualization based on text relations. This kind of visualization is mainly to study the internal and external relations of the text so that people can easily understand the content of the text and find certain objective laws. We commonly have tree graph, node connection network graphs, and so on.

(c) Visualization based on multi-level information. This type of visualization mainly helps users to have a deeper understanding of textual data based on multiple aspects of the information. Nowadays, more and more attention is paid to text visualization that contains time information and geographic coordinates. Common visualizations in this category include geothermal maps, Spark Clouds, and matrix-based sentiment analysis visualizations.

(2) Network visualization

Network visualization is usually used to show the relationship between data in a network and is generally used to depict interconnected entities, such as social networks.

The most common tool for creating social network graphs is Python, and users need to access the Network library before creating social network graphs. As a graph theory and complex network modeling tool in Python language, the network library contains a variety of commonly used graphs and complex network analysis algorithms. Users can use the Python library to analyse complex network data, and can also use it for simulation modeling.

(3) Visualization of spatial information

Spatial information visualization refers to the process of graphing complex scientific phenomena, natural landscapes and some abstract concepts by using computer graphics and image processing technology. Cartography and computer graphics are often used in the process of spatial information visualization, and the process of spatial information visualization is to input the information of cartography, through inquiry, analysis and processing, and then combined it with the display of graphics and images, to achieve interactive processing and display in a concise and easy to understand visual form.

III. COMMON DATA VISUALIZATION TECHNIQUES

In the application of information visualization technology, target classification methods are not technology-driven but target-oriented. Data visualization method based on object classification has been widely used in the industry. Abstract the goals of data visualization into comparison, distribution, composition, and relationships [3, 4]. Common data visualization tools can be divided into the following categories:

(1) Parallel visualization

Parallel visualization usually includes three parallel processing methods: task parallelism, pipeline parallelism, and data parallelism. Task parallelism divides the visualization process into independent sub-tasks, and there is no data dependence between the sub-tasks.

The visualization process is divided into several stages. The computer executes each step in parallel to speed up the process. Data parallelism is a parallel processing method of "single program and multiple data". It divides data into several subgroups and then executes programs to process different subdata in parallel with the granularity of subdata.

(2) In situ visualization

The numerical simulation process can intuitively eliminate bottlenecks in large-scale simulation output.

Raw materials can be divided into image, distribution, compression, and characteristics. The output is treated as the raw image, while the data is treated as visual and image storage in digital simulation. Output - Visual display of raw location-allocation data, according to user-determined statistics, calculation and retention of statistics during numerical simulation, and subsequent statistical reports;

Using the compression algorithm to visually display the output of the compressed data reduces the number of analog data output, and the compression reduces the number of input for subsequent visual processing.

The visual method used to show the starting position of the output is to extract characteristics, which are extracted and preserved during the digital simulation and subsequent visual processing of input data.

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(3) Time series data visualization

Providing data in chronological order helps people to look at the past from a statistical perspective and predict the future, for example, to build prediction models and analyze user predictions and behaviors.

The area chart shows the changes and changes in numbers over a period of time, which is the most common trend. In the bubble chart, you can set a variable in the animation process of an axis as time or change a data variable. Candle patterns are often used as a tool. Histograms are often used as a project management tool, thermometers show color changes in data, and histograms are suitable for showing data allocation between sequential intervals or specific time intervals. Use line charts to show continuous time intervals or the number of time intervals, trends and relationships most often displayed.

IV. DATA VISUALIZATION TOOLS

Data visualization analysis tool, since it is a tool to analyze data, it must have the ability to deal with massive data and graphical display and interaction. Therefore, it needs to be able to quickly collect, screen, analyses, summarize and show the information needed by decision-makers, and update it in real-time according to the newly added data [5].

Smartbi

Smartbi supports Excel as a report designer and is perfectly compatible with Excel configuration items. Support Excel all built-in graphics, background, conditional formatting and other design complex dashboard style. Excel plug-in functions all Excel graphics such as feature graphics: mini, Pareto, bullet, small and many, etc. Commonly used graphics, such as column chart, pie chart, line graph, radar chart, etc., and combined with the dynamic data in the data warehouse for data display.

Smartbi supports a complete ECharts graphics library, supporting a variety of graphics, including dozens of dynamic interaction graphics such as waterfall diagram, relationship diagram, radar diagram, oil volume diagram, thermal map, tree diagram, etc. Support 3D dynamic graphics effect, such as 3D route chart, 3D scatter chart, 3D column chart for data visualization display; Support rich Echarts graphics controls such as wheel cast controls, running lights, TAB controls, URL controls, can be directly using Echarts all options configuration; Integration with other HTML5 graphical controls is also supported.

D3

D3 is another Java library that supports SVG rendering. However, D3 offers a wide range of complex chart styles beyond linear and bar charts, such as Voronoi charts, trees, circular clusters, and word clouds. D3.js, which stands for Data-driven Documents, uses HTMLCSS and SVG to render amazing charts and analysis diagrams. D3's emphasis on web standards is strong enough to make it possible to use on all major browsers without being tied to other types of architectures, and it can combine visually appealing components with a data-driven approach.

Processing

Processing is the marquee tool for data visualization. All you need to do is write some simple code and compile it into Java. There is also a processing.js project that will make it easier for websites to use Processing without Java Applets. Since the port supports Objective-C, you can also use Processing on iOS. Although Processing is a desktop application, it can run on almost any platform, and the Processing community has grown over the years to include a large number of instances and code.

Rapidminer

Rapidminer, a handy data visualization tool, another essential tool for data processing, is an open-source data science platform that works through a visual programming mechanism. Its capabilities include modifying, analyzing, and creating models and quickly integrating the results into business processes. Rapidminer has received a lot of attention and has become a reliable tool in the minds of leading data scientists.

Google Chart API

The Google Chart API tool set has removed the static image feature and now only provides the dynamic Chart tool. It works in all browsers that support SVGCanvas and VML, but one big problem with Google Chart is that: Diagrams are generated on the client side, which means devices that do not support JavaScript will not be able to use them, nor will they be able to use them offline or save the results to other formats, as was previously the case with static images. Despite the above issues, it's undeniable that the Google Chart API is incredibly rich, and if you don't have a particular need for customization or resistance to Google's visual style, you can start with Google Chart.

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V. CONCLUSIONS

This paper first introduces the data visualization that can present the current types. Visualization technology has been widely used in finance, medical care, geography, e-commerce, and so on, and has played a huge role. Through the visualization application of knowledge maps, users can understand certain knowledge in the shortest time and obtain accurate information. The visual display of data represents abstract "data" in a visible form, which helps people understand the data. Data visualization essentially deals with different data objects compared to traditional data visualization. Data visualization requires large-scale, multi-type, fast-updating, and efficient data processing, which brings a series of new challenges to the research and application of data visualization.

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Four Noble Truths and Fo Guang Entrepreneur

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ABSTRACT: The Four Noble Truths (Pali: cattāri ariyasaccāni), namely: (1) the “Noble Truth of Suffering”, (2) the “Noble Truth of the Cause of Suffering”, (3) the “Noble Truth of the Ending of Suffering” and (4) the “Noble Truth of the Way to Ending Suffering” are the fundamental Dharma of Siddhartha Gautama. Mr. Jason Chou was the founder of Taiwan Shinshun Corporation (TWSS). He experienced to do volunteer works at Sudan Temple and received karmic reward of making profits extensively. However, a fire devoured the TPU factory of the TWSS Company in 2012. It is the first time he epiphanies the Noble Truth of Suffering. Mr. Chou sold all the TWSS Company's shares to BASF in 2015, hoping to concentrate on cultivation compassion, and promoting the Dharma in the future.

KEYWORDS: Siddhartha Gautama, Dukkha, Suffering, Sacca, Entrepreneur, Hsing Yu

I. FOUR NOBLE TRUTHS

Around 2,500 years ago, Siddhartha Gautama attained enlightenment under the Bodhedrum in Buddha-gayā. He presented the Four Noble Truths of the Dharma for the five sramana: Koṇḍañña, Bhaddiya, Vappa, Mahānāma, and Assaji in Sarnath (Sanskrit: saraṅga-nāthā). The five sramana disciples understood the Dharma and became ordained as five bhikṣu (Pali: bhikkhu). This is the first turning the Dharma Wheel by Siddhartha Gautama. He said: "Koṇḍañña! Do you know why the way to ending suffering? Because we desire to be free from suffering. You know it is full of suffering around the world. There are hurricanes, floods, and earthquakes that have harmed us in the world. There are various intolerable and undesired things in our society that make us uncomfortable and painful. There are physical and mental attacks from ageing, illness and death. You can see our world is filling with suffering.

"You should know that all these sufferings are based on “ego”, because sentient beings are attached to “ego”, and following with greed, hatred, and delusion. This is the cause of suffering. If you want to get rid of these sufferings, you must practice the way to ending suffering, and you can enter the Nirvana!" These five bhikṣu felt that they had never heard it before, when they heard the Dharma of Siddhartha Gautama. They deeply admire that Siddhartha Gautama is definitely the authority of truths. Siddhartha Gautama keeps saying: This “suffering”, “the cause of suffering”, “the ending of suffering”, and “the way to ending suffering” are called the “Four Noble Truths”. No true liberation if you do not understand the Four Noble Truths. Can you understand my Dharma (Hsing Yun, 2018)?

The Four Noble Truths (Pali: cattāri ariyasaccāni), namely the “Noble Truth of Suffering”, the “Noble Truth of the Cause of Suffering”, the “Noble Truth of the Ending of Suffering” and “Noble Truth of the Way to Ending Suffering” are the fundamental Dharma of Siddhartha Gautama (FGS Foundation, 2012).

The “Truth” (Pali: Sacca), is translated as reality in Southern Buddhism, representing the absolute truth, the truth, the reality and unchanging things. It is an important philosophical thought in various religions in India. Buddhism uses “Sacca” (Pali) to represent truth. The original meanings of “kǔ dì” (Chinese word) are to understand the inner meaning or meaning of things, so it was used to translate this noun of “Sacca” in ancient China (Fo Guang Shan, 1988). First, the Noble Truth of Suffering: The truth that makes one realizes that life is suffering. The Truth of Suffering (Sanskrit: Duhkha; pali: Dukkha) clarifies that all sentient beings are in suffering. However, Dukkha is a combination of the prefix “du” and the noun “kha”. “du” means bad, difficult, not good, uncomfortable. “kha” refers to the meaning of void, space or sky. The combined “Dukkha” means difficulty, discomfort, or restrained (Buswell and Lopez, 2017).

The word suffering (Pali: Dukkha; Sanskrit: Duhkha), has the meanings of “physical or mental pain that a person is feeling” in common usage. On the other hand, the word of pleasure (Pali: Sukha; Sanskrit: Sukha) has opposite meanings. When we use the word of “suffering” to represent the “Dukkha” in English article may lose deeper meaning for Buddha’s Dharma because it

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contains deeper thoughts, such as "impermanence", "emptiness", and so on. Hence, we should bear in mind, it is impossible to use "suffering" to represent the whole concept of the "Dukkha" in this article. Our body, and indeed everything, is impermanence and causes suffering. Suffering and pleasure are happening in our life, but what makes it unbearable is impermanence. Birth, ageing, sickness, and death are all human beings must go through. From the perspective of Dharma, "ego" is composed by five aggregates (Sanskrit: Skandhas; Pali: Khandhas), which are only short-lived without permanent existing in the world.

Siddhartha Gautama divided "the Noble Truth of Suffering" into 11 types of suffering: (1) birth, (2)aging, (3)death, (4)sorrow, (5)lamentation, (6)suffering, (7)grief, (8)vexation, (9)remorse, (10)separation from love, and (11)inability to seek. The Buddha finally said that "the Five Aggregates of grasping are suffering", the Five Skandhas bearing suffering, which means that these sufferings arise from the Skandhas of form, sensation, perception, volition, and consciousness. All kinds of suffering in life come from the sentient beings composed of these Five Skandhas.. Siddhartha Gautama said: "bhiksu! If any brahmacarin can not understand it is enjoyment as enjoying sensual pleasures with objective attitude; it is unsatisfactory as enjoying from sensual unsatisfactory with objective attitude; In attaining liberation from sensual pleasure, knowing objectively that it is liberation. It is impossible for them to know precisely and entirely the desire for sensual pleasures. However, bhiksu! Any brahmacarin who can objectively understand the enjoyment of sensual pleasures is enjoyment; their unpleasantness is unsatisfactory, and liberation from sensual pleasures is liberation. They may know precisely and entirely the desire for sensual pleasure (Hsing Yun, 2005).

Second, the Truth of the Cause of Suffering (Pali: Samudaya): The truth that enables one to understand the cause of suffering. Samudaya means accumulation, arising. The Truth of the Cause of Suffering is the analysis of the cause of suffering. Human suffering mainly comes from greed, hatred, and delusion. The original minds of all human beings are obstructed by ignorance, driven by ignorance, craving, hatred and other afflictions. Sentient beings accumulate all kinds of bad karma, and these karma lead to all kinds of suffering. Eventually, a thorough understanding of the cause of suffering, the truth of the cause of suffering, is the beginning of enlightenment (Rahula, 1959).

Third, The Truth of the ending suffering (Pali: Nirodha): To liberate one from suffering. When we cut off the cause of suffering, there will be no pain or distress, that is, from the "reincarnation" to liberation, this is the "Truth of the Ending Suffering", also known as Nirvana. In order to get rid of suffering, we must eliminate the causes of suffering (suffering) "greed, hatred, delusion". The Buddha also listed these sufferings, including the six inner senses, the outer six senses, the six senses, the six touches, the six feelings, the six thoughts, the six loves, the six searches, and the six attachments, and proposed the corresponding methods. The termination of these sufferings is also called Nirvana, which refers to the state of liberation attained by practitioners by cultivating "the way to ending suffering" after knowing suffering. "Ending suffering" means cessation, which is essentially a different name for "Nirvana". Nirvana can be obtained by eliminating all kinds of ignorance, such as troubles, pains, and obstacles and so on. Taken as a whole, the ending of suffering refers to the eradication of all afflictions such as greed, hatred, and delusion, and the state of pure and true nature is revealed: Nirvana.

Fourth, the "Truth of the Way to Ending Suffering" (Pali: Magga), it leads to the cessation of suffering and the achievement of Nirvana. Magga means the way of practice to ending suffering and achieving Nirvana. Its content is the Noble Eightfold Path, which enables people to get rid of evil and turn to good, and to cultivate right wisdom. If we can practice diligently, when our afflictions are completely eliminated, we can fully attain Nirvana. The Noble Eightfold Path is: Right View, Right Intention, Right Speech, Right Action, Right Livelihood, Right Effort, Right Concentration, and Right Mindfulness.

One day, Siddhartha Gautama came to the Jetavana Vihar in Sravasti country to deliver a blessing. At this time, a well-known arrogant brahmin lived in this country. Not only did his parents belong to brahmin nobles, but all seven generations were brahmin nobles, and his family background was prominent. He is not only handsome, intelligent and unimpeded, as a brahmin, but also has extensive knowledge. However, he relied on family background, appearance, intelligence, wealth to be superior to others, so impertinent to parents, elders and teachers.

He heard that Siddhartha Gautama was blessing near by, and he thought, "I should go to see Siddhartha Gautama, if there is dharma to present, I can argue with him; if there is nothing to say, I will come back quietly." The arrogant brahmin rode in a white carriage, followed by a group of young brahmins, with golden handle umbrellas or golden bottles. This group went to the Jetavana Vihar. The arrogant brahmin got out of the car and walked in as Siddhartha Gautama happened to be preaching to the public. At this time, the arrogant brahmin thought: "Sramana Gautama didn't notice me at all, let's go home." Siddhartha Gautama knew the brahmin's thought, and he said a gatha: "arrogant is here, badness will grow more arrogant; always been for dharma; increasing for dharma". As the brahmin hearing what Siddhartha Gautama said, he thought, "Sramana Gautama already knows my purpose." He wanted to bow down to Siddhartha Gautama. Siddhartha Gautama said to the arrogant brahmin, "Stop! There is no need to bow, as long as your mind is pure enough."

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In Jetavana Vihar, all the people present praised in unison: "It's amazing, Buddha! You are indeed of great wisdom. This brahmin is usually arrogant, relying on his family background, appearance, intelligence, wealth is higher than others, and he disrespects his parents, elders, and teachers. However, he is humbled by the Buddha and wants to pay homage to the Buddha." The arrogant brahmin respectfully asked Siddhartha Gautama: "What is humbleness? What is admiration? What is good consolation? What is good offering?" Siddhartha Gautama replied with gatha: "Parents and elder, monks and teachers, and those who respect, should not be humbled. They should be respectful, humble and inquiries, serve enthusiastically, and make offerings. Free from greed and exhausted arahant. Righteous wisdom and good liberation can reduce arrogance. Wise people will be hands-together Ceremony.

Siddhartha Gautama taught the arrogant Brahmins all kinds of wonderful dharma afterwards, and consecutively explained the various ways of kindness, keeping the precepts, generating virtues, cravings, and avoiding afflictions, so as to purify your mind. The arrogant brahmin realizes the Four Noble Truths - "suffering", "the cause of suffering", "the ending of suffering", and "the way to ending suffering" and realizes the state of full attainment of arhatship (Pali: Arahant). The arrogant brahmin stood up and bowed to Siddhartha Gautama. He asked, "Siddhartha Gautama, can I become a Sramana and receive full ordination?" Siddhartha Gautama then genially agreed. After being a sramana, the brahmin thought: "A good man (Pali: kula-putta) shaves his hair and wears a cassock. He should become a sramana with virtuous faith and learn the right path..." Since this thought has been liberated from the repression of arrogant, he attains the state of full attainment of arhatship (Pali: Arahant) (FGS Foundation, 2012).

II. FO GUANG ENTREPRENEUR

Venerable Master Hsing Yun said that a person who wants to have a career will have the opportunity to start a business as long as he understands the needs of the public with his heart. Starting up a business must also get together four basic conditions: (1) utilizing capital, (2) connecting with people, (3) creating opportunities, and (4) having adequate conditions. Jason Chou expressed his view in a lecture of Entrepreneurship (Hsu, and Chiu, 2018). Mr. Luohan Chou, was the founder of the Kangshan branch of the Buddha's Light International Association (BLIA), and is also a Lay Dharma Lecturer of the BLIA. Mr. Luohan Chou had been relying on self-learning method during early years although only graduated from elementary school. He has been a lifelong supporter of BLIA and is the best role model for Jason Chou, the founder of Taiwan Sheen Soon Co. Ltd. (TWSS) (Man Mu, 2017).

Jason Chou studied MSc in chemical engineering at the University of Utah in the United States after BA graduation in Taiwan. He had been reading Buddhism books written by Master Hsing Yun before going to the United States in 1988. It had been a voice in his heart: "I am a Buddhist!" when someone invited him to church. After Jason obtained the master degree from the University of Utah, he went back to Taiwan and worked for a company for seven years. A friend invited him to establish a Thermoplastic Polyurethane (TPU) factory, Taiwan Shinshun Corporation (TWSS) and he became an entrepreneur. TWSS was established in July 1997 and officially produced in mid-1998. Thermoplastic Polyurethane (TPU) is an environmentally friendly material for polymer elastomers. TPU does not enclose plasticizers and can be used in a large range of applications, such as PU pneumatic tube, mechanical transmission belt and so on. However, the road to operate a company was bumpy, and the TWSS suffered serious losses for three following years.

His father, Luohan Chou, and mother accompanied him to Fushan Temple in Changhua County. His mother said to him, "The only thing you lack is karmic reward, and you have to go to the temple to cultivate karmic reward as soon as possible." His mother asked the Most Venerable of Fushan Temple to give Jason a chance to do volunteer works. Surprisingly, the company began to make a profit as Jason became a volunteer at Fushan Temple in the very first month. It was the first time that the company had profits although it was a small fortune. Jason's mother asked him to donate the whole profits to Fushan Temple in order to repay Buddha's grace. The TWSS Company has been making profits since the donation, and it's making more and more money. Jason is a scientist, and he could not figure it out from an experimental point of view. But it was a success after all, and Jason worked harder to be Buddhist volunteer (Pan, 2018).

Later, Jason supported a new building of Fushan Temple and cultivated karmic reward. In the ten years after year 2002, the revenues of the TWSS Company grew more than 20 times. In 2009, the TWSS Company won the Little Giant Award from the Ministry of Economic Affairs in Taiwan. In 2011, the TWSS Company won the honor of the Golden Merchant Award (Excellent Merchant Award) also from the Ministry of Economic Affairs in Taiwan (Chen, 2015). The TWSS Company had been growing 10 times in the following decade. Jason thanked his parents for cultivating merit and wisdom simultaneously to achieving a successful life. When encountering tricky customers, Jason would take the initiative to write disaster relief tablets for them, and chanted sutras in the morning and evening. Jason freely subscribed The Merit Times, a Buddhism newspaper, to all employees, in order to accomplish Three Acts of Goodness Campaign and share Dharma to encourage employees.

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In 2005, The TWSS Company expanded its factory with an area of 24,000 square meters and an annual production capacity of 8,000 metric tons in Taiwan. In 2009, the TWSS Company invested in Zhongshan Baoxuan Technology, a subsidiary of Pou Chen Group in China, and expanded its annual production capacity to 5,000 tons in China. Pou Chen Group is one of the largest shoe manufacturers in the world. It produced branded athletic and casual footwear and claims to be an OEM for major sports brands such as Nike, Adidas, New Balance, Puma, and so on. In 2011, the annual production capacity of the Taiwan factory was expanded to 20,000 tons as launching the film-blown TPU. In 2014, the TWSS Company was the largest TPU hot melt adhesive manufacturer in the Asia-Pacific region and top three independent TPU material suppliers in Asia.

However, a fire devoured the TPU factory of the TWSS Company in 2012. Many Foguang members of (BLIA) in Changhua County rushed to the scene to care as they saw the TV news. The 4,000-square-meter factory burned down for a whole day and night, and only the pillars at the entrance of the TWSS Company's fence were pasted with the Spring Festival couplets "Heavenly Blessings & Protection" written by Venerable Master Hsing Yun. A neighbor said "Did Heavenly Blessings & Protection work? The factory was burnt down." as he saw the Spring Festival couplets. Jason's wife replied, "Fortunately, there was Heavenly Blessings & Protection to protect the neighbors, so no one was injured." Jason and his wife were so calm, so others were surprised to see them accepting this disaster calmly. Jason cleaned up the mess among the rubble, and comforting the sympathetic masters and members of BLIA. It is the first time he epiphanies the Noble Truth of Suffering.

What Jason prayed sincerely at the fire scene was: don't let the neighbors suffer. He only thought about how to solve the problem under the devastating high temperature. At his heart, it was Venerable Master Hsing Yun's teaching: "If there is Dharma, there is a solution!" . Jason and his wife have been implemented the Dharma in their daily life, and our words and deeds are in line with the Noble Eightfold Path. We firmly believe that the whole family will never go hungry after the fire. Mr. Hong Wenzheng, a supervisor of BILA, helped the steel structure manufacturer to build the new factory as quickly as possible regardless of the cost. Moreover, Jason usually treat people with integrity, so the bank was not in a hurry to ask him to repay the loan. On the other hand, the machine manufacturer urgently changed the machines ordered to install new machines for the TWSS Company regardless of payment issue. Not only all upstream suppliers continued to supply raw materials, but also none of their customers stopped placing orders. All of the above, as long as any party does not support the TWSS Company, it will go bankrupt soon. I am really grateful for these many good causes and good fates! Fortunately, all the machines and purchase documents were fine. In addition, Jason has been developed broad and good affinity with others, and the fire insurance claims were settled quickly. The TWSS Company was able to restore the production line within six months. The fire did not knock Jason down, but let him made some fortunes. Finally, the employees understand the truth of "The family that accumulates goodness is sure to have superabundant happiness" (Chou, 2016).

III. CONCLUSIONS

Jason took the oath in front of the Buddha to be the chairman of the North Branch of BILA in Changhua County just few months after the fire. People were wondering why he took the chair. Jason expressed the main reason was "impermanence", and everything "there is a solution to the Buddha dharma". Surprisingly, profits of the TWSS Company were the best in 16 years after he taking over as chairman. The company continued to operate smoothly and the two years of 2013 and 2014 as the chairman of the North Branch of BILA in Changhua County were the best two years of profit in the TWSS Company's 17-year history.

BASF, a leading Chemical Company worldwide, acquired the TWSS Company for its operations and assets both in Taiwan and China in 2015. This acquisition of the TWSS Company will further strength dominant position of BASF in the field of TPU extrusion and injection molding, which are widely applied in the shoe industry. Mr Jason Chou, Chairman and General Manager of the TWSS Company will continue to manage its business as a BASF consultant to oversee the related business after the acquisition. BASF will do its best to ensure a smooth transition and unaffected customer supply after the TWSS Company's related assets, customers and employees will be incorporated into BASF's business.

A fire caused Jason and his wife to epiphany the "impermanence" in life. Jason Chou sold all the TWSS Company's shares to BASF, hoping to concentrate on cultivation compassion, and promoting the Dharma in the future.

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ICT-Based Needs Assessment Analysis in Partner Community



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ABSTRACT: Determining the needs of the participants in a community extension program prioritizes the topics that they will be interested to attend. It is critical to identify interconnected needs and their underlying causes in order to design empowering and long-term programs and projects to assist people in improving their quality of life. Thus, using consultative meetings and focus group discussions, this qualitative study determined the community problems of Barangay Tanza, Estancia, Iloilo, on the ICT related program. Participants included 50 residents from the sectors of fisherfolks, farmers, women, youth, barangay officials, and 4Ps beneficiaries. This ensures that participants are interested in various topics presented in the program. The findings of the study were the basis for a proposed annual extension program plan for June 2021 to October 2025.

I. INTRODUCTION

The academe is one of the most important actors in society, with the ability to affect change by empowering members of the community. Community extension services address not only the needs of the community, but also the University's Vision and Mission. Community development is the process of assisting a community in strengthening and developing to its full potential (Adedokon, Adeyemo & Olorunsola, 2010). One of the most difficult challenges faced by members of the community, as well as many others, is a sense of isolation, and ICTs can provide access to knowledge in ways that were unimaginable not long ago.

ICTs force that has changed many aspects of the way we live. If one was to compare such fields as medicine, tourism, travel business, business, law, banking, engineering and architecture, the impact of ICT across the past two or three decades has been enormous. The way these fields operate today is vastly different from the ways they operated in the past.

In addition to curiosity, a person will recognize that it will not be easy to get through the rest of life without knowing about computers. As one studies about computers, the person becomes aware of the importance, versatility and its pervasiveness in the society. The person will also learn what computers are and how they work. This requires learning some technical jargon. And there is no better way to understand computers than through interacting with one. So being computer literate also means being able to use a computer for some simple applications (Capron & Johnson, 2004).

E-learning is another term for learning through new ICTs. Information and communication technology (ICT) is an essential component of today's world. It is a force that influences many aspects of our lives, as well as an electronic means of capturing, processing, storing, and communicating information.

According to UNESCO: ICT is a scientific technological and engineering discipline and management technique used in handling information in application and association with social, economic and cultural aspects. Appropriate use of ICT can transform the whole teaching-learning processes leading to paradigm shift in both content and teaching methodology (Anu Sharma et al., 2011).

Through its adopt-a-barangay program, the Northern Iloilo Polytechnic State College (NIPSC), has been charged with performing extension functions. In accordance with its mission and vision, the college generates data to support and sustain critical decisions, implements corresponding mechanisms, and transfers results in the design of relevant community extension services. As a result, this study was conducted to assess the needs of Barangay Tanza, Estancia, Iloilo in order to develop an extension program that will provide opportunities to its residents while also empowering the community.

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II. METHODOLOGY

A. Study Area

Tanza is located in the municipality of Estancia, province of Iloilo (11° 25' 44" N, 123° 8' 18" E). It is situated at approximately 11.4375, 123.1363, in the island of Panay. The elevation is estimated to be 24.5 meters or 59.4 feet above mean sea level. According to the 2020 Census, its population was 1,413. This represented 2.66% of the total population of Estancia.



Figure 1. Map of Tanza, Carles, Iloilo

B. Participants

The participants in this study were 50 randomly selected residents of Barangay Tanzai, Estancia, Iloilo. They represented a variety of sectors, including fisherfolks, farmers, women, youth, barangay officials, and 4Ps beneficiaries. Prior to the start of the process, they were oriented and informed of the objectives of the program.

C. Procedure

Consultative meetings and focus group discussions were used in this qualitative study to identify gaps, map out issues, and determine key training priorities in order to design a sustainable extension program.

Participants were asked to write down the needs of their respective sectors intended for computer skills, as well as the contributing factors and potential solutions. Each group presented its findings, and then there was deliberation.



Figure 2. shows the active participation of various stakeholders in the needs assessment activity.

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III. RESULTS AND DISCUSSION

Needs of the Partner Community

During the consultative meeting and focus group discussion, a number of issues and needs arose. The interconnectedness of all issues from different sectors was observed during the presentation of participants' output.

The needs of the participants for the ICT program reveals that the top nine necessities were: Computer Literacy Program, Barangay Information System, SK Information System, Vaccination System, computer assembly, computer troubleshooting, Photoshop, Awareness on Social Media, and Netiquette.

- a. Computer literacy, also known as digital literacy, involves having a current knowledge and understanding of computers and their uses. Because the requirements that determine computer literacy changes as technology changes, you must keep up with these changes to remain computer literate (Shelly & Vermaat, 2011).

Thus, the training program under the computer literacy will be the Training on Microsoft Word and Microsoft Powerpoint. Trainees who successfully complete the Microsoft Word training course will be able to learn the latest features of Word, create, edit, and save documents, format text and paragraphs, work with tables, columns, and other formatting features, and work with graphics, WordArt, charts, and text flow.

Microsoft PowerPoint, on the other hand, will teach participants how to create presentations with PowerPoint, format and organize PowerPoint slides, work with graphics, tables, and charts, add multimedia and SmartArt presentations, and integrate Microsoft office files.

- b. Barangay Information System

Technology had proven its capacity on how a business, organization and government keep the productivity and to be competitive. In giving quality service for its people to satisfy their needs.

Keeping Barangay records is a one way to easily track resident's information. BIS is capable in recording this bulk information and can be stored in a long period of time. This system can meet strategic objectives for reducing paper consumption and reducing time consuming file retrieval from bulky documents. BIS can track residents record such as personal to family information, complaints to amicable settlement information and can create daily reports for the Barangay.

- c. SK Information System

SK Information System is designed to manage all the records of SK officials and it is an information system intended to the youth of Brgy. Tanza. SKIS is capable of recording large amounts of data and storing it for an extended period of time. It creates monthly reports and send notification for all the registered kabataan members.

This system is capable of storing and retrieving information of individuals inoculated with COVID -19. A tool to display information and generate reports of the individual and its vaccination details Also, for reliable and rapid data collection.

- e. Computer Assembly is a training course that teaches participants how to disassemble a computer system, identify computer components and accessories, assemble and test the computer system.
- f. Computer Troubleshooting will teach trainees how to identify common computer system problems, identify basic troubleshooting procedures and tools, describe safety hazards associated with working with electronic equipment, and demonstrate the ability to install and effectively use command-line functions and utilities to manage the operating system.
- g. Graphics Design is a training course that will teach basic graphics to the trainees to understand and work with layers; enhance images with paint and filters; perform color adjustments; work with vector paths; and automate task. Adobe Photoshop is the software program used in the training.



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Figure 4. Presentation of Output



Figure 5. Presentation of Output

IV. CONCLUSIONS

It is concluded that, under certain conditions, information and communication technologies (ICTs) can significantly improve poor people's human and social capabilities and have a positive impact on their well-being. ICTs have the potential to increase the individual and collective agency of poor people, as well as to strengthen their existing individual or community assets and informational capabilities. ICTs gain meaning only when people use and enact ICTs for specific purposes. The most immediate and direct impact of ICT programs on people's well-being, according to the study, is personal empowerment of the most marginalized groups, where newly acquired ICT capabilities provide a sense of accomplishment significantly strengthening their self-esteem. As a result, an ICT program is deemed essential. Eventually, the use of ICT will improve people's learning experiences in the community. It also aids in the development of a successful career in a technologically advanced world.

V. RECOMMENDATIONS

Training programs and activities should be carefully planned to meet the needs of the community, and a long-term extension program should be established. Continuous monitoring and evaluation should be carried out to assess the program's impact on the community. More extension programs should be offered in order to further empower the partner communities.

ICT-Based Needs Assessment Analysis in Partner Community

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Smart Irrigation for Crop Management Using IoT



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ABSTRACT: Agricultural production involves cultivating plants and raising domesticated animals to produce food and feed for humans and other animals. Agriculture or farming as it is also called is a complex activity, and each aspect of it impacts the overall crop production. Farmers need to manage all segments of crop production to achieve success. Farmers make strenuous efforts to produce good quality crops but they face challenging issues of monitoring and maintaining it around the clock. The problems in the agriculture domain largely affect the food production and supply chain. This project includes the proposal of an integrated crop management system to maintain the health of crops by supplying the required amount of water and nutrients to them. One aim is to reduce the amount of water lost to unnecessary evaporation, a concern in the 21st century. As a result, other factors, such as cost, time, and effective care are also benefited. This is why, after the soil preparation and planting are completed, the growth phase of the plant also requires special attention. The paper discusses a process for detecting and solving plant health issues using an intelligent automated system.

KEYWORDS: Plant Disease detection; Machine learning; Automated Irrigation; Raspberry Pi.

1. INTRODUCTION

Agriculture is the main source of income in India. Initially, farming needs human interaction. The yield depends upon the way a farmer takes care of his field. But if the land is far from his residence, it is difficult to monitor. While in case the crops turn out to be diseased farmers to spend more time and money on curing them [1]. For salt-affected soils and saline water to be safely utilized, primarily salt-tolerant crops have to be grown, seedbeds have to be managed, and fields have to be graded.

It is necessary to minimize local concentrations of salt, improve irrigation efficiency, and monitor soil, water, and salinity to gauge drainage and leaching requirements. This has led to the development of autonomous, robotic vehicles, such as those used in mechanical weeding. It is now possible to calculate biomass development and fertilization by using aircraft equipped with a hyperspectral snapshot camera that uses lightweight powerful and autonomous flight control systems. These cameras are being developed to aid in unmanned aerial vehicles' application of fertilizer and harvesting of fruits. A decision-tree model based on optical information allows discerning between plant diseases based on crop status. In addition, today's technology farms reed crop histories to provide sophisticated farm management advice [2]. In addition, decision tree models are now available, allowing farmers to differentiate between crop diseases using visual information. Taken together, these technical improvements represent a technical revolution that will lead to disruptive changes in agricultural practice. This trend has for agriculture not only in developed countries but also in developing countries. At the same time, the demand for food is growing and the supply side faces constraints in terms of land and agricultural inputs [2]. The worworldpulation is on track to reach 9.7 billion by 2050, requiring a corresponding 70% increasing calories available for consumption even as the cost of inputs required to produce those calories increases. By 2030, water supply will be 40% below global water needs,d raising energy, labor, and nutrient cost are already putting pressure on profit margins. About a quarter of farmland is degraded and requires extensive restoration before it is once again suitable for large-scale cultivation. Climate change is irreversible, and agriculture is a highly affected industry. Unexpected weather and sometimes bad weather is a serious problems to be solved [3]. Proper timing of fertilizer application increases yields, reduces nutrient losses, and prevents environmental damage. Bad weather and unpredictable weather can cause fertilizer damage and damage the crop. Information is needed on how to apply fertilizer [4]. Weather forecasts can help farmers determine when and where to use them. Both resources and money can be wasted if fertilizer application is done incorrectly so proper information and forecasting are required. The land is an important resource for agriculture. Soil and chemical conditions play a major role in

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the production cycle. One of the most important tools for farmers to improve their crop production is soil analysis. In this regard, soil testing plays an important role in plant growth. Farmers can add organic or non-living nutrients to the soil in appropriate amounts. Yield growth depends largely on the nutrients in the soil: nitrogen (N), phosphorous (P), and potassium (K). Excessive distribution of fertilizer can significantly reduce production and quality [1].

2. LITERATURE SURVEY

Paper [1] recommends drip irrigation performance when water is supplied to plants where the required weather forecasting and crop diagnostics are performed with ugh MCP 3008. This paper proposes a cheap and efficient and effective irrigation system. CNN is responsible for the separation and accuracy of the high voting number and the state of full connection. This paper [1] proposes drip irrigation efficiency when water is supplied to plants were necessary to predict the weather and crop diagnostics are performed with MCP 3008. The degree of yellowing of leaves in plant cracks and on earth is determined by CNN calculations. And based on the data of the clouds using raspberry pi will determine whether to spray water and its value.

Paper [2] provides an advance in the field of in-depth research technology in the field of leaf spot disease in recent years. In this paper, the diagnosis of plant leaf disease is based on an in-depth study, and as long as sufficient information is available for training, in-depth study methods can detect plant leaf disease with high accuracy and advanced photography techniques learned. The comparative study in [3] was conducted, focusing on developing and comparing several Machine Learning (ML) models, assessing the various conditions and horizons of time, and predicting rain using two types of methods. The forecast model uses four different ML algorithms, namely Bayesian Linear Regression (BLR), Boosted Decision Tree Regression (BDTR), Decision Forest Regression (DFR), and Neural Network Regression (NNR). Rainfall was predicted at different times using different ML algorithm that methods used to predict rain using Autocorrelation Function (ACF) based on rain history data and Rainfall Forecasting Using Predicted Error based on historical and predictable rainfall data. This paper concludes with the use of two different methods with different conditions and different horizons of time, and ACF shows higher accuracy than predicting Rainfall Using Forecast Error using BDTR modeling. Paper [4] focuses on various agricultural and crop diseases. The paper has reviewed the Inception-ResNet-v2 model developed using in-depth learning theory and neural network technology. Tests show that the model can successfully diagnose a set of data and the accuracy of overall recognition which is why it can be used effectively in diagnosing and diagnosing plant and insect diseases. Paper [5] proposes an effective way to systematically classify the symptoms of plant diseases using neural convolution networks. This program is trained and tested on two plant disease databases namely plant data and pepper data sets. Learning the slow transmission helped to reduce CNNs meeting time. The accuracy of training and validation is measured in three tests with MonileNet_V3_Large for transfer learning with and without the Plant district data set compared to VGG-16 and transfer learning. Paper [6] suggests how to diagnose cardamom plant disease using the effective NETV2 model. A complete set of tests was performed to determine the effectiveness of the method and to compare it with other models such as NET which works well with Convolutional Neural networks. Paper [7] operates and compares Markov's predicted modern performance with rain forecast and other six alumni learning algorithms, namely: Gene Programming, Support Vector Regression, Radial Basis Neural Networks, Rules for M5, MS. Model Trees, and k-Close Neighbors. This paper also focuses on finding the correlation between different weather conditions and the accuracy of forecasts. paper [8] provides research on artificial neural network (ANN) that contains multiple layers and back-propagation to enable computer literacy in determining the indirect combination. A convolutional neural network (CNN) is generally regarded as an improved version of ANN called a deep learning neural network. This method uses a multilayer perceptron system designed for reduced processing needs. CNN contains the output layer, the hidden layer, the most flexible layers, the integration layers, the fully connected layers, and the default layers to automatically extract the shallow and deep input features. 2D-CNN and 3D-CNN have been used to output spatial-spectral presentations of hyperspectral images. Based on this paper [9] the basis of a network-based disease module, a recurring clustering algorithm was adopted to classify 299 diseases into different categories. The optical clustering scheme is based on the networks and functions of disease-related genes, which can provide functional phases for each disease as well, with more goals or KEGG methods identified and validated. This paper proposes several computational methods to reveal functional differences between different diseases such as group disease identification and classification, the functional relationship between diseases shared by the same group, and the important function associated with the classification of diseases. This paper [10] proposes a diagnostic method for the diagnosis of asymptotic non-local means (ANLM) image algorithm and integration of parallel convolution neural network (PCNN) and advanced reading machine (ELM) with improved linear particle swarm optimization (IPSO). PCNN-IPERM-based peach image detection i.e. neural network parallel convolution, IPSO-based high-resolution machine learning, and precision particle efficiency The paper propose an NLM-based audio output algorithm for peach images. The Parallel convolution neural network model is used to process data after audio output. This paper [11] suggests early diagnosis and complementary measures can be taken at the onset of plant disease. They are trained in specific types such as AlexNet DenseNet-121, ResNet-50, VGG-16, and X-

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ception and it is shown that almost all of the above types cannot provide satisfactory results. X-reception can achieve only 80%. The proposed approach focuses on leaf dot features, which include an advanced R-CNN object acquisition algorithm and a background production platform, two Db and Daux stereotypes are presented to judge the generated or non-realistic image and to determine whether the generated image contains space. This paper [12] proposes an in-depth study approach based on the development of convolution of neural networks (CNNs) for the real-time diagnosis of apple leaf disease. Introducing a new apple leaf diagnostic model using the original GoogLeNet structure and Rainbow Concatenation. This paper proposed a new model of deep neural convolution network, i.e., INAR-SSD was designed by introducing the GoogLeNet launch module and integrating Rainbow integration to improve diagnostic and diagnostic function. This paper [13] suggests nutritional recommendations using an advanced genetic algorithm (IGA) that uses time-series sensor data and recommends various plant settings. Through the proposed model, crop production increased and enabled the determination of the right combination of different types of resources available. N-P-K automation helps to avoid manual manipulation. The method is also improved if a large amount of data for a variety of crops can be achieved and the target will be to produce values that are correctly calculated by soil type and location. This study [14] provides a comparative analysis using simulated rainfall models based on conventional machine learning algorithms and in-depth study structures that work well in sub-river operating systems. This study aims to compare the performance of rain forecast models based on the LSTM-Networks architecture and modern Mechanical Learning algorithms. Weather data from 2000 to 2020 was used in five major cities in the United Kingdom. This paper suggests that LSTM-Networks-based models with a few hidden layers work better in this approach, demonstrating its potential for use as a smart rain forecast forecasting app. This paper concludes that it is appropriate to consider the analysis of the significance of the features and the inclusion of other climatic factors to achieve better performance of rain forecast models. This paper [15] introduces a fast-paced FCM-KM and Faster R-CNN fusion detection system to address a wide range of problems with rice disease photography, such as noise, blurred vision, severe background disturbances, and low detection accuracy. . The Faster 2DOtsu algorithm mentioned in this paper has achieved excellent results in the use of image classification of rice. This paper suggests that this method is more effective in detecting rice diseases and improves the diagnostic accuracy of the Faster R-CNN algorithm while reducing the required diagnostic time. The paper concludes that there is a need to integrate smart internet resources such as the Internet of Things agricultural and terminal processor processors to real-time monitoring and pest identification in grain storage facilities, ready to promote modernization and agricultural industry ingenuity. This paper [16] focuses on promoting effective humidity control based on the Modern Irrigation System (MIS) using the Arduino Nano with various modifications in the planting area. The main objective of this project is to reduce excess water consumption, thereby saving crops from damage. The proposed system can be applied to a variety of plants, as those plants have different humidity conditions for their growth. This article [17] introduces various recent strategies related to intelligent irrigation systems in agriculture using the IoT and intelligence surveillance systems. In this introductory article, various components of smart irrigation, the functions of each layer in smart irrigation, and modern irrigation systems are introduced. System [18] is a sensor that measures soil moisture and adjusts the relay that controls the solenoid valve according to the requirement. The model shown provided the expected results at different humidity levels. The system can be enabled with the help of a solar panel; a solar controller can be used that controls the power of the system. This paper [19] introduces an image classification algorithm used for the automatic detection and classification of plant leaf diseases. It also compiles a study on a variety of disease-specific methods that can be used to diagnose plant leaf diseases. Image classification, which is an important factor in the diagnosis of plant leaf disease, is performed using a genetic algorithm. This paper demonstrates the effectiveness of the proposed algorithm in detecting and classifying leaf diseases. Another advantage of using this method is that plant diseases may appear early or in the early stages. In this paper [20] they developed a self-defense measure based on ground moisture and salt sensitivity, an electrophoretic sensor for measuring ions/nutrients in the soil, a nano-patterned plasmonic-resonance, and light-based sensors based on resonance-based optical mode. in the plant, flexible organic compounds are extracted. In this, they used the input impedance of the metamaterial-inspired pool embedded in the soil sample as a measurable area, known to be directly related to the permit, and proposed a method of determining ion-ion saturation mixture using Impedence spectroscopy. Using a multi-frequency impedance measurement method, a method of measuring the concentration of in-suit nitrate in the soil by analyzing dielectric mixture models over a mixture of Debye-type elements is developed. In this paper [21] the trapezoid method is widely used in SM recognition based on pixel distribution within the thermal remote vision and optical sensing. The SM recovery algorithm that combines a common method with learning methods that integrate with packaging technology is proposed. The accuracy of the predictions tested against the in situ, RMSE, MAE, and group return correlations was performed. This paper a potential application for remote sensing data measuring SM in TP using integrated learning methods. The SM retrieval algorithm that combines a common method (trapezoid method) with integrated learning methods with packaging technology is suggested. In this paper [22] SMMI (soil moisture monitoring index), MSMMI (soil moisture monitoring index), PDI (perpendicular drought index indicator), and MPDI (modified perpendicular drought index) for moisture measurement of land (SM) on farms. Here

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Spectral indicators and plants that are important in distinguishing the earth cover species mainly include Sentinel-2 bands of SWIR1, SWIR2, Red, Green, Red edge1, blue, and plant extracts such as MNDWI, NDMI, TCARI, I S2REP (Sentinel-2 REPI), REPI, MRENDVI, red-edge vegetation index32, and MRESR. MSMMI is not dependent on the soil line and can more accurately establish a standard SM regional testing model for farms. Sentinel-2 satellites with red belts and SWIR can create an SM map of 0–5 cm depth of 10–20 m of landscaping and provide a solid foundation for agricultural waste management. Repeating farmers' financial profits until 2022-23 from the 2016-16 primary year requires an annual improvement of 10.42 percent on the farmer's income. In this paper [23], they evaluated each function separately based on the performance of a built-in robot. the grid structure is used for pomegranate plants. 5 pairs of transmitters and receivers are used to locate the white line in a dark area with the help of an IR-based line. The visual sensor is made by connecting the light transmission setting with the right-angle detection setting. The distance between the LED and the photodiode varies using the test and error method to obtain maximum transducer sensitivity. Plant growth depends on several factors such as NPK, soil characteristics, soil pH, soil moisture, temperature, climate, and light. To manage all the necessary information and complexity of crop growth system, based on IoT technology, can measure, analyze, and take action. It is an accurate agricultural context. acts as a key parameter sensor. The paper introduces an IoT-based system and innovative strategies that improve soil yield through which it is a new way to feed this population growth. this paper proposes [24] a solution that integrates IoT to monitor agriculture more accurately. This paper is primarily aimed at improving the visual system [25] of nitrogen, phosphorus, and potassium-containing the optic nerve. It uses a transfer system and a recovery system. This paper shows the built-in NPK optical sensor for ground detection, which includes light transmission and detection system. An integrated optical sensor war can detect the NPK element on the ground. the clear container is high, about 80%. Based on the test results, there was a significant interaction between the light samples and the NPK samples taken at different locations which caused the light intensity to decrease as the voltage was reduced. Output responses to high NPK were obtained from 32.0 volts of Nitrogen, 4.6 V of Phosphorus, and 19.8 V of Potassium. This paper [26] introduces an agricultural precision recognition system using Wireless Sensor Networks, which enables remote monitoring of soil fertility and other parameters namely soil moisture, pH, and temperature. The proposed Internet of Things (IoT) software system is smart enough to recommend water and fertilizer improvements that improve soil quality and ensure good crop growth. This program helps to reduce the use of excess fertilizer thus increasing the yield. To estimate the amount of nitrogen, phosphorus, and potassium present in the soil, soil fertility tests are used. Data from the sensor is sent to the AWS cloud, and a mobile app is developed that provides information about various soil features by using this information, the farmer will make the right decision on growing the right crop. For the plant to grow continuously above macronutrients (such as N, P, and K), trace elements such as copper, iron, manganese, molybdenum, and zinc are also required to affect yields. The system can be expanded to measure these features with appropriate integration of additional components and precision specifications. The main purpose of this paper [27] is to incorporate an integrated irrigation network and to measure the amount of three major macronutrients, nitrogen (N), phosphorus (P), and potassium (K), in the soil, respectively. Saving farmers time, money, and energy. Comparing the solution in the color scheme determines the value of N, P, and K in the soil sample. It will define the upper, middle, and lower levels of N, P, and K. This paper introduces an intelligent system that will detect and analyze the NPK level of the soil and will determine the moisture content of the soil, and then based on these values, automatically. watering will take place. Like the tiny Microcontroller system used here to make the device less expensive and instead of the pH meter here it used the TCS230 color sensor to determine the pH level of the soil or NPK, this sensor detects the color of the soil sample solution. A tiny Microcontroller performs sensory measurements about NPK objects.

3. PROPOSED SYSTEM

The proposed solution ensures monitoring the health of a plant during its entire lifecycle by using various sensors and taking required actions based on data collected. RaspberryPi is the controller of the setup. We also develop an AI model to take necessary decisions depending on the condition of the plants and the weather. It collects data from sensors and, cameras, and based on the suggestion of AI models it controls the irrigation network [1]. The sensors used are soil NPK and moisture. The water tank consists of a water level sensor to monitor the water level. The main water tank is connected to four containers consistent with nutrients and medicines concerning the plants. The camera and sensors constantly check the plants, once it detects any disease or malnutrition. Then the AI model suggests the required nutrition or fertilizers be supplied to the plants [2]. This enforces the RaspberryPi to open the valve of that container containing the nutrient. The nutrient gets mixed up with the water coming from the tank [13] and is made to flow to the plants. Once the required water is supplied, the valves get closed. The amount of water and nutrients left is noted and if it is very minimal, then an alert message will be sent to the user to refill the container and tan

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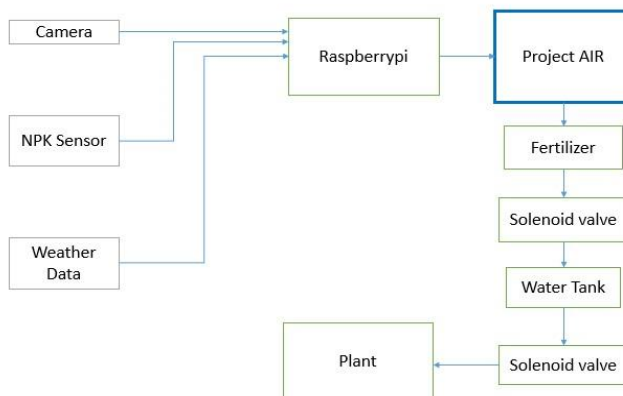


Fig.1 Work Flow

The solution also aims at applying real-time data on weather conditions relevant to the current location and season to take care of soil and crops and manage all weather-related risks. It gets data such as rainfall [14], temperature, humidity, and wind from reliable sources and takes appropriate measures to conserve water, plan smart irrigation, and predict crop yields. If the rainfall is very less in that particular season [3], then the amount of water used is regulated, and plans to wisely use it. This combined solution promises to improvise crop maintenance and yields good quality crops.

4. RESULTS AND DISCUSSION

The ML model is tested and verified for different crop diseases and the results obtained are highly satisfactory. The success rate of the Convolution Neural Network model for all the diseases is almost similar. To optimize the results of detection and prediction, the number of epochs can be increased. The data collected from these devices is sent to the project's AIR app and analyzed. The pipeline created in the AIR app receives the data and filters the required parameter (Image and Integer from camera and NPK sensor respectively will be collected). Once filtered, the rules section will monitor the NPK values and, depending on that, it sends notifications and commands to the valves to turn-On/Off.



Fig.2 Prototype Setup



Fig.3 Water outlet to plants

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Fig.4 Plant disease detection

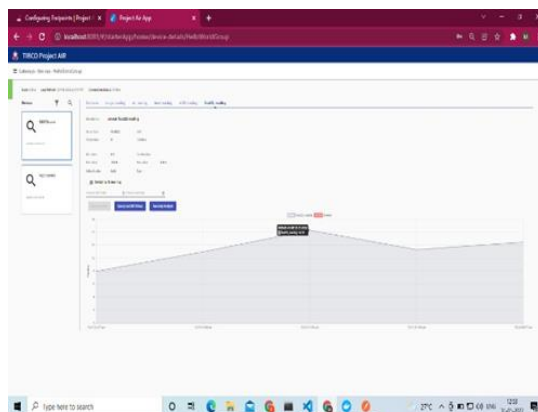


Fig.5 Analysis of NPK data

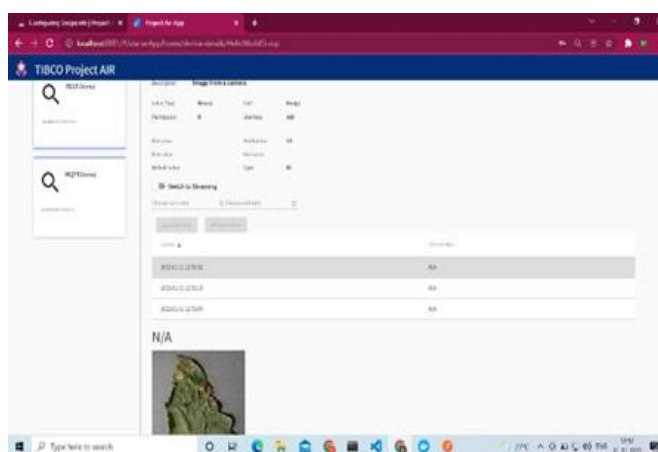


Fig. 6 Analysis of image data

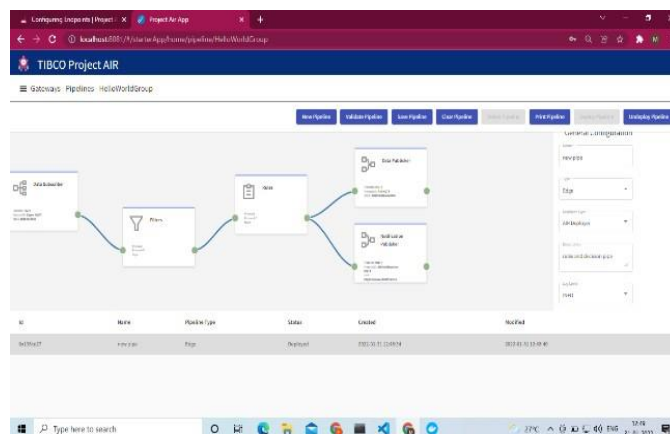


Fig.7 Decision pipeline

The ML model is tested and verified for different crop diseases and the results obtained are highly satisfactory. The success rate of the Convolution Neural Network model for all the diseases is almost similar. To optimize the results of detection and prediction, the number of epochs can be increased.

5. CONCLUSION

Smart farming using IoT is a significant answer for different health-related issues of plants. With the traditional methods, it is difficult to assess plant diseases and suggest remedies for them. The proposed system enhances the irrigation system using new-age technologies like AI, ML, and edge computing. The system keeps track of plant health status and automates the process of supplying fertilizers. This path-breaking solution promises to handle these issues more systematically with minimal effort. This takes into consideration versatile and prominent answers for a significant issue influencing many million individuals across the globe.

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Rationing of Tire Mileage in the Operating Conditions of the Kalmakyr Quarry



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ABSTRACT: The article presents the results of the road studies of the wear resistance of the tire size 33.00.51 in the Kalmakyr quarry. It is established that the predicted norm of the operational mileage of the tire was 30500 km (Belshina). On Kalmakyr, BelAZ-75131 dump trucks deliver cargo at the Overburden Quarry and the Central One, carrying out lifting, which averages about 60% of the length of the entire route. Based on the analysis of the characteristic causes of premature decommissioning of 23% of controlled oversized tires (OT), it is shown that all of them failed due to cuts and punctures of the tread or side walls. It was revealed that radial tires 33.00R51 VRLS, "BRIDGESTONE" are much more resistant to cuts: on average, their cuts occur after a run of 40000km.

KEYWORDS: tread wear, dump truck, rationing, correction factors, oversized tires.

1. INTRODUCTION

Operating costs for tires represent 25-30% of the cost of transporting rock mass by dump trucks, so increasing tire mileage is essential to reduce costs. The decisive factor determining the efficiency of using tires is the performance of tires, performance, technical level of their operation. The performance and durability of tires are affected by the average density and strength of the transported rocks, the correct loading of the dump truck and the uniformity of the location of the rock mass, the road profile, the condition and type of road surface. In this regard, in order to obtain the maximum efficiency of tires, it is necessary to properly operate and maintain them [1].

Tire wear is generally affected by about 30 different factors³, which can be grouped into the following four groups: tire quality; technical condition of the motor vehicle; violation of the conditions and modes of operation of the vehicle; road and climatic conditions [2, 9].

In the course of the study of the state of roads of the Kalmakyr Mine Administration, all routes of technological and auxiliary transport at the Kalmakyr and Sary-Cheku quarries were analyzed in detail. Quarry Kalmakyr deep type. The roads in the quarry naturally crumble or build on the rocks that lie there. The Kalmakyr ore field is composed mainly of intrusive and volcanic rocks. In the north of the quarry, ionite-diorite porphyries occur, on the left side - quartz porphyries, on the right side of the observation deck - diorites with chlorides, related to soft rocks. At the bottom of the quarry, there are granodiorite porphyries and basalts, a very hard rock; in the southeast of the quarry, there are sheet-like quartz porphyries [3, 4].

The rock in the Kalmakyr quarry is not homogeneous. Formed with stacked and discontinuous disturbances. Therefore, on different horizons, one can find various rocks, up to soft ones, based on sandstone and limestone [5].

2. METHOD OF CALCULATION

According to the methodology "Individual norms for the operating mileage of automobile large tires", developed at the Scientific Research Institute of Large Tires (SRILT), taking into account the listed factors, careers are divided into three categories according to the severity of tire operating conditions [6]:

I-category (L) - careers with light operating conditions;

II-category (C) – quarries with medium-heavy operating conditions;

III-category (T) - careers with difficult operating conditions.

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The quarry category is determined by three generalized parameters - X_1 , X_2 , X_3 , which characterize the operating conditions of tires in this particular quarry. The X_1 parameter, which takes into account the influence of the type of road surface and its share in the transportation shoulder on tire mileage, is determined by the expression

$$X_1 = \sum_{i=1}^3 K_i \cdot N_i, \quad (1)$$

where N_i is the share of the i -th coating (asphalt, crushed stone, soil on a rocky base) in the transportation leg; K_i is a coefficient that takes into account the influence of the i -th coating on the tire mileage. The values of the coefficient K are given in table.1.

Table 1. Coefficient values K

Type of road surface	i	K
Advanced asphalt pavement and soft ground	1	1
Crushed stone and gravel	2	0,8
Natural covering on a rocky base (rocky soil)	3	0,7

The parameter X_2 takes into account the influence of the magnitude of the longitudinal slope and its share in the shoulder of transportation on the mileage of tires and is determined by the formula

$$X_2 = N_y \cdot \vartheta, \quad (2)$$

where N_y is the share (percent) of slopes in the shoulder of transportation; ϑ is the average value of slopes, %.

The parameter X_3 takes into account the hardness of the transported rocks and is determined by the formula

$$X_3 = \sum_{j=1}^n M_j \cdot f_j, \quad (3)$$

where M_j is the share of the j -th rock in the total volume of rock mass transportation; f_j is the hardness coefficient of the j -th rock on the Protodyakonov M.M. scale; n is the number of types of transported rocks with different hardness.

Each category of quarries is characterized by the average values of generalized parameters \bar{X}_{1k} , \bar{X}_{2k} , \bar{X}_{3k} .

To determine the category of operating conditions of a particular quarry, it is necessary to calculate the D_k parameter, which characterizes the measure of "proximity", "approximation" of the generalized parameters of this enterprise X_1 , X_2 , X_3 to the average values of the generalized parameters \bar{X}_{1k} , \bar{X}_{2k} , \bar{X}_{3k} characterizing each category. The maximum value of the parameters D_1 , D_2 , D_3 determines whether the quarry belongs to the corresponding category.

The D_k parameter is determined by the formula

$$D_k = \left\{ 1 + 0,01 \left[\frac{1,33(X_1 - \bar{X}_{1k})^2}{\sigma_1^2} + \frac{0,67(X_2 - \bar{X}_{2k})^2}{\sigma_2^2} + \frac{1,33(X_3 - \bar{X}_{3k})^2}{\sigma_3^2} \right] \right\}^{-1}, \quad (4)$$

where X_1 , X_2 , X_3 are generalized parameters characterizing the operating conditions of this quarry; \bar{X}_{1k} , \bar{X}_{2k} , \bar{X}_{3k} are the average values of parameters characterizing the severity categories of operating conditions (Table.2); σ_1 , σ_2 , σ_3 are the standard deviations of the parameters X_1 , X_2 , X_3 obtained as a result of statistical data processing.

The tire mileage rate for a particular quarry is determined by the formula

$$S = \bar{S}_k \cdot C_{1k} \cdot C_{2k} \cdot C_{3k}, \quad (5)$$

where \bar{S}_k is the basic tire mileage rate for each category of operating conditions; C_{1k} , C_{2k} , C_{3k} are correction coefficients that take into account the change in the basic tire mileage rate for each category depending on the values of the parameters X_1 , X_2 , X_3 of a particular quarry; $K=1, 2, 3$ is the index of the category of operating conditions.

The basic rate of tire mileage for each category of operating conditions is set by the manufacturer. For the 27.00-49 and 33.00-51 FT-116 AM2 models, the basic mileage standards are presented in table 2.

Table 2. Basic standards of tire mileage

Category of operating conditions	Basic tire mileage rate \bar{S}_k , thousand km		
	model (tire brand)		
	27.00-49(Bel)	33.00-51(Bel)	33.00R51 (Bridg)
I (easy)	40	40	90
II (average)	34	35	75
III (heavy)	25	30	60

Correction coefficients that take into account the change in the basic mileage rate of tires for each category are given in table 3.

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Table 3. Correction factors that take into account the change in the base rate of tire mileage

X ₁₁	C ₁₁	X ₂₁	C ₂₁	X ₃₁	C ₃₁
0,85	0,93	0,5	1,25	1	1,10
0,85 - 0,90	0,95	0,5 - 1,0	1,10	1 - 2	1,05
0,90 - 0,93	0,98	1,0 - 1,5	1,00	2 - 3	1,00
0,93 - 0,95	1,00	1,5 - 2,5	0,97	3 - 4	0,97
0,95 - 0,97	1,10	2,5	0,95	4	0,95
0,97 - 1,00	1,20				
X ₁₂	C ₁₂	X ₂₂	C ₂₂	X ₃₂	C ₂
0,75	0,95	2,0	1,10	3	1,10
0,75 - 0,80	1,00	2,0 - 2,5	1,05	3 - 4	1,08
0,80 - 0,85	1,03	2,5 - 3,0	1,00	4 - 5	1,04
0,95 - 0,90	1,05	3,0 - 4,0	0,98	5 - 6	1,02
0,90 - 0,95	1,07	4,0	0,95	6 - 7	1,00
0,95 - 1,00	1,10			7	0,95
X ₁₃	C ₁₃	X ₂₃	C ₂₃	X ₃₃	C ₃₃
0,70	0,85	2	1,10	12,0	1,10
0,70 - 0,75	0,95	2 - 3	1,05	12,0 - 13,0	1,08
0,75 - 0,80	1,00	3 - 4	1,00	13,0 - 14,0	1,05
0,80 - 0,90	1,05	4 - 5	0,95	14,0 - 14,5	1,00
0,90 - 1,00	1,10	5 - 6	0,90	14,5 - 15,0	0,90
		6	0,85	15,0	0,80

3. EXPERIMENTAL RESEARCH

According to the standards of Building codes and regulations 2.05.07-91 "Industrial transport", the quarry roads of the Kalmakyr facility belong to the III category of mountain roads. 90% of technological roads are temporary with a service life of up to one year.

Considering that the rock contains a lot of quartzite of the Kalmakyr quarry up to 67%, which is considered the hardest rock, it is natural that all wheeled vehicles operating there will experience intense tire wear. Even bulldozers that perform a huge amount of work in the quarries of the Almalyk Mining and Metallurgical Combine (AMMC), the tracks wear out before the planned service life in hours. Judging by the location of various rocks in layers of a certain height, the road from the descent to the bottom of the quarry is heterogeneous in the hardness of its base.

According to the classification of rocks, their strength and hardness are evaluated on the scale of M.M.Protodyakonov. The strength of the rocks on which the road in the Kalmakyr quarry is based is estimated on average at 15 units out of 20 on the scale. Data on the strength of rocks were obtained from geologists of specific quarries and refined in the department of the Chief Geologist of the AMMC [7, 10, 11] (table 4).

Table 4. Characteristics of the magnitude of slopes and their length on the main routes of transportation of rock mass in the Central and Overburden quarries of Kalmakyr

Slope, %	Length of horizontal sections, km					The length of the ascent, km					Length of descent, km					Total, km
	№ transportation route					№ transportation route					№ transportation route					
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	
0	0,7	0,13	0,05	0,56	1,32											2,76
0-1						0,24					0,15					0,39
1-2						0,1					0,09					0,19
2-3						0,16				0,1						0,26

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3-4					0,31	0,31	0,31	0,96		0,05			0,28	2,22
4-5					0,23			1,22						1,45
5-6					0,29						0,09	0,26		0,64
6-7					0,36	0,31	0,31							0,98
7-8					0,72				0,22	0,09				1,03
8-9					0,24									0,24
9-10					0,18	0,04	0,04							0,26
Total														10,42

The mileage of the diagonal 33.00-51 FT-116AM2 model of the BelAZ-75131 dump truck at the Kalmakyr quarry in the winter season of 2019 in November – April was 32624 km, and in the summer-autumn 27821 km, in 2020 respectively – 32733 km and 29995 km [8] (table 5).

Table 5. Initial data on the routes of transportation of rock mass by cars BelAZ-75131. Name of the quarry: Kalmakyr (Central + Overburden)

No	Name of indicator	Designation	Unit of measurement.	Value
1	2	3	4	5
1.	Route length	L	km	10,42
2.	Type of coverage and its length on the leg of transportation: -asphalt - concrete, soft ground;	l_a	km	-
	-crushed stone and gravel;	$l_{\text{ш}}$	km	1,88
	-natural coating on a rocky base, rocky soil	$l_{\text{ск}}$	km	8,54
3.	For each coating in the general shoulder of transportation: -asphalt concrete, soft ground;	N_1	%	-
	-crushed stone and gravel;	N_2	%	18
	-natural coating on a rocky base, rocky soil	N_3	%	82
4.	The number of slopes and their length on the shoulder of transportation: 1st – slope	l_1	km	0,39
	2nd – slope	l_2	km	0,19
	3rd – slope	l_3	km	0,26
	4th – slope	l_4	km	2,22
	5th – slope	l_5	km	1,45
	6th – slope	l_6	km	0,64
	7th – slope	l_7	km	0,98
	8th – slope	l_8	km	1,03
	9th – slope	l_9	km	0,24
	10th – slope	l_{10}	km	0,26
5.	The total length of slopes in the shoulder of transportation	l_y	km	7,66
6.	The share of slopes in the shoulder of transportation	N_y	%	74

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7.	The magnitude of each slope on the shoulder of transportation: 1st – slope	Θ_1	%	1
	2nd – slope	Θ_2	%	2
	3rd – slope	Θ_3	%	3
	4th – slope	Θ_4	%	4
	5th – slope	Θ_5	%	5
	6th – slope	Θ_6	%	6
	7th – slope	Θ_7	%	7
	8th – slope	Θ_8	%	8
	9th – slope	Θ_9	%	9
	10th – slope	Θ_{10}	%	10
8.	The average value of the values of all slopes on the shoulder of transportation	Θ	%	5,5
9.	For each rock in the total volume of rock mass transportation: 1st (breed)	M_1	%	100
10.	The coefficient of rock strength on the Protodyakonov scale: 1st (breed)	f_1	-	14

4. CALCULATION

The following generalized parameters characterizing the operating conditions of tires in the Kalmakyr quarry are calculated: a parameter that takes into account the influence of the type of pavement and its share in the transportation arm on the tire resource:

$$X_1 = \sum_{i=1}^3 K_i \cdot N_i = 0,8 \cdot 0,18 + 0,7 \cdot 0,82 = 0,718.$$

a parameter that takes into account the effect of the magnitude of the longitudinal slope and its share in the shoulder of transportation on the mileage of tires:

$$X_2 = N_y \cdot \theta = 0,74 \cdot 5,5 = 4,07.$$

a parameter that takes into account the influence of rock strength on tire mileage:

$$X_3 = \sum_{j=1}^n M_j \cdot f_j = 1 \cdot 14 = 14.$$

According to the calculations of the measure of proximity D_k of the generalized parameters X_1 , X_2 , X_3 of the operating conditions of the Kalmakyr quarry to the average values of the typical parameters characterizing the category of severity of the operating conditions, it was found that:

$$D_1 = \left\{ 1 + 0,01 \left[\frac{1,33(0,718 - 0,95)^2}{0,09^2} + \frac{0,67(4,07 - 1,43)^2}{2,43^2} + \frac{1,33(14 - 2,04)^2}{4,5^2} \right] \right\}^{-1} = 0,84,$$

$$D_2 = \left\{ 1 + 0,01 \left[\frac{1,33(0,78 - 0,78)^2}{0,09^2} + \frac{0,67(4,07 - 3,03)^2}{2,43^2} + \frac{1,33(14 - 6,89)^2}{4,5^2} \right] \right\}^{-1} = 0,96,$$

$$D_3 = \left\{ 1 + 0,01 \left[\frac{1,33(0,718 - 0,79)^2}{0,09^2} + \frac{0,67(4,07 - 3,89)^2}{2,43^2} + \frac{1,33(14 - 14,41)^2}{4,5^2} \right] \right\}^{-1} = 0,991.$$

A comparison of the calculated values of the parameters D_1 , D_2 , D_3 indicates that the largest value is $D_3=0,991$, therefore, the Kalmakyr quarry belongs to the III category with severe tire operating conditions. According to TURB 700016217.126-2001, for the III category of operating conditions, the base mileage rate of tires 33.00-51 of the FT-116AM2 model is $\bar{S}_k = 30000\text{km}$ [8, 10, 11].

The values of the correction coefficients C_{13} , C_{23} , C_{33} for a quarry with severe operating conditions are from table.3 according to the values of the generalized parameters X_1 , X_2 , X_3 . The adjusted rate of tire service life for specific operating conditions of the Kalmakyr quarry is determined by the formula

$$S = \bar{S}_k \cdot C_{1k} \cdot C_{2k} \cdot C_{3k} = 30000 \cdot 0,95 \cdot 0,95 \cdot 1,05 = 28428\text{km}.$$

According to the Operating Manual of the oversized tires company "BRIDGESTONE" for 2018, for the III – category of operating conditions, the basic warranty rate of radial tires 33.00R51 is $\bar{S}_k = 60000\text{km}$.

The adjusted norm of the operational mileage of tires for specific operating conditions of the Kalmakyr quarry is determined by the following formula, making up 33.00R51 "BRIDGESTONE" for tires:

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$$S_k = \overline{S}_k \cdot C_{1k} \cdot C_{2k} \cdot C_{3k} = 60000 \cdot 0,95 \cdot 0,95 \cdot 1,05 = 56875 \text{ km.}$$

5. CONCLUSIONS

1. After carrying out activities in the quarry under study to improve the quality of quarry roads and bring them into compliance with at least the minimum requirements of the interstate Building codes and regulations 2.05.07-91 "Building codes and regulations. Industrial transport" the mileage of these radial tires should increase by at least 15-20%.
2. Radial tires 33.00R51 VRLS, "BRIDGESTONE" are much more resistant to cuts: on average, cuts occur after a run of 40000km. The cost of these tires is more than diagonal tires of the same size produced by JSC "Belshina", and the walking capacity is 2 times higher. Calculations show that in the case of switching to the purchase of radial tires 33.00R51 VRLS "BRIDGESTONE" instead of diagonal tires 33.00-51 "Belshina" for 34 BelAZ-75131 dump trucks operating today, the annual economic effect on truck depots No. 1 and No. 4 will amount to more than 3 million US dollars.

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Archaeological Research is an Important Source in the Study of Traditional Economic Activities of the Uzbek People (On the Example of Some Researchers of the Twentieth Century)



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ABSTRACT: This article discusses archeological research as an important source (on the example of some researchers of the twentieth century) in the study of traditional economic activities of the Uzbek people. Historical analysis has shown that some of the scientific works of that period were dominated by the research of historical archeology of the former Soviet period and the influence of history on the idea that the economy of the ancient peoples of Central Asia, especially the Uzbeks, was formed mainly nomadic. This is because the diversity of views and sometimes unscientific notions on the way of life of the peoples of Central Asia, which still persist in science, are sometimes linked to the fact that the economy of the Uzbek people has long been associated with the territories inhabited and now occupied by oases and valleys.

KEYWORDS: archeological research, source, economic activities, Uzbek people, historical analysis, scientific works, historical archeology, Soviet period, influence of history, ancient peoples, unscientific notions, Uzbek people, territories, oases, valleys.

INTRODUCTION

It is known that from ancient times the specific natural and geographical features and climatic conditions of Uzbekistan have affected the economic life of the people. From ancient times in the territories of the republic, especially in the oases, steppes and valleys of irrigated agriculture, three main types of economy have been formed: animal husbandry, semi-subsistence farming, and irrigated subsistence farming.

To date, significant work has been done to study the lifestyle and economic activities of the ancient population of Uzbekistan from an archeological point of view, and great achievements have been made. In this regard, significant research has been conducted in the XX century in the field of history, especially in the field of archeology, which is its component area. In particular, on the issues of lifestyle and economy of the Uzbek people, leading historians S.P. Tolstov, V.M. Masson, A. V. Vinogradov, Yu.A. Zadneprovskiy, V.I. Sprishevskiy, Ya.Gulomov, E. Kuzmina, N, N.A. Avanesova, A. Askarov, Yu.F. Buryakov, A. Sagdullaev's scientific researches are noteworthy. Although the traditional economy of ethnic communities and peoples living in the territory of modern Uzbekistan in the XIX-XXI centuries is almost similar, it is clear that they differ in some local and ethnic aspects.

THE MAIN FINDINGS AND RESULTS

Scientific research based on archeological research conducted in the country after the second half of the XX century was radically different from the work of previous periods in terms of its weight, scope, essence and methodology. In particular, in order to study the economic life of our ancient ancestors, scientists have found many archeological monuments of the Neolithic period in the territory of our country, in particular, the settlements inhabited by individuals in a compact place.

If we approach the issue from a periodic point of view, in the 40s and 50s of the XX century only the lower basins of the Amudarya, especially near the Kaltaminor canal near the ancient Akchadarya delta, were inhabited by separate Neolithic settlements. The research of one of the leading scholars of the region S.P. Tolstov [1] reflected the fact that many communities were found and studied in the Upper Uzbay tributary of the Amudarya and the north-eastern shores of the Aral Sea.

In 1949-1953, under the leadership of academician S.P. Tolstov, a special "Archaeological and ethnographic expedition" to the Khorezm oasis was organized. As a result of excavations in the lower basins of the Amudarya, the ancient Aral Sea region

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of the Khorezm oasis, the ancient agricultural culture “formed much earlier in the northwestern regions of Uzbekistan due to the natural climate and geographical features of the region” [1]. According to S.P. Tolstov, “In the above-mentioned regions, hunting and fishing have not yet given way to a new economy - animal husbandry. It was at this time that the economic life of primitive communities in the central regions of Central Asia began to change radically [2,123-187]”.

Another important contribution of S.P. Tolstov was that under his leadership, bibliographic indexes of scientific literature in the field of archeology in Uzbekistan from 1948 to 1954 were compiled, and a number of scientific articles were regularly published in the journal “Soviet Archeology”. In these articles you can find a number of articles devoted to the ancient period of the cultural economy of the Uzbek people, which we have analyzed.

Well-known archaeologist V.M. Masson’s study of the Anov-Namazgoh economic culture of the Eneolithic and Bronze Ages, based on the cultural and economic traditions of the Joytun culture, made it possible to compare the economic life of the peoples of Central Asia with other regions of the ancient East. According to him, the traces of sedentary farming in the central regions of Central Asia, especially in the lower basins of Zarafshan, are widespread from the south to the north-eastern regions of the region, especially along the northern Kopetdag [3].

Although the works of the scientist have a general, descriptive character, his work “Central Asia and the Ancient East” provided an opportunity to study the economic life of the Uzbek people and enrich its dynamics. According to the concept of V.M. Masson, in the south-western regions of Central Asia, under the influence of the ancient Eastern civilization, a way of life based on a sedentary farming culture began to take shape from the Neolithic period (Joytun culture) [4].

Among the researches on archeology and economic life after the 50s of the XX century, the directions of economic life of the Uzbek people were studied by academician Ya. Gulyamov was able to show clearly. The involvement of the vast factual source and statistical material inherent in the scientist’s research made it possible to draw a number of important theoretical conclusions. This is confirmed by the monument of Zamonbobo culture of the first stage of primitive farming, which was discovered by a scientist in the 50s of the XX century [5].

One of the great achievements of the academician in the field of archeology was that he first provided valuable information in his fundamental work “History of Irrigation in Khorezm” [6,57-67] about the ancient irrigation systems of the Khorezm oasis, the existing irrigation systems and the first views of the main canals. According to Ya. Gulyamov, “the first irrigated agriculture in the oasis began to take place not only in the lower reaches of the Amudarya, but also in the steppe, hilly areas and dry oases” [6].

A.V. Vinogradov’s research confirms that primitive communities on the northern borders of Khorezm in the Mesolithic period still lived by hunting (Kaltaminor culture)¹. While studying the ancient economic life of the people of the region on the basis of available archeological materials, scientists pay attention not only to agriculture, hunting, fishing, but also to the settlements of ancient herdsmen and artisans. According to the author’s analysis, the images of Zarautsoy rock in Surkhandarya region belong to the Mesolithic period, and in the Neolithic period the migration of hunter-gatherer families to the settlements between the Amudarya and Syrdarya rivers is observed [7]. According to the author’s concept, such farms are known to science as “hunting and fishing grounds of the ancient rivers of Central Asia” [8]. This thesis was further developed and enriched by local archaeologists such as Ya. Gulomov, A. Askarov, O., Islamov, who studied the economic activity of the ancient ancestors of the Uzbek people.

Historical analysis has shown that some of the scientific works of that period were dominated by the research of historical archeology of the former Soviet period and the influence of history on the idea that the economy of the ancient peoples of Central Asia, especially the Uzbeks, was formed mainly nomadic. This is because the diversity of views and sometimes unscientific notions on the way of life of the peoples of Central Asia, which still persist in science, are sometimes linked to the fact that the economy of the Uzbek people has long been associated with the territories inhabited and now occupied by oases and valleys.

At a time when the science of history could not deviate from the ideological stereotypes of its time, academician A. Askarov’s research is characterized by the fact that archeological research is carried out at the required level and is rich in scientific analysis. In “Sapallitepa” and “Ancient agricultural culture of the Bronze Age of the south of Uzbekistan” the author rightly noted that in the economic life of the southern population a sedentary lifestyle prevailed and agriculture was of great importance, “they were the oldest farmers in southern Uzbekistan” [9]. The fact that the people of the South have established economic relations with such regions as the ancient Zarafshan oasis, the Fergana Valley is also noted in the works of such authors as Ya.G. Gulomov, O. Islamov Yu.A. Zadneprovsky [10].

¹ Виноградов А. В. Древние охотники и рыболовы среднеазиатского междуречья. Москва-1981.

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Historical analysis of the available sources has shown that as a result of such economic and cultural changes, the boundaries of the regions of ancient agricultural culture began to expand towards the northeastern regions of Central Asia, shows the beginning of the formation of the Bronze Age Sopolli culture of irrigated agriculture and highly developed handicrafts in southern Uzbekistan [9].

Based on the analysis of the works of the above-mentioned authors, it can be concluded that if scientists focused more on the study of agriculture and animal husbandry, an important sector of the economy, Archaeological finds from southern Uzbekistan confirm the development of handicrafts in the region.

V.I. Sprishevsky, E. E. Kuzmina's researches studied the culture of Zoroastrian and cattle-breeding tribes living in the lower reaches of the Amudarya in the middle of the 2nd millennium BC. The authors have made a significant contribution to the development of archeological research in the region. In particular, the monument to Amirabad in the early 1st millennium BC, the location of the ancient cultivating families of the Chust culture in the late Bronze Age (late 2nd millennium BC - early 1st millennium BC) will be studied [11].

Yu. A. Zadneprovsky, N.A. Avanesova, based on their research, conclude that as the migration of livestock communities from north to south begins in the oases inhabited by settled peasant communities, ethnic processes expand and the first consolidation of northern and southern populations occurs. Such rapid changes are reflected in the authors' scientific research on the ancient Bronze and Iron Ages [12,20-21].

Rapid economic relations As noted by scholars, by the time of the Bronze Age (end of the second millennium BC - beginning of the first millennium BC) radical socio-economic and cultural changes took place in the economic life of our primitive ancestors. It is noted that the root of these changes took place simultaneously in the last quarter of the 3 millennium BC in both worlds, i.e. in the communities of ancient farming and hunting-fishing tribes.

According to extensive archeological research, the discovery of private property buds farming and animal husbandry was the economic basis of society, associated with the transition from a subsistence farm to a productive farm. In the south-western regions of Central Asia, primitive farming and animal husbandry began in the Neolithic period. In the central and north-western regions of the region during the Neolithic period, still subsistence farming was still going on [12].

It is known from historical research that the authors note that mil. av. In the early millennia, our ancestors mastered the manufacture of iron tools, weapons, ornaments, and the use of iron in agriculture became widespread. The Iron Age begins in people's lives. Iron plows, hoes, shovels, and other tools made farm work easier, with the possibility of plowing much larger areas, building dams, and digging canals and ditches. This helped to increase the generality of farm labor.

But a number of authors, particularly Yu.A. Zadneprovsky in his book "Ancient agricultural culture of Ferghana" notes that not only in ancient times, but also in the Middle Ages, the preservation of past forms of land tenure has led to low labor productivity in agriculture, existing primitive agro-technical traditions, which prevent workers from growing at the required level. It was one of the factors that negatively affected the uneven development of the national economy and the development of social life [13].

One of the other historical-cultural and historical-ethnographic regions of Uzbekistan is undoubtedly the Fergana Valley. In addition to Yu.A. Zadneprovsky and O. Islamov, the economic activity of the population of the valley during the first Iron Age was studied by B.E. Hamburg, N.G. Gorbunova [14], Shurabashat culture associated with farming tribes dating back to the post-Eilat period [15] and similar studies are of great importance in the study of the ancient economic life of the inhabitants of the Fergana Valley. The scientific conclusion that the culture of ancient Fergana was in the direction of agriculture and animal husbandry was also noted by A.N. Bernstam in his time [16, 186-190].

In one of his works on irrigation and irrigated agriculture in ancient Fergana, the researcher B. Latin focuses on the characteristics of the valley, ancient agricultural traditions and systems, stages of development, and shows the characteristics of each stage. He noted that at the end of the second millennium BC and the first half of the first millennium BC, small oases for the first time appeared, which were irrigated and cultivated by the simplest method (port).

As a result of the development of agriculture and animal husbandry in the country, patriarchal families with high male rights emerged. Family life of the Uzbek people and patriarchal family economic relations of ancient and medieval L.F. Monogarova, reflected in the scientific work of N.G. Borozna, was the head of a male family in such a patriarchal family, where he lived with his wives, children and grandchildren, as well as other relatives. Such originality contributed to the organization of family life, in particular, the rapid development of economic life [17]. Such an attitude as M. Kosven points out, the peasant and pastoral communities of the time were dominated by the rules of military democracy [18,7], It is a sign that a child born in every family has been brought up in the spirit of loyalty to the family, clan and tribal traditions from an early age. Ethnographer N.A.

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Kondaurov describes the patriarchal collective farm as not only a combination of several large and small family farms, but also a slightly larger social association with certain economic and territorial units [19,147].

It should be noted that it is not difficult to see from the analysis of research that the social sciences, especially history, served the interests of the communist ideology and Marxist-Leninist ideas of the time. In particular, in post-Soviet historiography, the first urban culture in Central Asia was brought by the Iranian Achaemenids and the Greeks led by Alexander. The indigenous inhabitants of this land, the Saks, lived on pastures and were engaged in nomadic pastoralism.

However, archeological research since the 1970s has proved that such unscientific views are unfounded on the example of the above-mentioned monuments of ancient agricultural culture [20, 194]. As a result of the growth and change of production relations in the process of historical development, small farms, small artisanal farms have led to a crisis.

It is worth noting that the important traces of the ancient economic life of the peoples of Central Asia, including the Uzbek people, are reflected in the work of a number of researchers on the example of the historical and cultural regions of Ancient Sogdiana and Bactria. Among them, the scientific research of local scientists is also significant, Yu.A. Buryakov, A. Sagdullaev, N. A. Avanesovas began to come up with their own concepts and theories, in contrast to the principles and methodology of post-Soviet historiography [21].

In other words, during the Late Bronze and Early Iron Ages, another cultural and economic center, the Sogdiana region, was formed, traces of its ethnic strata engaged in ancient farming, on the example of the lower strata of the Koktepa, Afrosiyob, Khojabostan, Kazimontepa monuments of the Zarafshan valley by Sagdullaev [22], information about the shield tombs of Kalkan ota, Uzunqir, Daratepa, Sangirtepa and other monuments in the Kashkadarya oasis can be found in the works of a number of other authors [23].

Yu. F. Buryakov notes that information about another region of Chach, which was formed as a result of regional development in Central Asia in the early antiquity, dates back to the 2nd half of the I millennium BC. The author argues that the urbanization process in the country is based on the burglary culture of the local settlers, the ancient inhabitants of Chach, who first began to engage in ancient agriculture, and its historical roots gradually began to settle under the influence of agricultural cultures of the southern regions of Central Asia. The first monuments of this period were Qanqatepa in Akkurgan district of Tashkent oasis, Qovunchitepa in Yangiyul, Shoshtepa (Chochtepa) in the Greater Tashkent region and others, signs of ancient urban culture began to appear in these places in the III-II centuries BC [24,108110].

CONCLUSION

Based on the study of the reflection of the economic life of the Uzbek people in archeological research and sources, the following conclusions can be drawn:

First of all, the scope of archeological research of the economic life of the Uzbek people is quite significant in terms of its content, which has served and continues to serve as a scientific basis for the science of historiography of its time and today;

Second, although the archeological study of the ancient way of life of Central Asia, including the Uzbek people, provided some opportunities for further scientific research, their analysis suggests that research in this area did not fully reflect all aspects of economic life of peoples.

Thirdly, from ancient times to the formation of the first land tenure relations, it is easy to see that the radical socio-economic changes in the economic development of the Uzbek people were reflected in archeological materials, in a sense under the influence of the former regime's communist ideology and Marxist-Leninist ideas.

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Best Practices in Implementing Modular Distance Learning to Indigenous People (IP) Students in Olongapo City



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ABSTRACT: This study explored the best practices employed by the teacher-respondents' strategies in implementing Modular Distance Learning to IP students amidst COVID-19 pandemic. It was conducted among Junior High School Teacher of Olongapo City that has Indigenous People (IP) students, Department of Education, Division of Olongapo during the first quarter of the school year of 2021-2022. The study utilized a descriptive quantitative research design, survey questionnaire as research instrument, and descriptive and inferential statistics for analysis of data. The researcher concluded that the teacher-respondent are female in their adulthood stage with a teaching position of Teacher I and the highest educational attainment of having units in master's degree. The teacher-respondents always employed best practices in implementing modular distance learning to IP students in terms of assessment and instructional delivery, they often employed best practices in terms of module development and distribution and retrieval of modules. There was a significant difference in the best practices employed in terms of module development in implementing module distance learning to IP students when respondents grouped according to age and higher education attainment; in terms of distribution and retrieval and assessment when grouped according to age, teaching position and highest educational attainment; there was a significant difference in the best practices employed in terms of instructional delivery when grouped according to teaching position.

KEYWORDS: Alternative Delivery Mode, Assessment, Indigenous People Students, Instructional Delivery, Modular Distance Learning, Module Development

INTRODUCTION

The COVID-19 pandemic is a huge challenge to education systems (Daniel, 2020 & Tria, 2020). According to Chin (2020), in order to maintain the education of millions of Filipino students, the government implemented a distance learning approach. Distance learning, also known as correspondence education or home study, is a form of education where there is little or no face-to-face interaction between students and their instructors. Another challenge to carefully reconsider education with special consideration on the distinctly disadvantaged Indigenous People (IP) learners. Finding ways on how education can be delivered to the vulnerable group of IP learners amid the COVID-19 crisis is important so that appropriate learning delivery modes can be carefully contextualized from any learning continuity plan. For young indigenous learners, many of whom live in remote areas with no or limited internet access, online education is nearly impossible. Many students especially the poor and those living in the far-flung areas for lack of gadget and equipment for on-line classes and also internet connectivity problem. However, the Covid-19 pandemic really forces educational institutions to look into different modes of delivery of lesson and learning media. The modular mode also provided many challenges ranging from lack of transportation to difficulty in crossing from one town to the others because of security and health protocols implemented by different local government units. The possibility of local transmission is very real when teachers from the lowland communities will come up the mountains to teach the IP students (Bayod, 2020). This study was done to determine the best practices employed by teachers can also be a reference for other teachers and a basis for further school program and activities in implementing Modular Distance Learning to IP students.

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The study determined the best practices employed in implementing modular distance learning to Indigenous People (IP) students by Junior High School Teachers of Olongapo City, Department of Education, Division of Olongapo City during the first quarter of the school year of 2021-2022.

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MATERIALS AND METHODOLOGY

The research study utilized a descriptive research design. According to McCombes (2019), descriptive research is an appropriate choice when the research aim is to identify characteristics, frequencies, trends, and categories. Moreover, the research study employed a quantitative research method. Quantitative research is defined as the process of collecting and analyzing numerical data. It can be used to find patterns and averages, make predictions, test causal relationships, and generalize results to wider populations. It is widely used in the natural and social sciences (Bhandari, 2020).

The respondents of the survey were two hundred forty (240) teachers of the selected public secondary schools in the Schools Division of Olongapo City. The respondents were chosen using total population sampling technique. There are only four (4) public secondary schools located in the Schools Division of Olongapo City that has IP students, namely: Iram High School, New Cabalan National High School, Old Cabalan Integrated School and Olongapo City National High School.

A survey questionnaire was used to gather all the necessary data regarding the best practices employed by the teacher-respondents' strategies in implementing Modular Distance Learning to IP students amidst COVID-19 pandemic. The contents of the survey checklist were based on the study of De Villa and Manalo (2020), Secondary Teachers' Preparation, Challenges, and Coping Mechanism in the Pre-Implementation of Distance Learning in the New Normal and Abante, Cruz, Guevarra, Lanada, Macale, and Myron (2021), A Comparative Analysis on the Challenges of Online Learning Modality and Modular Learning Modality: A Basis for Training Program.

The survey questionnaire has two (2) parts. First part of the survey checklist focused on the profile of the teacher – respondents which include the age, sex, academic position, and highest educational attainment. The second part determined the best practices employed by junior high school teachers in the implementation of modular distance learning to Indigenous People (IP) students in terms of Module Development, Distribution and Retrieval of Modules, Instructional Delivery, Assessment. This part had a total of 28 items. The teachers answered from the scale ranging from 4 (Always), 3 (Often), 2 (Sometimes) and 1 (Never).

To test for the reliability and validity of the instrument, the questions were pilot tested to 25 teachers among the Junior High School teacher in the Municipality of Subic, Schools Division of Zambales, who were not respondents of the study. After the data had been consolidated, it was subjected to Cronbach's analysis by a Statistician and the questions were found acceptable.

The researcher asked for permission from the Schools Division Superintendent, Division of Olongapo City for the distribution of questionnaires to the respective public secondary schools. After securing the endorsement, the researcher properly coordinated to the respective school heads or principals for the administration of the questionnaire through google forms and printed questionnaire. The participants were informed of the objectives of the study so that clarity of information and correctness of answers were attained. The researcher ensured full compliance with the highest standards of research and ethical considerations throughout the conduct of the study. The demographic profile of the respondents was analyzed using descriptive statistics. The best practices in the implementation of the Modular Distance Learning to IP Students were determined using Likert Scale.

The significant difference on the best practices in the implementation of the Modular Distance Learning when respondents are grouped according to profile variables was computed using Analysis of Variance (ANOVA). All the data obtained in the instrument were tallied, tabulated, analyzed and interpreted accordingly.

RESULTS AND DISCUSSION

The computed mean age of the respondents was 34.57 years' old which clearly signifies that the typical respondent is in adulthood. The highest frequency of respondents belongs to age group 31-40 years old, with one hundred twelve (112) responses or 46.67%. In terms of sex, majority of the teacher- respondents were females with one hundred eighty-three (183) or 76.25%, while there are only fifty-seven (57) or 23.75% who are male teacher-respondents. The highest frequency of respondents was in the Teacher I position, with one hundred seven (107) responses or 44.58%. Majority of the respondents earned units in Master's Degree with one hundred forty-four (144) responses or 60%. This result suggests that the teachers of the present study are pursuing continuous professional development through engagement in advanced education.

1. Best Practices Employed by the Respondents in Implementing Modular Distance Learning to IP Students

1.1 Module Development

In terms of the best practices employed in module development in implementing modular distance learning to IP students, it can be noted on Table 1 that the teacher-respondents "Often" employed "2. Procurement of learning resources for module development", as manifested in the highest weighted mean of 3.15. Furthermore, the teacher-respondents "Sometimes" practiced the "4. Conduct action research for effectivity of developed modules", with the lowest weighted mean of 2.10.

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The computed overall weighted mean on the responses was 2.74 with qualitative interpretation of "Often". To address the challenges encountered by teachers on the lack of laptops, the Department of Education (DepEd) already asked the House of Representatives during the 2022 Budget Deliberation for a P37 billion fund to provide public school teachers with the laptops needed to support remote teaching during the pandemic, including the development of modules (Magsambol, 2021).

Table 1. Best Practices Employed in Module Development in Implementing Modular Distance Learning to IP Students

Module Development	Weighted Mean	Qualitative Rating	Rank
1. Attending trainings or webinars for module development.	2.98	Often	4
2. Procurement of learning resources for module development.	3.15	Often	1
3. Collaboration with other teachers for techniques in module development.	3.05	Often	3
4. Conduct action research for effectivity of developed modules.	2.10	Sometimes	7
5. Maximization of the availability of laptops and computers in the school.	2.68	Often	5
6. Development of modules using the dialects of the IP learners.	2.11	Sometimes	6
7. Quality assurance of developed modules is being conducted by supervisors and other experts.	3.14	Often	2
Overall Weighted Mean	2.74	Often	

1.2 Distribution and Retrieval of Modules

Table 2. Best Practices Employed in Distribution and Retrieval of Modules in Implementing Modular Distance Learning to IP Students

Distribution and Retrieval of Modules	Weighted Mean	Qualitative Rating	Rank
1. All subjects have available printed modules for all the IP learners.	3.35	Always	2
2. Building partnerships with LGU or Barangay officials for the distribution and retrieval of modules.	2.80	Often	3
3. The flowchart of procedures is devised in the dialect of the IP learners and parents.	2.23	Sometimes	6
4. Police Officers are being tapped for the strict implementation of health protocols.	2.51	Often	4
5. Retrieved modules and answer sheets are properly disinfected.	2.29	Sometimes	5
6. Masks and alcohols are readily available for parents, guardians of students during distribution of modules.	3.73	Always	1
7. Modules are delivered to the houses of the IP learners directly.	2.19	Sometimes	7
Overall Weighted Mean	2.73	Often	

In terms of the best practices employed in the distribution and retrieval of modules in implementing modular distance learning to IP students, it can be noted on Table 2 that the teacher-respondents "Always" practiced the statements "6. Masks and alcohols are readily available for parents, guardians of students during distribution of modules", with the highest weighted mean of 3.73, and the respondents "Sometimes" practiced the statement "7. Modules are delivered to the houses of the IP learners directly", with the lowest weighted mean of 2.19.

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The computed overall weighted mean on the responses was 2.73 with qualitative interpretation of “Often”. It was found out that the teachers employed their best practices to counteract the challenges in Modular Distance Learning in terms of the distribution and retrieval of modules. The schools have allotted funds for the procurement of COVID-related supplies that are readily available during distribution of modules. Teachers made sure that all the IP learners are provided with printed SLMs.

According to Adriano (2020), various schools gear up for distance learning under the new normal, some motorcycle riders have signified their intent to distribute learner’s modules for free. In a memorandum of agreement (MOA) signed between the Department of Education Laoag City and the Motorcycle Philippines Federation 128 Inc., the Project Volunteer Riders Organized for Optable Module (VROOM) Delivery was launched as both parties agreed that the modules developed by teachers will be distributed for free by the riders to the village halls of Laoag and other municipalities. The village officials will then give out the modules to the learner’s home. The learners will bring the modules to the barangay halls which will be carried back by the riders to schools. The distribution and retrieval of learning modules will be made weekly.

1.3 Instructional Delivery

Table 3. Best Practices Employed in Instructional Delivery in Implementing Modular Distance Learning to IP Students

Instructional Delivery	Weighted Mean	Qualitative Rating	Rank
1. Establish good and regular communication with students.	3.36	Always	5
2. A Weekly Home Learning Plan is given to every learner.	3.63	Always	1
3. Home visitations are being conducted to assist the IP learners.	3.04	Often	6
4. Students’ progress is being monitored regularly per subject area.	3.60	Always	2
5. Enrichment activities and other references are given to learners to improve mastery of lessons.	3.48	Always	4
6. Proper guidance from parents, continuous communication between the parents and teachers	3.53	Always	3
7. When explaining lessons to students, the dialect of the IPs is being used.	2.67	Often	7
Overall Weighted Mean	3.33	Always	

In terms of the best practices employed in instructional delivery in implementing modular distance learning to IP students, it can be noted on Table 3 that the teacher-respondents “Always” employed the statement “2. A Weekly Home Learning Plan is given to every learner”, with the highest weighted mean of 3.63. Additionally, the respondents “Often” employed the statement “7. When explaining lessons to students, the dialect of the IPs is being used”, with the lowest weighted mean of 2.67.

The computed overall weighted mean on the responses was 3.33 with qualitative interpretation of “Always”. It was found out that the teachers employed their best practices to counteract the challenges in Modular Distance Learning in terms of instructional delivery. The teachers make sure that students are well-informed of the competencies they need to learn and the activities they need to answer through the provision of the Weekly Home Learning Plan. Monitoring of the students are also being practiced and home visitations are being conducted by the teachers.

DepEd-CO features Lutucan integrated National High School on a Press Release titled “DepEd Teaches Inetrates Technical Assistance in Improving Delivery of Basic Education Services. In one of the sessions, OIC-Director Cawilan underscored one of the best practices of Lutucan Integrated National High School (LINHS) in Sariaya, Quezon Province on managing learning resources in time of the pandemic. In the Schools Division of Naga City, the best practices of teachers must include: (1) conduct of house-to- house visitation for those learners with low performance; (2) parents and teachers must have collaborative efforts in the implementation of Weekly Home Learning Plan in keeping track the student’s everyday activities; and (3) teachers must give intervention strategies based on the Individual Monitoring Learning Plan which monitors the learner’s progress.

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1.4 Assessment

Table 4. Best Practices Employed in Assessment in Implementing Modular Distance Learning to IP Students

Assessment	Weighted Mean	Qualitative Rating	Rank
1. Summative tests are given in printed form.	3.83	Always	1
2. Results of summative tests are given to students for feedbacks.	3.53	Always	4
3. Summative tests are given every week and are aligned to the content standards of the MELCs.	3.38	Always	5.5
4. Rubrics are given in every performance task and are explained to students.	3.63	Always	2
5. Parents and students are being informed of the assessment process.	3.60	Always	3
6. LAC sessions are being conducted to improve test construction skills of teachers.	3.38	Always	5.5
7. Focused Group Discussions are being conducted for effective assessments of IP learners.	3.37	Always	7
Overall Weighted Mean	3.53	Always	

In terms of the best practices employed in assessment in implementing modular distance learning to IP students, it can be noted on Table 4 that the teacher-respondents “Always” practiced the statement “1. Summative tests are given in printed form”, with the highest weighted mean of 3.83 and “7. Focused Group Discussions are being conducted for effective assessments of IP learners”, with the lowest weighted mean of 3.37.

The computed overall weighted mean on the responses was 3.53 with qualitative interpretation of “Always”. It was found out that the teachers employed their best practices to counteract the challenges in Modular Distance Learning in terms of assessing the students’ learning. This is being done through the construction of summative tests that are suited to assess each weeks’ learning of the students.

In the study conducted by Galang, Conde & Sudarsana (2021), it was identified that teachers assess the students by utilizing modules and other activities as alternatives of face-to-face instruction and assessment, using rubrics and providing feedbacks, utilizing online platforms, and involving parents.

1.5 Summary

Table 5. Summary on the Best Practices Employed by the Respondents in Implementing Modular Distance Learning to IP Students

Best Practices Employed in the Implementation of MDL	Overall Weighted Mean	Qualitative Rating	Rank
Module Development	2.74	Often	3
Distribution and Retrieval of Modules	2.73	Often	4
Instructional Delivery	3.33	Always	2
Assessment	3.53	Always	1
Grand Mean	3.08	Often	

Table 5 shows the summary on the best practices employed by the teacher-respondents in implementing modular distance learning to IP students. It can be noted that the teacher-respondents “Always” employed best practices in “Assessment”, with the highest overall weighted mean of 3.53, followed by “Instructional Delivery”, with an overall weighted mean of 3.33. Additionally, the teacher-respondents “Often” employed best practices in “Module Development”, with an overall weighted mean of 2.74, and “Distribution and Retrieval of Modules”, with the lowest computed overall weighted mean of 2.73.

The computed grand mean of responses was 3.08, with a qualitative interpretation of “Often”. The results manifested that the teachers employed their best practices to counteract the challenges in Modular Distance Learning to IP students.

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2. Analysis of Variance on the Difference in the Best Practices Employed by the Respondents in Implementing Modular Distance Learning to IP Students when Respondents are Grouped According to the Demographic Profile Variables

2.1 Module Development

Table 6. Difference in the Best Practices Employed in Module Development in Implementing Modular Distance Learning to IP Students when Respondents are Grouped According to the Demographic Profile Variables

Profile Variables	Source of Variation	Sum of Squares	df	Mean Square	F	Sig.	Interpretation
Age	Between Groups	5.186	4	1.296	3.088	0.017	Ho is rejected Significant
	Within Groups	98.658	235	0.42			
	Total	103.843	239				
Sex	Between Groups	0.003	1	0.003	0.006	0.937	Do not reject Ho Not Significant
	Within Groups	103.840	238	0.436			
	Total	103.843	239				
Teaching Position	Between Groups	0.9	3	0.3	0.688	0.560	Do not reject Ho Not Significant
	Within Groups	102.943	236	0.436			
	Total	103.843	239				
Highest Educational Attainment	Between Groups	42.272	3	14.091	54.009	0.000	Ho is rejected Significant
	Within Groups	61.571	236	0.261			
	Total	103.843	239				

Table 6 shows the Analysis of Variance to test the difference in the best practices employed in module development in implementing modular distance learning to IP Students when respondents are grouped according to demographic profile variables of age, sex, teaching position and highest educational attainment respectively.

The computed P-values for sex (0.937) and teaching position (0.560) were greater (>) than 0.05 Alpha Level of Significance, hence the Null Hypothesis is accepted. Therefore, there is no significant difference on the best practices employed in module development in implementing modular distance learning to IP Students when respondents are grouped according to sex and teaching position. On the other hand, the P-values for age (0.017) and highest educational attainment (0.000) were lower than (<) 0.05 Alpha Level of Significance, therefore the Null Hypothesis is rejected and that there is a significant difference when respondents are grouped according to age, and highest educational attainment.

The result implies that the best practices employed in module development by the teacher-respondents diverges in terms of the age and highest educational attainment of the respondents. Furthermore, there is no statistically detected difference in the best practices employed by the male and female respondents and their teaching positions.

According to the study of Chan, Marasigan &Santander (2021), quality assured modules and stronger financial support would aid better modular remote teaching delivery in modular distance learning during the COVID-19 pandemic. Thus, the improvement of quality-controlled modules and worksheets was recommended.

2.2 Distribution and Retrieval of Modules

Table 7 shows the Analysis of Variance to test the difference in the best practices employed in the distribution and retrieval of modules in implementing modular distance learning to IP Students when respondents are grouped according to demographic profile variables of age, sex, teaching position and highest educational attainment respectively.

The computed P-value for sex (0.499) was greater (>) than 0.05 Alpha Level of Significance, hence the Null Hypothesis is accepted. Therefore, there is no significant difference on the best practices employed in distribution and retrieval of modules in implementing modular distance learning to IP Students when respondents are grouped according to sex. On the other hand, the P-values of age (0.000), teaching position (0.000) and highest educational attainment (0.000) were lower than (<) 0.05 Alpha Level of Significance, therefore the Null Hypothesis is rejected and that there is a significant difference when respondents are grouped according to age, teaching position, and highest educational attainment.

The result signifies that the best practices employed in the distribution and retrieval of modules by the teacher-respondents varies in terms of the age, teaching positions, and highest educational attainment of the respondents. Furthermore, there is no statistically detected difference in the best practices employed by the male and female respondents.

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To ensure the safety of both teachers and students in the distribution and retrieval of modules, the Department of Education (DepEd) said its regional offices (ROs) and school division offices (SDOs), schools should conduct of disinfection of learning materials prior packaging and distribution and forge stronger partnerships with barangay councils that will help in facilitating the distribution and retrieval of modules to their respective barangays (Malipot, 2020).

Table 7. Difference in the Best Practices Employed in Distribution and Retrieval of Modules in Implementing Modular Distance Learning to IP Students when Respondents are Grouped According to the Demographic Profile Variables

Profile Variables	Source of Variation	Sum of Squares	df	Mean Square	F	Sig.	Interpretation
Age	Between Groups	18.961	4	4.74	27.234	0.000	Ho is rejected Significant
	Within Groups	40.904	235	0.174			
	Total	59.865	239				
Sex	Between Groups	0.115	1	0.115	0.459	0.499	Do not reject Ho Not Significant
	Within Groups	59.75	238	0.251			
	Total	59.865	239				
Teaching Position	Between Groups	19.819	3	6.606	38.931	0.000	Ho is rejected Significant
	Within Groups	40.046	236	0.17			
	Total	59.865	239				
Highest Educational Attainment	Between Groups	17.492	3	5.831	32.475	0.000	Ho is rejected Significant
	Within Groups	42.373	236	0.18			
	Total	59.865	239				

2.3 Instructional Delivery

Table 8 shows the Analysis of Variance to test the difference in the best practices employed in instructional delivery in implementing modular distance learning to IP Students when respondents are grouped according to demographic profile variables of age, sex, teaching position and highest educational attainment respectively.

The computed P-values for age (0.087), sex (0.871) and highest educational attainment (0.229) were greater (>) than 0.05 Alpha Level of Significance, hence the Null Hypothesis is accepted. Therefore, there is no significant difference on the best practices employed in instructional delivery in implementing modular distance learning to IP Students when respondents are grouped according to age, teaching position and highest educational attainment. On the other hand, the P-value for teaching position (0.000) was lower than (<) 0.05 Alpha Level of Significance, therefore the Null Hypothesis is rejected and that there is a significant difference when respondents are grouped according to sex.

Table 8. Difference in the Best Practices Employed in Instructional Delivery in Implementing Modular Distance Learning to IP Students when Respondents are Grouped According to the Demographic Profile Variables

Profile Variables	Source of Variation	Sum of Squares	df	Mean Square	F	Sig.	Interpretation
Age	Between Groups	1.818	4	0.455	2.056	0.087	Do not reject Ho Not Significant
	Within Groups	51.952	235	0.221			
	Total	53.770	239				
Sex	Between Groups	0.006	1	0.006	0.026	0.871	Do not reject Ho Not Significant
	Within Groups	53.764	238	0.226			
	Total	53.770	239				
Teaching Position	Between Groups	15.762	3	5.254	32.623	0.000	Ho is rejected Significant
	Within Groups	38.008	236	0.161			
	Total	53.770	239				
Highest Educational Attainment	Between Groups	0.973	3	0.324	1.449	0.229	Do not reject Ho Not Significant
	Within Groups	52.797	236	0.224			
	Total	53.77	239				

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The result implies that the best practices employed in the instructional delivery of the teacher-respondents differs in terms of teaching positions only. Furthermore, there is no statistically detected difference in the best practices employed by the male and female respondents and their age, as well as their highest educational attainment.

Parents use the learning guide and supervise their child's interaction with the materials and communication with the teacher can be done. For the other students they accomplish the module activities and connect with the teacher for feedback through text, messenger, or any form of communication (Codamon, 2020).

2.4 Assessment

Table 9. Difference in the Best Practices Employed in Assessment in Implementing Modular Distance Learning to IP Students when Respondents are Grouped According to the Demographic Profile Variables

Profile Variables	Source of Variation	Sum of Squares	df	Mean Square	F	Sig.	Interpretation
Age	Between Groups	5.484	4	1.371	11.911	0.000	Ho is rejected Significant
	Within Groups	27.049	235	0.115			
	Total	32.533	239				
Sex	Between Groups	0.027	1	0.027	0.197	0.658	Do not reject Ho Not Significant
	Within Groups	32.506	238	0.137			
	Total	32.533	239				
Teaching Position	Between Groups	6.773	3	2.258	20.685	0.000	Ho is rejected Significant
	Within Groups	25.76	236	0.109			
	Total	32.533	239				
Highest Educational Attainment	Between Groups	7.711	3	2.57	24.438	0.000	Ho is rejected Significant
	Within Groups	24.822	236	0.105			
	Total	32.533	239				

Table 9 shows the Analysis of Variance to test the difference in the best practices employed in assessment in implementing modular distance learning to IP Students when respondents are grouped according to demographic profile variables of age, sex, teaching position and highest educational attainment respectively.

The computed P-value for sex (0.658) was greater (>) than 0.05 Alpha Level of Significance, hence the Null Hypothesis is accepted. Therefore, there is no significant difference on the best practices employed in assessment in implementing modular distance learning to IP Students when respondents are grouped according to sex. On the other hand, the P-values for age (0.000), teaching position (0.000) and highest educational attainment (0.000) were lower than (<) 0.05 Alpha Level of Significance, therefore the Null Hypothesis is rejected and that there is a significant difference when respondents are grouped according to age, teaching position, and highest educational attainment.

The result indicates that the best practices employed in the assessment by the teacher-respondents varies in terms of all the profile variables of the respondents. Their practices differ in terms of their age, sex, teaching positions and highest educational attainment.

The Department of Education emphasized that assessment should be holistic and authentic in capturing the attainment of the most essential learning competencies and is integral for understanding student learning and development. Assessment and grading should have a positive impact on learning (Montemayor, 2020).

V. CONCLUSIONS

Based on the results of the study, the researcher concluded that the majority of the teacher-respondent are female in their adulthood stage with a teaching position of Teacher I and the highest educational attainment of having units in master's degree. The teacher-respondents always employed best practices in implementing modular distance learning to Indigenous People (IP) students in terms of assessment. There was significant difference in the best practices employed in terms of module development in implementing module distance learning to IP students when respondents grouped according to age and higher education attainment. There was significant difference in the best practices employed in terms of distribution and retrieval and assessment when grouped according to age, teaching position and highest educational attainment; in terms of the instructional

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delivery when grouped according to teaching position. Teachers should sustain best practices on the implementation of modular distance learning to IP Learners and conduct benchmarking to further improve other practices.

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Validation of modified Children's Health Survey for Asthma (CHSA) Questionnaire for the Sri Lankan setting



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ABSTRACT: Asthma is one of the most common chronic diseases in the childhood in developing and developed countries. Health related quality of life has become essential part of health outcome measurement in chronic disorders. The present study was conducted to assess the validity and reliability of western developed scale for use in Sri Lankan children and their care givers. This study was a hospital based cross sectional study for validation of the western developed CHSA questionnaire. Study population was 100 children who was diagnosed as having asthma. Factor analysis of the data in the present study identified seven relevant factors. Two separate factors each were extracted for physical health (child) domain and emotional health (family) domain. Two separate factors each were extracted for physical health (child) domain and emotional health (family) domain. Cronbach alpha of above 0.7 for all domains indicate the internal consistency of the measure.

It was found that CHSA is a valid and reliable measure to assess the impact of the disease among children with Asthma and their care givers.

KEYWORDS: Childhood asthma, CHSA, Factor analysis

1. INTRODUCTION

Abramson and Abramson¹ stated that when a researcher considers the use of a study instrument that others have developed and validated, they should satisfy its validity in the present study population. If the researcher is certain that the study populations and circumstances are so similar, then the previous validation would be sufficient. When a questionnaire has to be translated from one language to another and understood by a specific population it is essential to check the validity.

The best and most obvious way of assessing the validity is comparing the findings with a gold standard or a criterion that is known or believed to be close to the truth.¹ The CHSA is an instrument which is used to assess the quality of life of asthma patients and their parents/ caregivers. Quality of life assessment is essentially a subjective measure and there is no gold standard to compare with.² Therefore, criterion validity which is thought to be the best cannot be proven for this measure. In the absence of a standard method, triangulation is the commonly used method to appraise validity in research tools. It is an approach where the evidence is sought by using different methods.^{1,3}

2. METHODS

Assessment of judgmental validity

Judgmental validity is mainly based on judgement alone and it assesses whether the conceptual definition of the variable has been measured by the operational definition. It includes face validity, content validity and consensual validity. This was done by a panel of experts in the field of paediatrics, psychology, sociology and community medicine. This panel included senior registrars in paediatrics (n=2), psychologists (n=2) attached to the Psychiatry Unit of the National Hospital of Sri Lanka (NHSL), a sociologist (n=1) of the University of Colombo, a Community Physician attached to the National Institute of Health Sciences, Kalutara (n=1) and the Principal Investigator (PI).

Selection of the study instrument

After a thorough literature search by the Principal Investigator (PI), the following questionnaires were identified for the assessment of impact of asthma among children and their families.

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1. Children's Health Survey for Asthma (CHSA) Questionnaire⁴
2. Paediatric asthma quality of life questionnaire⁵
3. Questionnaire to measure perceived symptoms and disability in asthma⁶
4. A Life Activities questionnaire for childhood asthma
5. Paediatric Asthma Quality of life Questionnaire

The content of each item of the questionnaires were looked for its relevance and acceptability in terms of local cultural context in which it was to be used, by a panel of experts. They also critically reviewed each question in the questionnaires for comprehensiveness of the questions and appropriateness of the measures. Among the above questionnaires the Children's Health Survey for Asthma questionnaire was selected by the panel because it assesses the health related quality of life in both the children and their family among 5-11 years children.

CHSA questionnaire

The CHSA is a disease specific, interviewer-administered questionnaire designed for the parents or the caregivers of the children. This instrument had been developed by the American Academy of Paediatrics in 1992. To develop the clinical aspect of the CHSA, a group of experts including pediatricians and specialists in asthma, allergy, immunology and pulmonology provided inputs. Contributions from the parents of asthma patients were also included. Its original is in English.

The questionnaire was pre-tested with the parents of asthmatic children for readability, comprehension and recall. This instrument includes assessment of five domains of child and family, namely; physical health (child), emotional health (child), activity (child), emotional health (family) and activity (family). The questionnaire has 48 items.

Table 1: Domains and the items in CHSA

Category	Domain	Item
Child	Physical health	15 items
	Activity	5 items
	Emotional health	5 items
Family	Activity	6 items
	Emotional health	17 items

In addition, it includes questions on health care utilization, asthma triggers and family demographics. Each item has a 5-point Likert type scale with a higher score indicating better or more positive outcome. This measure had undergone a series of psychometric tests for validation in a variety of settings in the United States (4). Validity of the CHSA has not been done in Sri Lanka.

After selecting of the CHSA, few changes were made. These changes included changing of the wordings of the few items. e.g. participating in the gymnastic classes was changed to participating in the physical training sessions at school.

Translation of the CHSA questionnaire to Sinhala language

Translating an instrument that was developed in one language with a particular cultural background to another language with a different cultural background will pose some difficulties. The CHSA which was used as the instrument for the present study was initially developed in the western world. Therefore, it needs to be translated into Sinhale language. Hereafter, the original English questionnaire and the translated Sinhalese questionnaire will be referred to as E-CHSA and S-CHSA respectively. The following validity problems were considered during the translation and adaptation of the questionnaire into Sinhala.^{7,8,9}

1. Content equivalence: The contents of the instrument (items of the questionnaire) describe a phenomenon relevant to both cultures. The items of the E-CHSA which measures the health related quality of life and developed in the western world should be culturally relevant to Sri Lanka.
2. Semantic Equivalence: It concerns with the retaining of the meaning of each item. The words used in the original and the translated versions should have the same meaning.
3. Technical equivalence: Similar effects to be achieved by the measuring technique in both cultures. It is mainly referred to both the technical features of the languages and their relationships in a socio cultural context. Sometimes, cultural and geographical differences are likely to lead to important differences between both cultures. e.g. In E-CHSA social plans and sports
4. Criterion equivalence: It measures whether the responses to similar items relate to the same normative concept in the two cultures.

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5. Conceptual Equivalence: It means that responses to an interview or question should relate to theoretical construct within that culture. Therefore, it needs to obtain an identical meaning of concepts which may have different cultural understandings. Most authors had emphasized the need of achieving the conceptual equivalence between measures, that is, comparability not only in what is said through translation procedures but in what is understood by the respondent. This can be achieved by careful attention to the cultural values and norms of relevant societies.

Participants for translation: When translating an instrument into another language, the translator should have a good technical knowledge of both the source and the target languages and full emotional understanding of the source and target languages. In addition, he should be deeply involved in the culture where the questionnaire is going to be applied to know about the cultural problems related to the concepts and terms used in the questionnaire (e.g. to avoid the use of stigmatizing concepts) and to have intergraded knowledge of the area and domains explored in the questionnaire.⁷

By considering all the above facts, it was decided to translate this questionnaire into Sinhala by a group of persons who were fluent in both English and Sinhala languages. In addition, some questions included in the E-CHSA questionnaire that were related to clinical aspect. Hence, it was decided to take persons with a medical background for this task in this study. This group consisted of a Medical officer, Out Patient Department (OPD) of Lady Ridgeway Hospital (LRH) for Children, a Medical Officer, Central Chest Clinic at Colombo and the PI. During the process of translation semantic, technical, criterion and conceptual equivalences were established. Developing consensus among the panel members during translation helped to modify and eliminate ambiguous items.

After establishing the semantic, technical, criterion and conceptual equivalences between the E-CHSA and S-CHSA, the questionnaire was pre-tested. This was done for both clarity and acceptance among twenty mothers who came for treatment from the OPD, and Asthma Emergency Treatment Unit at LRH. The translated and pre-tested instrument was then used for the validation study.

Assessment of construct validity

The assessment of construct validity of a questionnaire is essential in a psychometric measure. Construct validity is defined as the extent to which an instrument measure a theoretical construct.

Construct validity of the questionnaire was appraised using two methods.

1. Confirmatory factor analysis
2. Assessing the discrimination between groups

Confirmatory factor analysis

This is a technique of psychometric validation that examines the correlation between variables in a large set of data to see if a small number of variables or factors can explain the variation in the original set of variables. For this study, factor analysis was performed to identify independent dimensions of impact of asthma on the child and the family and to identify homogenous items suitable for measuring each dimension. If CHSA is a valid measure, the dimensions (physical health, social health and day-to-day activities of the child and the social health and day-to-day activities of the mother or the caregiver) within it should emerge from a factor analysis of the data of the population that is being validated for. Items relating to a particular dimension should be grouped together within a single factor.¹⁰ The method used to perform the factor analysis was the principal component analysis. The appropriateness of the factor analysis was assessed by using test of Kaiser-Meyer-Olkin measure of sampling adequacy and Bartlett's test of sphericity. The selection of the appropriate factors was based on the variance explained by each factor, the eigen value for each factor and examination of the scree plot. The methods used to extract factors include principal component analysis with varimax rotation using Kaiser normalization. For a rotated factor to be interpretable, each factor should have two or more loadings above 0.3 and each item should have at least one factor loading above 0.3.^{3,11,12}

The discrimination between groups

The results of the validation study confirm the hypothesis concerning the expected distribution of the impact within the group (mild, moderate, and severe cases of asthma) that was examined by the measure being validated (1,10). It was hypothesized that mean scale scores for all five domains should be highest for the mild and lowest for the severe. The categorization of children into mild, moderate and severe was based on the classification given by the authors. Symptom activities were classified as number of days the child experienced wheezing or tightness of the chest in the last two weeks. It was defined as follows: mild = 0-2 days, moderate = 3-10 days, severe = 11 or more days.⁴

Assessment of reliability – internal consistency

The reliability of an instrument is a major criterion for assessing its scientific acceptability. In a composite scale, reliability can be measured by appraising the internal consistency. It assesses the degree with which an instrument measures the attributes it is supposed to measure. This is measured by the extent to which items within the domain correlate with each other.

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Therefore, the domains which assess the physical health, social health and activities of the child and the physical health and activities of the family should be internally consistent if the responses to items that contribute to the same domain correlate well with each other (1,10). Internal consistency was assessed using Cronbach's alpha for each scale overall, item total correlation and alpha if an item was deleted for individual scale items.

Cronbach's Alpha

The calculation of Cronbach's alpha is based on the number of items and the average inter-item correlation i.e. more homogenous the domain, the higher the internal consistency. A high correlation between different items in a domain will indicate that they are measuring the same thing and there is less chance for random error. A low correlation indicates that there is lot of error and items are not measuring the same items. For scales which are used as research tools, alpha may be less than in the clinical situations. Alpha values of 0.7 to 0.8 are regarded as satisfactory.^{12,13}

Item total correlation

It gives the relationship between the responses on individual questions and the overall total score on the questionnaire. A reliable question should have a positive relationship with the overall total, ideally being above 0.3. An item displaying weak or a negative relationship to the total indicates that item may be poor in reliability and thus affect the findings of the whole scale. The effect of the individual item on overall reliability of the questionnaire can be assessed by the relationship between the corrected total correlation and the alpha if item is deleted.¹²

Validation study

S-CHSA validation was done at the Asthma Emergency Unit at OPD/ LRH, in a follow up clinic at LRH, and all the medical wards at LRH. The study subjects were identified according to the place of residence. Those who resided in areas other than the CMC area were selected. Selecting the study subjects from above places ensured coverage of a broad spectrum of clinical presentations of childhood asthma and different social groups they come from.

The subjects for this study were the children aged 5-11 years diagnosed by a paediatrician as having asthma or wheezing. The respondents were the mothers or the principal caregivers of the above children.

Exclusion Criteria were;

1. The children with other diseases in addition to asthma
2. The children who come to the Emergency Treatment Unit for asthma at OPD/ LRH without a diagnosis of asthma or wheezing by a paediatrician

There are no power tables available to assess the sample size calculation. Sample size calculation for the factor analysis is controversial. Some consider that a minimum of 2:1 participants to a variable will give stable reliability and validity estimates while others argue that a minimum sample size of 100 subjects is sufficient.¹¹ The S-CHSA in the present study has 48 items. If 1:2 ratio is considered, the sample size for 48 items is 96. Considering all above factors, it was decided to take 100 subjects for the present study.

A consecutive sample of children aged 5-11 years with asthma or wheezing who came for treatment from Emergency Treatment Unit of Asthma, at LRH, asthma follow up clinics of the LRH or admitted to wards at LRH were selected until the sample size was achieved.

Data collection instrument was the modified and validated S-CHSA. Respondents were the mothers or the caregivers of the selected children diagnosed as having asthma or wheezing. The principal investigator (PI) administered the questionnaires to the respondents.

3. RESULTS

Confirmatory Factor Analysis

Anti-image correlation matrices shows that sampling adequacy for all 48 items were well above the accepted level of 0.5. The Kaiser-Meyer-Olkin measure of sampling adequacy (KMO) is 0.649. For a satisfactory factor analysis, the KMO value should be greater than 0.5.

The Bartlett's test of sphericity is significant at 0.000. If the p value is less than 0.05, it indicates that there is sufficient power to continue with the factor analysis. Therefore, the above criteria confirmed the factorability of data¹². After the principal component analysis, 12 factors met the eigen value greater than one criterion.

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Scree plot revealed that scree test breaks at 4 and 7 factors. Four and seven factors were rotated using varimax rotation with Kaiser Normalization and seven factor was the most interpretable. The eigen values among these factors were ranging from 9.87 to 1.96.

Discrimination between groups

The discrimination between groups were tested among all five domains of the CHSA with low, moderate and high sub groups of asthma children in the study. The different studies had used different criteria to categorize the severity of the asthma symptoms. The authors of the original study had used the number of days child experienced wheezing or tightness in the chest as to create the symptom activity variable. The categories of symptom activity were defined as Low=0-2 days, Moderate= 3-10days and the High=11 days or more.

Similar classification was adapted for the present study. CHSA scale scores were assembled using likert method for summed ratings and the raw scores were linearly transformed into 0-100 scale. Higher scores indicate more positive outcome or better health. The mean scores of the physical health (child), emotional health (child) and Activity (Child) domains among the subgroups were tested for significance by using the Analysis of variance (ANOVA) and it was significant at $p=0.001$ level.

The mean scores of the emotional health (Family) and Activity (Family) domains among the subgroups were tested for significance by using the Analysis of variance (ANOVA) and it was significant at $p=0.001$ level.

Cronbach's Alpha

Each domain has a Cronbach's Alpha ranging from 0.76 to 0.84.

Table 2 : Cronbach's Alpha for each domain of S-CHSA

Domains	Physical Health (child)	emotional health(child),	Activity (child	Emotional Health (Family)	Activity (Family)
Cronbach's Alpha	0.76	0.77	0.84	0.83	0.75

Total Item Correlation

A reliable question should have a positive relationship with the overall total correlation of above.3. All the items of the questionnaire were meet this criteria.

4. DISCUSSION

The criteria used for recruitment of asthma children into the validation study was purely based on clinical diagnosis, were adequate for the purpose of carrying out this study. The majority of the children recruited were categorized as mild to moderate asthma (94%), is a reflection of the role of severity of disease as the determinant for seeking health care. Because of the early relief of the often-distressing symptoms of asthma more mild& moderate types are likely to come before they get severe attacks. This discrepancy may however, be unlikely to affect the validity of the results.

Health related quality of life has become essential part of health outcome measurement in chronic disorders. In addition to the sequelae of chronic disease itself on the child, it has some impact on the family as well. Therefore, goal of prevention and treatment of chronic illness in children is to diminish the impact of the illness and prevent dysfunction.

To assess the impact of the disease several questionnaires are available in the literature. They are the Pediatric Asthma quality of life Questionnaire and Pediatric Asthma Care Givers Quality of life Questionnaire⁵, Questionnaire to measure perceived symptoms and disability in asthma⁶ Children's Health of Survey for Asthma (CHSA)Questionnaire⁴ etc. After appraising the judgmental validity by the six experts, the CHSA was selected as the study instrument for the present study. Once a study instrument is used in different setting, other than where it was developed, the researcher if using this instrument should be satisfied of its validity in the selected setting¹. Therefore, the present study was conducted to assess the validity and reliability of western developed scale for use in Sri Lankan children and their care givers. When in a situation where there are no standard validation methods available, the use of several methods, however imperfect each may be, provides the most accurate assessment of the instrument properties. This method is known as Triangulation³.For the present study above method of Triangulation was used to validate the questionnaire.

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When validating a questionnaire first criterion which was looked for was the judgmental validity and it assesses that the survey instrument makes sense and reflects appropriately the domains under investigation. This was assessed by a panel of experts and it was found to be satisfactory.

This questionnaire is based on multidimensional conceptualization of health. The statistical approach of factor analysis was adopted to test whether the original conceptualized domains fitted into the data, which were collected during present study.

The precise correspondence between the factors and the domains are rare in factor analysis¹⁴. Factor analysis of the data in the present study identified seven relevant factors. Two separate factors each were extracted for physical health (child) domain and emotional health (family) domain. . Factor analysis of the data in the present study identified seven relevant factors. Two separate factors each were extracted for physical health (child) domain and emotional health (family) domain. Similar findings were seen in other studies. WHO study group¹⁵ reported that the factor analysis among the WHO quality of life questionnaire confirmed the comparative fit of a four domain model and six domain model of assessment of quality of life. Wijeyasinghe et al ¹⁶ in their study found though the original version of the questionnaire had eleven domains they had only seven domains extracted.

In the original study the mean scale scores for children whose recent symptom activity was rated as low were consistently better and significantly higher (for all but the activity (child) domain) than for those designated as moderate to high⁴. But the present study showed significantly higher scores for the low symptom activity than the moderate and high symptom activity for all domains.

Internal consistency reliability for CHSA-S were above 0.7 for all domains. The high degree of internal consistency confirmed its reliability. This is compatible with the original validation study of the questionnaire⁴.

CONCLUSION

The translated Sinhalese version of the western developed questionnaire is a reliable instrument for measuring the impact of Childhood Asthma in children and the family.

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A Study of Donation-Based Crowd Funding Platforms



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ABSTRACT: Persuasion is the process of communication in which a person wants to create an influence to induce certain behaviour sends a persuasive message to the other individual with the aim of generating an impact on the recipient's attitude. The power of decision making, however, is at the disposal of the recipient. Various technologies are used by the donation based crowd funding platforms to persuade the website visitors to make donations for certain causes.

The main objective of the study was to focus on the specific factors that are used by the donation based crowd funding platforms to persuade the prospective donors to make donations to specific campaigns. Exploration methods were used to obtain the necessary data through online questionnaires. The questionnaire mainly included close ended questions where most of the questions were designed for the people who have donated using crowd funding platforms to react on a Likert scale of 5 (Strongly Agree to Strongly Disagree). Total sample size was 230. Simple Random Sampling method was used to collect the data. The researcher has explained a model where building a new concept in the set of factors that are specifically applicable for the donors who contribute for donation based crowd funding campaigns. The model shows that using technology in persuasion and having a higher social networking presence can affect the donation intention of the website visitors to a considerable extent. The model also shows that various privacy issues, trust and overall website quality also have a major impact on the donation intention of the donors. In the end, the study also shows that the donation intention of the donors is highly positively correlated with the donation behaviour.

KEYWORDS: crowd funding, crowd funding platforms, website quality, donation intention, Persuasion Technologies, donation behaviour, donation behaviour.

INTRODUCTION

One may define persuasion as the process of communication in which a person wants to create an influence to induce certain behaviour sends a persuasive message to the other individual with the aim of generating an impact on the recipient's attitude. The power of decision making, however, is at the disposal of the recipient¹. The overall value of the persuasive messages is distinguished by the media channel and the content of the message that is used to deliver these messages. Several technologies including the internet, cell phones and other online platforms provide ample opportunities for a persuasive interaction between the donors and the fundraisers. Persuasive technology can be used to communicate with single individuals as well as groups of individuals.² There has been a very limited amount of research that has been conducted on the use of persuasive techniques used by donation based crowdfunding platforms which are used to persuade the donors to donate to specific causes and finally check out, almost like a regular online purchase.

Therefore, it can be said that the entire set of ICT enabled tools that are designed to interact with the purpose of changing or shaping a particular person's attitude or behaviour is persuasive technology. Persuasive technology involves bringing about a valid interaction between humans and computers and studies how people are persuaded when they interact with different kinds of technologies.

Various technologies are used by the donation based crowdfunding platforms to persuade the website visitors to make donations for certain causes. The following is a list of some of the persuasive strategies that are used:¹

- **Reduction:** by simplifying the complex activities and making it easier to donate, donation based crowdfunding platforms use a strategy of reduction. For example, instead of going through the entire lengthy process, they can facilitate the donor to donate for a particular cause with a few clicks of the mouse. For this purpose, crowdfunding platforms often offer the

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visitors who visit for the first time to save their card information or remember that choice/ mode of payment which speeds up the process and also persuade the prospective donors to donate quickly. This strategy is especially useful in the case of people who get overwhelmed with a feeling of sympathy and make impulsive donations.

- **Tunnelling:** tunnelling is a process by which websites offer free trials. However, this method is not applicable to the donation based crowdfunding platforms. The strategies used by websites that provide certain types of services such as antiviruses, spyware protection and special-purpose websites that provide specific information to certain prospective donors.
- **Tailoring:** based on the browsing history, potential interests, usage context and other factors that may be borrowed from the process of profiling of the donors, donation based crowdfunding platforms tailor out specific information and persuade the prospective donors to make donations for specific causes.
- **Personalisation:** in this strategy, based on the donors' previous history, the websites offer specific content and recommendations to the donors so that they can make decisions to donate quickly.
- **Self-monitoring:** it allows the customers to keep a track of their own status and performance as far as their donation ability is concerned. This strategy enables the donors to check the actual impact of the donations that they have made and create a feeling of pride and warmth. This can create a sense of pride as donors always want to know how they have affected the wellbeing of specific people who needed help. Faster checkouts and reports that contain detailed information regarding the status of the beneficiaries, progress of the overall campaign are emailed to the donors on a timely basis. These factors can play an important role in persuading donors to donate more towards the same campaign or other campaigns that are promoted on the same donation based crowd funding platform.
- **Pop-ups:** this technology is relatively old. Whenever a particular person logs in to a specific social networking platform or website, or simply opens a webpage, a pop-up advertisement is displayed which contains pictures of the individuals/ beneficiaries that are illustrated in a way to create sympathy and persuade the donors to make donations by clicking on links. These pop-ups are extremely effective and contain punch lines such as "Help a farmer's 3-year-old daughter to battle blood cancer". These messages are accompanied with images of the actual bedridden patient along with the photographs of the parents, who pose helplessness through their natural expressions. This is one way of creating sympathy, and persuading the donors to click to know more. Once the donors click the link on the pop-up, they directly land up on the payment page, where donation amounts are pre-written (Usually beginning with 1000-1500 INR). However, the person who makes the donation can change the amount to the minimum acceptable limit that is set by the platform (usually in the range of 300-500 INR).
- **Offering the option to withdraw the donation:** In certain cases, (Ketto.org) the crowdfunding platforms allow the users to claim the amount that they have contributed in case if they ever face situations in life where they need to raise funds for themselves. This means that if the donor who had previously donated to the campaign faces a situation in life, where he is not left with any option but to raise funds using donation based crowdfunding, Ketto.org allows the person to use the amount that he had donated over the years, for various causes.

There are several other factors such as "thank you letters", reminders, testimonials given by beneficiaries that add to the overall persuasion strategy and can have a deep impact on the donation intention and the donating behaviour of the individuals who visit the websites that are maintained by donation based crowdfunding platforms. According to Oinas-Kukkonen and Harjumaa (2009) other factors include trustworthiness, suggestion and third-party endorsements etc. that contribute to the overall persuasiveness of the website. According to the authors, websites often offer up-to-date information and statements from certain famous personalities or people who have a certain level of authority that increase the trustworthiness of a particular donation based crowdfunding campaign. When a particular website has a very sympathetic feel and look and the design reflects the context of the website, it certainly ends in persuading the person to make contributions.¹

In the context of electronic commerce, the current paper focuses mainly on the design of the websites that are maintained by donation based crowdfunding platforms. It also discusses several strategies that are used by such platforms in order to shape the attitude or behaviour of the donors. Due to the advent of Internet technology and availability of higher broadband speeds, such websites are becoming increasingly functionally persuasive and are implementing dynamic persuasion techniques to increase their site visits and contributions to the various campaigns that are listed on the platform. These technologies are used by donation based crowdfunding platforms to enhance the overall system credibility and facilitate the process of donating online by motivating the donors to adopt certain systems. For example, a list of top contributors is displayed on the website. Such things can motivate specific individuals to donate more and be at the top of the list, possibly by generating a sense of pride or some kind of satisfaction.

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At times, when a particular person clicks a post on the social networking website, but decides to not donate at that moment, a few days later the same campaign is deliberately displayed with the help of tools like Google ads etc. and hammered on the prospective donors. Hammering can happen with the help of mobile phone short text messages, emails and at times and sometimes even through personalized phone calls. This is done with the intention of persuading the prospective donors to donate to specific campaigns that were explored by the prospective donor. Thus, it can be said that various techniques and methods are employed by donation based crowdfunding platforms in order to raise funds using persuasive techniques. The next section of the paper deals with the review of literature that is relevant to the current study.

REVIEW OF LITERATURE

Captology is the study of computers as devices that promote persuasive technologies. In the year 1996, Dr. B.J. Fogg, who is the director of the Stanford University Persuasive Technology Lab, derived the term in 1996 from an acronym. According to him, the full form of CAPT is "Computers As Persuasive Technologies (CAPT)." ³

Captology involves the research, design and analysis of various computing products that are interactive in nature. Various devices such as mobile phones, websites, wireless technologies, computers, mobile applications, video games et cetera can be used for the purpose of persuading the people to buy certain products and services. Therefore, it can be said that the technology has the potential of creating an influence on its own right. The concept of Captology (persuasive technology) has been around for more than 2 decades. However, there is very limited research on Captology and its impact on the donation intention and donating behaviour of people who surf the Internet to make donations to specific campaigns. Each crowdfunding campaign requires a different way of persuasion. For example, if a particular person wants to raise funds for the purpose of taking care of stray animals, the persuasion technique used by the crowdfunding platform will be completely different as compared to a campaign directed towards raising funds for a patient with terminal illness requiring a transplant. Persuasion is extremely relevant for the design of interactive electronic communications. Nonlinear messages make it difficult to orient and direct the reader with traditional graphic strategies conceived for linear message sequencing.

Internet site's visitors can choose their own paths, browsing the key content, and may be diverted by links to other sites on the Web. Persuasive communications strategies can persuade the website visitors to follow understandable reading pathways, and to generate the most expected reactions by using a combination of different kinds of tools, techniques and devices. Thinking of persuasion in this way, the smallest graphic images can also amount to persuasion. For example, the prospective donors can be directed to click the "Donate Now" or "Save his Life now!" button that is highlighted by using attention grabbing animations and colours (McCoy, 2000)⁴.

Persuasive technologies work without using quotes and deception and make an attempt to change shape an individual's attitude and behaviour concerning an object, issue or action (Fogg, 2003)³. The literature that is available on the current study provides various guidelines for evaluating the performance of various aspects of systems that are implemented by the websites that are maintained by donation based crowdfunding platforms in order to persuade people to make donations for certain charitable causes. Kaptein and Duplinsky (2009)⁵ have studied the use of persuasive technology in e-commerce. However, they have overemphasized on the aspect of the changing behaviour of individuals using specific messages. The study that is done by Felfernig and Burke(2008) explores the various factors that contribute to the success of ecommerce websites. However, there are virtually no studies that have considered the persuasive techniques employed by crowdfunding websites. This demands a study that would help in gaining a deeper understanding about the persuasive aspects of the design of the websites that are maintained by donation based crowdfunding platforms. Several researchers have used the persuasive system design (PSD) model (Oinas-Kukkonen & Harijumaa, 2009) as a theoretical foundation. However, none of the researchers seem to have used the various factors that have been mentioned by the technology acceptance model.

Online donations have become increasingly popular, owing to the pandemic situation that the planet is currently going through. Therefore, the proficiency in design and functionalities of a particular website play a considerable role in providing a competitive advantage to the fundraising platforms. Websites are often the first point of contact and generally it is considered that the first impression is the last impression. Therefore, it is necessary for a particular website to be good enough to present a favourable image of the entire organisation and attract more prospective donors. The website must have the ability of converting people who are surfing the Internet to potential shoppers. There are several features which are pursued extensively applied in designing e-commerce websites that result in improving the quality and help companies to deploy their marketing strategies more effectively. Such features also contribute to the credibility of the website (Fogg et al., 2003, Kaptein and Duplinsky, 2009). Again, a donation based platform gains valuable information of the donors. In certain cases, the donors may even be required to enter their pan number and other sensitive data. This data can leak or be sold by the platform for money. Therefore, privacy is one of the major issues that can affect the donation behaviour and the donation intention of the prospective donors.

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Winn and Beck (2002)⁶ performed a study as to how the different visual elements operate in persuading prospective donors. However, the study was performed in 2002 and technologies have changed since then and websites have become more interactive due to the availability of higher internet speeds and faster computing devices. Instead of pop-ups with images, websites can use popups with videos and other forms of interactive media that is programmed using flash animations.

Overall, the literature available suggests that there is very less work done on the impact of persuasive technology on the donation intention and donating behaviour of individuals who contribute to charitable causes through donation based online crowdfunding platforms. The current study focusses on donations probes into the various persuasive technologies and strategies that have a certain amount of impact on the donating behaviour and donating intention of the visitors of the websites that are maintained by donation based crowdfunding platforms.

OBJECTIVES OF THE STUDY

1. To identify various factors that are used to persuade the website visitors of donation based crowdfunding platforms to increase the chances of success of donation-based crowdfunding campaigns.
2. To measure the influence of the key factors that are used to persuade the potential donors of donation based crowdfunding platforms.

Hypothesis:

H1: The website quality (WQ) is significantly positively correlated with trustworthiness (T) of a donation based crowdfunding platform.

H2: Privacy (PRI) is significantly correlated with donation intention (DI).

H3: There is a significant positive correlation between Persuasion Technologies (PT) and the donation intention (DI).

H4: The social networking presence (SNP) of the website is positively correlated with the donation intention (DI).

H5: Trust (T) and Privacy (PRI) are significantly positively correlated with the donation behaviour.

H6: Donation intention (DI) and donation behaviour (DB) are positively correlated.

RESEARCH METHODOLOGY

The main objective of the study was to focus on the specific factors that are used by the donation based crowdfunding platforms to persuade the prospective donors to make donations to specific campaigns. The objective of the study is to create a model that would explain the level of influence of each of the persuasion strategies on the donation intention of the website visitors. Exploration methods were used to obtain the necessary data through online questionnaires. The questionnaire mainly included close ended questions where most of the questions were designed for the people who have donated using crowdfunding platforms to react on a Likert scale of 5 (Strongly Agree to Strongly Disagree). The questionnaire was circulated among the respondents using social media platforms like WhatsApp and Facebook. The exact number of donors of the Internet is finite but unknown. The survey was conducted on 252 respondents. However, some of the respondents had given polarised Responses and not seem to have seriously participated in the research. 22 such irrelevant questionnaires were cancelled and finally, 230 responses were considered for the purpose of the study. For the purpose of dimensional reduction an exploratory factor analysis was conducted.

ANALYSIS OF DATA

Profile of the Respondents:

Age * Gender Crosstabulation

			Gender		Total
			Male	Female	
Age	18-30	Count	30	48	78
		% within Gender	26.3%	41.4%	33.9%
	31-40	Count	44	40	84
		% within Gender	38.6%	34.5%	36.5%

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41-50	Count	23	20	43
	% within Gender	20.2%	17.2%	18.7%
51-60	Count	14	7	21
	% within Gender	12.3%	6.0%	9.1%
Above Years 60	Count	3	1	4
	% within Gender	2.6%	0.9%	1.7%
Total	Count	114	116	230
	% within Gender	100.0%	100.0%	100.0%

The table shows that maximum number of respondents (36.5%) were from the age group of 31 to 40 years followed by 33.9% of the respondents belonging to the age group of 18 to 30 years. Overall, 116 respondents were female whereas 114 the respondents were male. A very few number of respondents belonged to the age group of 51 years and above. This suggests that making online donations through crowd funding platforms is not that popular among the people who are having ages 51 years and above.

Education

	Frequency	Percent	Valid Percent	Cumulative Percent
Masters and above	120	52.2	52.2	52.2
Graduate				94.8
Valid 10+2 and below	98	42.6	42.6	97.4
Diploma/ Other	6	2.6	2.6	100.0
Total	6	2.6	2.6	
	230	100.0	100.0	

The above table shows that 94.8% of the respondents were graduates. Only 2.6% of the respondents were having an education of 10+2 and below.

Most preferred donation based platform:

	Frequency	Percent	Valid Percent	Cumulative Percent
Impact guru	35	15.2	15.2	15.2
Milaap	84	36.5	36.5	51.7
Valid Ketto	91	39.6	39.6	91.3
Others	20	8.7	8.7	100.0
Total	230	100.0	100.0	

Milaap and Ketto seem to be more popular as compared to Impact Guru and other platforms for the purpose of making charitable contributions. 36.5% of the respondents stated that the Milaap is the most preferred platform whereas 39.6% of the respondents stated that Ketto is the most preferred platform as far as their activity of making online donations is concerned.

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Internet Usage proficiency (Self Evaluation of the respondents)

	Frequency	Percent	Valid Percent	Cumulative Percent
Newbies	10	4.3	4.3	4.3
Beginner	36	15.7	15.7	20.0
Basic Valid	46	20.0	20.0	40.0
Intermediate	65	28.3	28.3	68.3
Expert	73	31.7	31.7	100.0
Total	230	100.0	100.0	

For the purpose of the study, internet proficiency refers to the level of expertise that prospective donors have regarding the various issues that are related to the general use of the internet, for browsing, making online payments and using social media platforms. Experienced users can make donations easily as they may know the different issues that can arise during the process. Only 4.3% of the respondents were newbies and 15.7% of the respondents were beginners. However, 20% of the respondents expressed that they had basic knowledge of online shopping, 28.3% of the respondents expressed that they had intermediate proficiency and 31.7% of the respondents stated that they are experts as far as using the internet is concerned.

For the purpose of checking the internal consistency among the variables, the Cronbach's Alpha Value was calculated, and for all factors that have been considered in the model, the Value was above 0.7.

For the purpose of testing the hypothesis, correlation analysis was used and the results were as follows.

Correlations

		WEB SITE QUALITY	SOCIAL NETWORKING PRESENCE	PRIVACY	TECHNOLOGY IN PURSUASION	TRUST	DONATION INTENTION	DONATION BEHAVIOUR
WEBSITE QUALITY	Correlation	1	.242**	.286**	.418**	.248*	.245**	.465**
	Sig.		.000	.000	.000	.000	.000	.000
	N	231	231	231	231	231	231	231
SOCIAL NETWORKING PRESENCE	Correlation	.242**	1	.403**	.402**	.443*	.454**	.547**
	Sig.	.000		.000	.000	.000	.000	.000
	N	231	231	231	231	231	231	231
PRIVACY	Correlation	.286**	.403**	1	.476**	.329*	.483**	.619**
	Sig.	.000	.000		.000	.000	.000	.000
	N	231	231	231	231	231	231	231
TECHNOLOGY IN PURSUASION	Correlation	.418**	.402**	.476**	1	.349*	.505**	.773**
	Sig.	.000	.000	.000		.000	.000	.000
	N	231	231	231	231	231	231	231

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TRUST	Correlation	.248**	.443**	.329**	.349**	1	.364**	.472**
	Sig.	.000	.000	.000	.000		.000	.000
	N	231	231	231	231	231	231	231
DONATION INTENTION	Correlation	.245**	.454**	.483**	.505**	.364*	1	.610**
	Sig.	.000	.000	.000	.000	.000		.000
	N	231	231	231	231	231	231	231
DONATION BEHAVIOUR	Correlation	.465**	.547**	.619**	.773**	.472*	.610**	1
	Sig.	.000	.000	.000	.000	.000	.000	
	N	231	231	231	231	231	231	231

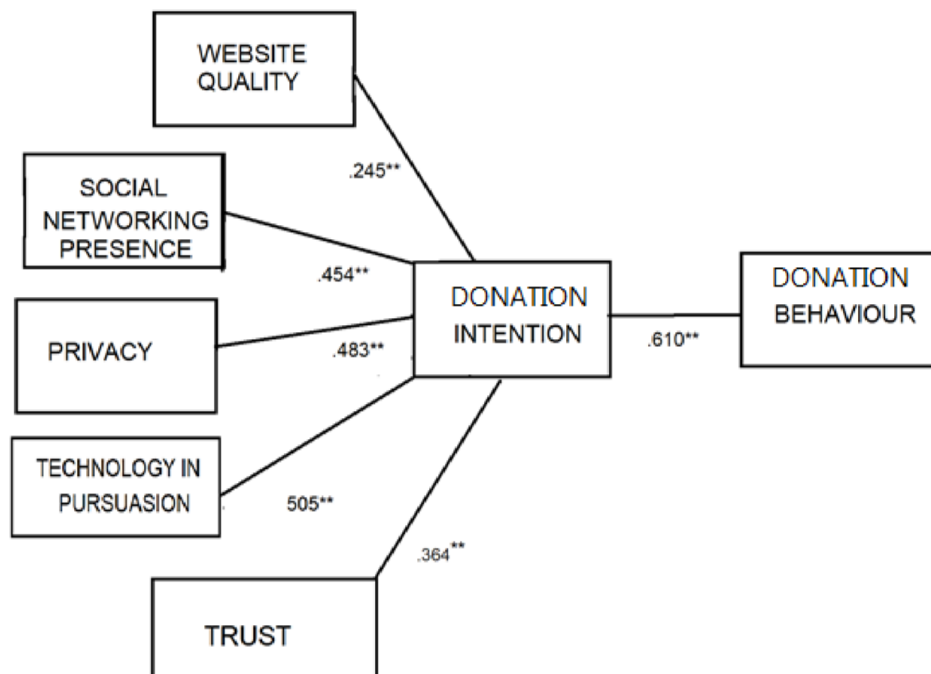
** . Correlation is significant at the 0.01 level (2-tailed).

From the above table it can be seen that:

1. The website quality (WQ) is significantly positively correlated with trustworthiness (T) of a crowdfunding platform's website.
2. Privacy (PRI) is significantly positively correlated with donation intention (DI).
3. There is a significant positive correlation between Persuasion Technologies (PT) and the donation intention (DI).
4. The social networking presence (SNP) of the users is positively correlated with the donation intention (DI).
5. Trust (T) and Privacy (PRI) are significantly positively correlated with the donation behaviour.
6. Donation intention (DI) and donation behaviour(DB) are positively correlated.

THE MODEL:

The model can be represented as follows:



CONCLUSION

The researcher has explained a model where building a new concept in the set of factors that are specifically applicable for the donors who contribute for donation based crowdfunding campaigns. Therefore, the study attempts to make contributions to the scientific work that is not done on the subject matter. The study shows that there are several factors that affect the donation intention which are related to the various forces of strategies that are used by donation based crowdfunding platforms to persuade

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the visitors to donate. The model shows that using technology in persuasion and having a higher social networking presence can affect the donation intention of the website visitors to a considerable extent. The model also shows that various privacy issues, trust and overall website quality also have a major impact on the donation intention of the donors. In the end, the study also shows that the donation intention of the donors is highly positively correlated with the donation behaviour.

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A Study of Speech Recognition with Deep Learning

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ABSTRACT: The development of deep learning and the continuous progress of artificial intelligence have contributed to the rapid development of speech recognition. Among them, the end-to-end structure is the more important part of the whole speech recognition. This paper introduces two end-to-end speech recognition methods, the attention model and the CTC loss function, describes the practical application of deep learning in speech recognition and suggests improvements to the two models. Finally, the practical usefulness of speech recognition is demonstrated by analyzing the application of trigger word detection and sentiment analysis in artificial intelligence in teaching and learning.

KEYWORDS: Speech Recognition; Deep learning; CTC Loss Function; Sentiment Analysis.

I. INTRODUCTION

Speech recognition is a technology that uses machines to recognize and understand speech signals and convert them into corresponding text and commands [1]. In simple terms, speech recognition can find the corresponding text when given a sound segment. The two most important parts of speech recognition are acoustic feature extraction and acoustic model building. One of the most used acoustic features is the Mel Frequency Cepstrum Coefficient (MFCC) [2]. For acoustic model building, the Gaussian Mixture Model (GMM) [3] in the traditional GMM-HMM [4] acoustic model ignores temporal information and does not make sufficient use of before and after information, which has certain limitations. The rise of deep learning, on the other hand, provides a new approach to acoustic modeling. Deep convolutional neural networks can improve the connectivity between frames, i.e. the closeness of the before and after information, and can achieve an improved level of speech recognition in the process of speech recognition. However, the emergence of accurate speech recognition was marked by the development of the sequence-to-sequence model [5]. Microphones work by measuring small changes in air pressure [6], and we can now hear people speaking because our ears detect small changes in air pressure generated by speakers or headphones. Speech recognition algorithms, which use a segment of an audio graph (an image of air pressure against time) as input, are then fed with the corresponding text. Even the physiological structures in the human ear are able to measure the intensity of different frequencies, rather than processing the original sound waves in their raw form [7]. So a common pre-processing step for sound frequency data is to generate a spectrogram from the sound frequency fragments, inside this graph the horizontal coordinates are time and the vertical coordinates are frequency, with different shades of color indicating energy levels. The spectrogram indicates how much volume is present at different times and at different frequencies.

Speech recognition systems were constructed based on phonemes (the basic units of sound) [8], where researchers divided language into basic sound units, and linguists believed that representing audio in terms of phonemes was the best way to recognize speech. Later, scholars proposed end-to-end structures, which could solve the situation of sequence misalignment during speech recognition [9]. Moreover, there is no need to use phonemes to represent sounds. However, the implementation presupposes that a larger dataset is required. An academic dataset for speech recognition may be 300 hours long, and in the academic community, an audio dataset of 3000 hours would be considered a reasonable size. This paper presents two types of end-to-end speech recognition based on attention models and CTC loss functions respectively. Of these, the CTC loss function is the main core algorithm for the end-to-end architecture [10].

II. PREVIOUS STUDIES

(1) Speech recognition based on attention models

Attentional modeling is a technique for extracting effective features from a sequence of features in a real sequence-to-sequence model. When people observe a scene, they pay different attention to different locations, people, and things within that scene.

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Derived from this phenomenon, attention models calculate a series of attention weights [11]. In speech recognition, a soft attention model is generally used, i.e. the attention weights are calculated for all encoder output data. A speech recognition based on the attention model is shown in the Figure 1.

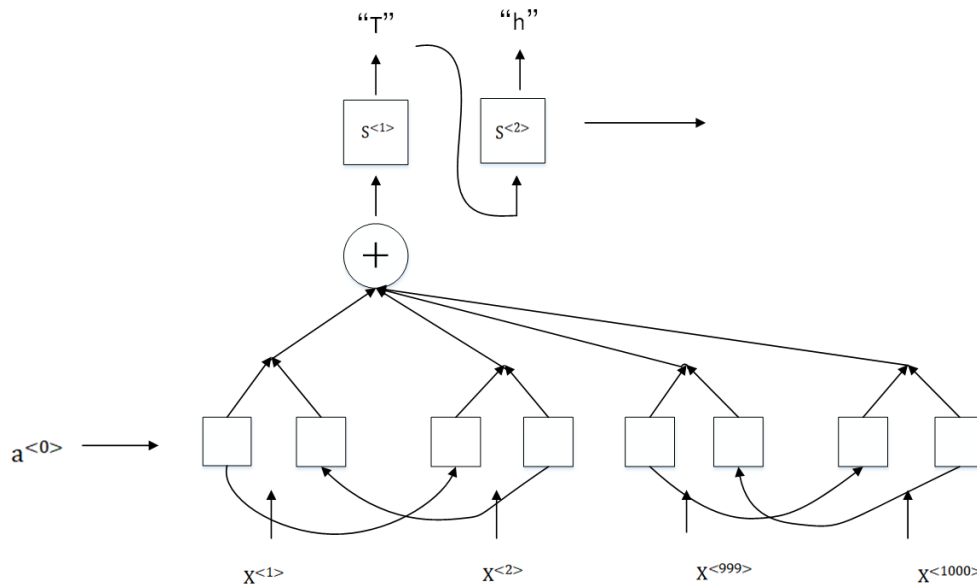


Figure 1 Diagram of speech recognition based on the attention model

The model consists of an encoder, a decoder, and an attention layer. The encoder is represented using a bidirectional RNN, while the decoder is composed using a unidirectional RNN [12]. First, the input data is fed through the bidirectional RNN model, which $\vec{a}^{<t>}$ denotes the time step t in the forward propagation of the activation, and $\overleftarrow{a}^{<t>}$ denotes the time step t in the backward propagation of the activation. $a^{<t'>}$ Connecting these two activation units, their representation of the feature vector at time step t

$$a^{<t'>} = (\vec{a}^{<t'>}, \overleftarrow{a}^{<t'>})$$

The input to a unidirectional RNN depends on the attention layer. The attention layer has an attention sub-network, which contains only one implicit layer and can be $e^{<t,t'>}$ denoted by the sub-network as shown in the following figure.

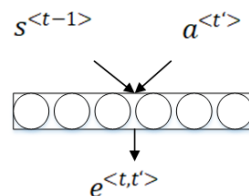


Figure 2 Attentional sub-network

where the first input $s^{<t-1>}$ is the previous step in the neural network decoded at the previous moment and $a^{<t'>}$ is the other input. In simple terms, the amount of attention needed for the input depends mainly on the activation from the previous state. By training this small neural network and back-propagating the algorithm to find the corresponding function utilizing gradient descent.

Then, all moments $e^{<t,t'>}$ are exponentially normalized. The normalized value is the attention weight [13], which can be interpreted as the attention of the output to the input. For example, when the decoder outputs a character, it should pay attention to how much attention is paid to the t' input character is how much. This is shown below.

$$a^{<t,t'>} = \frac{\exp(e^{<t,t'>})}{\sum_{t'=1}^N \exp(e^{<t,t'>})}$$

Finally, the features are weighted and summed over all moments to obtain the output corresponding to the position of the output sequence under the attention model o .

$$o^{<t>} = \sum_{t'} a^{<t,t'>} a^{<t'>}$$

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(2) Speech recognition based on CTC loss function

In the horizontal coordinates, the audio is input at various times and the text is output by the attention model, which is a good approach, but the algorithm is prone to run at a quadratic cost. A better alternative approach to speech recognition is to use the CTC loss function, which stands for Conjointist Temporal Classification [14]. The principle is described in the figure.

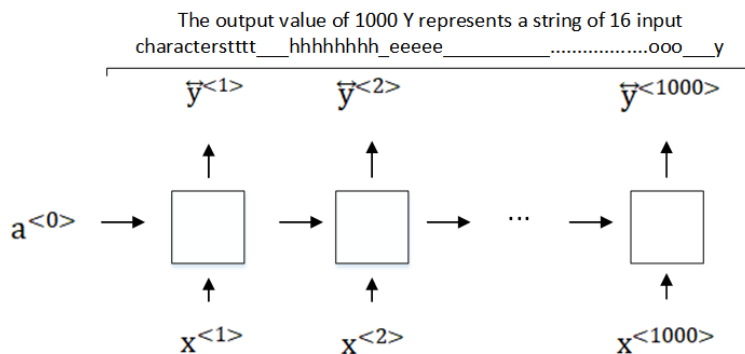


Figure 3 Diagram of speech recognition based on CTC loss function

If there is an audio clip "The handsome boy", a simple one-way RNN is used here, but in practice, this is usually a bi-directional LSTM or bi-directional GRU, usually a deeper model. The important thing to note here is that the times here are large and that in speech recognition the input times usually greatly exceed the output times. For example, if you have 5 seconds of video with features at 50Hz, i.e. 50 samples of data per second, then 5 seconds of audio will be 250 input characters.

$$50\text{Hz} * 5\text{s} = 250$$

The basic principle of the CTC loss function is to collapse repetitive characters that are not split by whitespace, for example, an RNN produces an output sequence "bbbbbb ____ooo_y", which is the correct output for "boy", using underscores to represent a special whitespace character for clarity. a character many times, giving a sequence of 1000 outputs. So by inserting a bunch of whitespace characters, you can still end up with a shorter string of text, so the paragraph above actually has 16 characters, and if somehow it can use the output value of these 1000 Y's to represent a string of these 16 characters.

Both attention-based models and CTC models are viable solutions for speech recognition. Today, building speech recognition systems still require significant effort and data sets.

III. APPLICATION AREAS

(1) Trigger word detection in AI

There is a very important branch in the field of artificial intelligence, natural language processing, which simply means enabling machines to understand human language and communicate with humans. Natural language processing covers machine translation, intelligent retrieval, and more. With the increasing maturity of deep learning, it simplifies the models in natural language processing but improves performance, trigger word detection being an example. As voice recognition is used in more and more smart devices, people can use their voice to command the devices they own, which is known as activating this detection [15].

Examples of activated word detection include Amazon Echo using "Alexa" to wake up, Baidu DuerOS using "Hello Xiaodu", Apple Siri using "Hey Siri" and Google Home using "ok Google". "For example, when a user says "Hello Xiaodu, what time is it? Baidu DuerOS will wake up with "Xiaodu Hello" and answer the corresponding voice question. So, if you can create an activation vocabulary detection system, then it is possible that you can activate your computer to make it do what you want. Activated vocabulary detection is still being adapted, so there is not a single universally default optimal algorithm, so it is described below using RNN. The principle of activated vocabulary detection is shown in the diagram.

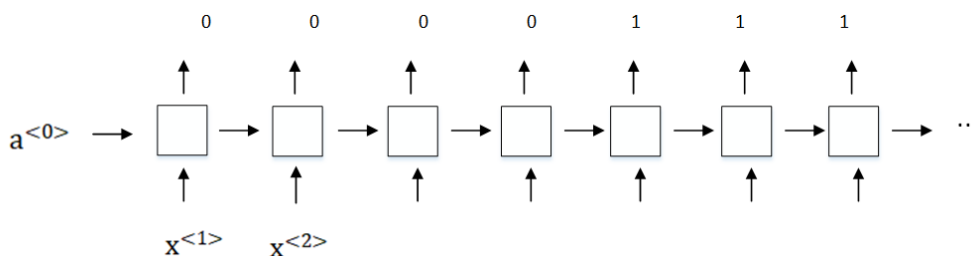


Figure 4 Schematic diagram of trigger word detection

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Taking "Hey Siri" as an example, when "Siri" is heard, the previous target tag in the training set can be set to 0, and the next target tag after it is detected can be set to 1. And so on, when the trigger word is responded to, the next subsequent target tag is set to 1, and the previous target tags are all 0. However, this RNN-based trigger word detection is flawed and can lead to an unbalanced training set with far more zeros than ones.

In terms of improvement, there are two methods. The first method is to set multiple subsequent target tags to 1 relative to a single target tag after a trigger word has been detected. The other method is to set the target tag value to 1 for a certain period after detection. The improvement allows for a balanced ratio of 0s to 1s.

3.2 Affective analysis in teaching

The task of sentiment analysis is to analyze a piece of text and tell people whether someone likes what they are discussing or not. It is the most important component of natural language processing and is used in many applications. There is this sentiment analysis problem. Input a piece of text and the output can be the sentiment that you want to predict. Examples are the emotions such as happiness, sadness, anger, boredom, and fear that students produce in the classroom. Sentiment analysis can use a piece of text to predict whether the students' feelings towards the teacher in class are positive or negative, and then the teacher and school can see if the teacher is having problems or whether the students' attitudes towards the teacher have changed for the better or worse over time. One of the challenges with sentiment analysis is the lack of a particularly large labeled training set in [16], but with the use of word embeddings, it is possible to build a good sentiment analyzer relying on a moderately sized labeled training set in [17]. For sentiment analysis tasks, it is common that the training set may have between 10,000 and 100,000 words of data. Sometimes it is even less than 10,000 words, and word embeddings can help to understand what happens when the training set is small.

(1) Word embedding method

Suppose you have a sentiment analysis model like this. You can take a sentence like "The teacher is excellent" and look up these words in your dictionary. This is shown in the diagram.

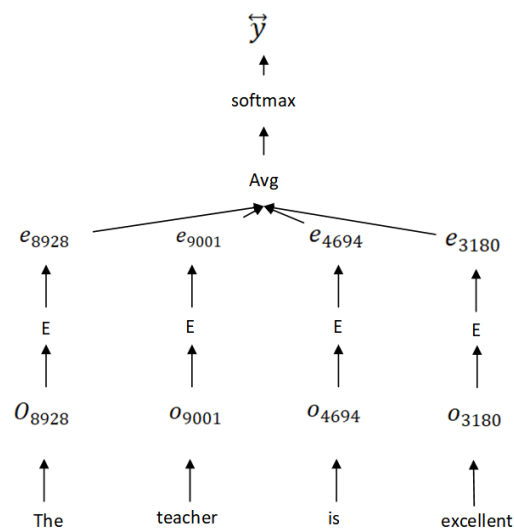


Figure 5 Schematic diagram of word embedded sentiment analysis

This sentence has a total of four terms. First, we get "The {0, 8, 9, 2, 8}", which is the product of the one-hot vector and the embedding matrix E . It can continue to learn into larger text vectors. It can continue to learn from a larger vector of text. This vector is then used to extract the embedding vector for the word "the" e_{8928} . The same operation is then performed for the remaining three words. Finally, the classifier is constructed using the averaging method, averaged over them, and then transferred to the softmax classifier, which outputs the predictions [18].

Although the averaging method gives a better prediction, what it does is average the meanings of all the words in the example. One of the problems with this algorithm is that it ignores the order of the words, particularly, in the case of the following comment, "Completely lacking in good teaching methods, good passion, and good attitude", although this is a negative comment. However, it has multiple occurrences of "good", so if you use the average algorithm output, this ignores the order in which the words are arranged and simply averages all the words. If there are many positive representations in the feature vector. The classifier may simply assume that this is a good rating, which in turn affects the analysis of sentiment, however in reality it is a very negative review.

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(2) Deep learning approach

There is more sophisticated model which not only sums all word embeddings but also performs sentiment analysis using an RNN. The previous steps are similar, find the one-hot vector for each word in the comment, then multiply the word embedding matrix E . You can then use the resulting embedding vectors of multiple words as input to the RNN, and finally predict the outcome through a many-to-one RNN model. This is shown in Figure 6.

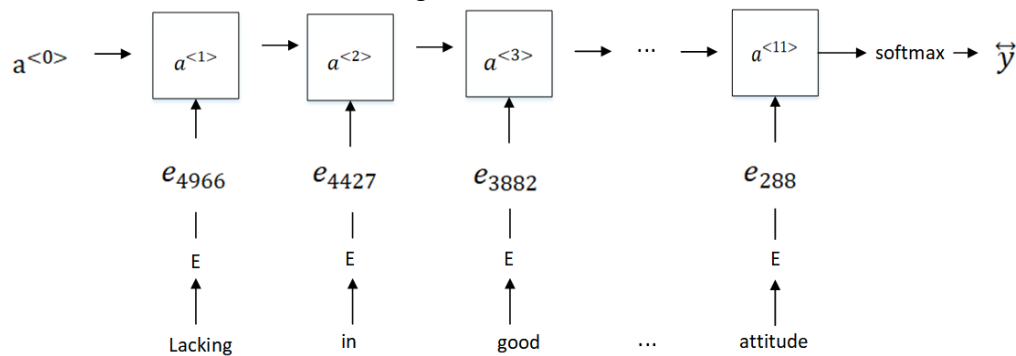


Figure 6 Schematic diagram of deep learning-based sentiment analysis

Like word embedding, the one-hot vector for each word is found and, as usual, multiplied with the word embedding matrix E . Multiple words embedding vectors can then be obtained. These word embedding vectors are used as input to the RNN, which finally computes the predicted sentiment results in the final step. With an algorithm like this, the order of the words can be considered to get better results and to realize that this comment is negative [19]. But the nature of the algorithm differs from the previous algorithm in that it recognizes "not good" as a negative comment. The previous algorithm just added everything into a larger word vector and did not realize that the meaning of "not good" was different from where "good" was used.

A larger dataset could be used to train the word embedding vector and better results obtained. This can even be generalized to words that do not appear in the training set. For example, enter the following text "Completely absent of good teaching methods", even though "absent" is not in your label training set, if it is in the billion-word or 100-billion-word database of the training word embedding vector of billions or hundreds of billions of words, you may be able to get the correct result, or even better generalize to words that are present in the training set of the training word embedding vector, but not necessarily in the label training set. This label training set may have been prepared by the researchers specifically for the sentiment analysis problem.

IV. CONCLUSIONS

This paper focuses on the principles of the attention model and the CTC loss function on the one hand, and the application of RNNs in speech recognition on the other. The end-to-end model based on the attention model does not require a priori alignment information, nor does it require independence tests between phoneme sequences, nor does it require artificial methods such as pronunciation dictionaries, and can be effectively combined with neural networks to achieve speech recognition. CNN, Transducer, and other models for improvement and optimization. On the other hand, two applications of speech recognition under deep learning are introduced. Trigger word detection and sentiment analysis, as promising fields, have been developed for a long time.

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Relationships Between the Achieved Target Levels of LDL Cholesterol and the State of Various Types of LV EF in Patients with Coronary Artery Disease and Type 2 Diabetes.



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ANNOTATION: Today, diabetes mellitus is one of the most powerful risk factors for the development of cardiovascular diseases and its complications. [1] In 50% of patients with type 1 diabetes and in 80% of people with type 2 diabetes, early disability and premature death are recorded due to cardiovascular complications. People with diabetes are often at risk for strokes, heart attacks, and high blood pressure. In this regard, the main strategy for the treatment of patients with diabetes is to prevent the development of cardiovascular complications, which includes strict control of glycemia, blood pressure, as well as antiplatelet and lipid-lowering therapy.

Despite the fact that strict glycemic control alone does not reduce the risk of myocardial infarction and mortality from it, most epidemiological and pathophysiological studies indicate a worse prognosis and a higher incidence of cardiovascular complications in chronic hyperglycemia. The use of a fixed combination of sitagliptin / metformin is one of the preferred options in the treatment of type 2 diabetes in patients with a high risk of cardiovascular disease due to the presence of type 4 dipeptidyl peptidase inhibitors of cardio protective effects. In this paper, changes in the lipid spectrum in patients with ischemic heart disease and type 2 diabetes mellitus with varying degrees of cardiac output are related to the number of years the patient has had diabetes mellitus, sitagliptin / metformin and statin drugs changes depending on the dose are highlighted.

KEYWORDS: dipeptidyl peptidase-4 inhibitors, metformin, type 2 diabetes mellitus, heart failure, average ejection fraction, preserved ejection fraction, lipid spectrum, statin.

INTRODUCTION

Type 2 diabetes mellitus (DM2) is a chronic progressive disease. Half of the patients with DM 2 already had complications, including those from the cardiovascular system, by the time the disease manifested. Cardiovascular diseases are 2–5 times more common in people with diabetes than in people without this pathology [1,4]. By the age of 50, almost 50% of diabetic patients have at least one of them unstable angina, myocardial infarction, life-threatening cardiac arrhythmias, and chronic heart failure rapidly develops.[2] At the same time, there is a high risk of developing conditions such as coronary heart disease (CHD), myocardial infarction (MI), arterial hypertension (AH), and acute cerebrovascular accident (ACVA). Thus, 69% of patients with diabetes have dyslipidemia, 80% have hypertension, 50–75% have diastolic dysfunction, 12–22% have chronic heart failure (CHF).[1] Mortality from MI among patients with DM is 1.5–2 times higher than among people who do not suffer from this disease, both in the acute stage of MI and during long-term follow-up [2]. In this regard, the main strategy for the treatment of patients with diabetes is to prevent the development of cardiovascular complications, which includes strict control of glycemia, blood pressure, as well as antiplatelet and lipid-lowering therapy. The development of vascular complications of type 2 diabetes mellitus is associated with chronic hyperglycemia, so the goal of treating the disease is to compensate for carbohydrate metabolism disorders as fully as

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possible. The lack of an ideal drug for the treatment of patients with type 2 diabetes, which would not only be able to provide high-quality and permanent control of glycemia without weight gain, the risk of hypoglycemia, and a negative effect on the heart, kidneys and liver, but also preserve the secretory function of β -cells, forced scientists to continue the search for new opportunities to influence the cause of the onset and progression of type 2 diabetes.

The attention of the entire diabetic community is drawn to the cardiovascular safety of hypoglycemic drugs. The combination of metformin + DPP-4 inhibitor is associated with a significantly lower risk of adverse cardiovascular events and all-cause mortality.[3] Numerous randomized clinical trials involving sitagliptin / metformin have a strong evidence base that allows you to comprehensively evaluate the hypoglycemic and non-glycemic effects, as well as the safety of use, especially in the group of patients with heart failure-mean ejection fraction. Anti-atherosclerotic properties of DPP-4 inhibitors may be associated with anti-inflammatory activity, improvement of endothelial function, and effects on lipid metabolism. In particular, while taking DPP-4 inhibitors in patients with type 2 diabetes, there was a decrease in the concentration of markers of systemic sluggish inflammation (low grade inflammation), including C-reactive protein, interleukins 1β , 6 and 18, tumor necrosis factor α , secretory phospholipase A2, macrophage activation marker sCD163.[1,5]

MATERIAL AND RESEARCH METHODS

A total of 60 patients with coronary artery disease and 2 patients with concomitant diabetes aged 30 to 70 years were examined. Patients of the main group (n=50) were divided into 2 groups depending on the ejection fraction (EF).

The first group - with an average ejection fraction (HF aEF -40-49%) - n-17.

The second group - with preserved ejection fraction (HFpEF $\geq 50\%$) n- 33.

Work with each patient included: questioning (complaints, anamnesis), physical examination (measurement of height and body weight of the patient with calculation of BMI, as well as examination of the cardiovascular, respiratory, digestive, urinary and endocrine systems). Paraclinical examination included: general analysis of blood and urine, biochemical blood analysis, ECG, echocardiographic examination of the heart, HMECG, daily monitoring of blood pressure, questionnaires using the Moirsky-Green questionnaires to assess adherence.

RESEARCH RESULTS

In the whole sample, the mean experience of DM-2 did not differ between the groups and amounted to 10.05 ± 0.59 and 9.5 ± 0.81 years; according to the number of patients who underwent AMI 7 and 5 ($\chi^2=0.18$); PCI 7 and 7 ($\chi^2=0$); the mean age of patients was 59.3 ± 1.4 and 62.4 ± 2.3 years ($P=0.5$) in the groups with HF aEF and HF pEF, respectively.

To correct the lipid spectrum, patients were prescribed fixed doses (10-20 mg/day) of rosuvastatin from the moment of admission (many patients were already taking a statin). Statin therapy was prescribed for the entire observation period with compliance control.

Monitoring of the patients' condition (clinical and instrumental data, indicators of lipid and carbohydrate metabolism) was carried out at admission and after 1 year of follow-up.

Analysis of the studied indicators depending on the achievement of target levels of LDL cholesterol showed the following. The number of patients who reached the target level of LDL-C was higher in the HFaEF group and amounted to (n-9; 53%) versus (n-12; 36%) in the HFpEF group. Although some patients were already initially at the achieved target level, and continued to take statins at the same dose.

According to the analysis of lipid spectrum indicators (Table 3.3.1), in patients with HFaEF, the average values of TC were: in the initial state 129 ± 12.17 mg/dL; after a year of observation 110.5 ± 9.92 mg/dl (in relation to the initial state $t= 1.177$; $P=0.09$); and in the comparison group with HFpEF: at the beginning of the observation 193.75 ± 9.38 mg/dl; after a year of observation 144.83 ± 1.42 mg/dl (in relation to the initial state $t= 5.150$; $P=0.01$). That is, the severity of the decrease in the level of total cholesterol was determined by the level of cholesterol at the beginning of the observation. And the difference in reduction was 18.5 ± 3.69 mg/dL (HFaEF) VS 48.91 ± 7.96 mg/dL ($t=-3.46589900$; $P=0.04$).

Comparing the parameters of LDL cholesterol in the analyzed subgroups, we see the following features. In the group of patients with HFmean LDL EF decreased from 54 ± 11.04 mg/dl to 39.75 ± 7.52 mg/dl ($t= -1.066$; $P=0.5$) ($t= -2.820$; $P=0.04$), in the HF HF group from 82.75 ± 15.10 mg/dl ($t= -1.183$; $P=0.5$) to 64.16 ± 4.28 mg/dl ($t= -1.183$; $P= 0.5$). Despite a significant difference in the level of reduction between groups ($t=2.820$; $P<0.05$). Although this difference was not significant in terms of Δ reduction in LDL-C and amounted to 18.58 ± 10.81 in the group with HF and 14.25 ± 5.02 mg/dL ($t=-0.363$; $P>0, 5$).

A similar situation is repeated with the content of triglycerides. Initially, the initial levels of triglycerides differed in subgroups and in the group with HFpEF was significantly higher than in the group with HFaEFF was 220.83 ± 4.89 mg/dl versus 167.33 ± 19.44 mg/dl

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($t=-2.667$; $P=0.04$). A distinctive feature is the degree of severity of the level of TG. Аналогичная ситуация повторяется и с содержанием триглицеридов. A distinctive feature is the degree of severity of the level of TG. In the group of patients with the target level of LDL-C with HF pEF, the decrease in TG was pronounced and amounted to 202.66 ± 0.61 mg/dL ($t= -3.679$; $P<0.05$), compared with the decrease in TG in the subgroup with HF aEF 164.55 ± 18.93 mg/dL ($t=-0.102$; $P=0.5$). But according to the degree of decrease in the difference in ΔTG in the group with HF aEF, there was no decrease in TG 2.77 ± 11.42 mg/dL ($t=-2.667$; $P=0.04$), in comparison with the group of HF pEF $18.16 \pm 5, 51$ mg/dL ($t=-1.213$; $P=0.4$). Perhaps the results obtained can be explained by a decrease in the level of PPG in this subgroup (HF pEF), because they are interconnected.

The eGFR indices in the subgroups did not change for the worse, and were before and after treatment in the HF aEF and HF pEF groups, respectively: 66.9 ± 8.32 vs 61.8 ± 5.72 and 69 ± 8.57 vs 74 ± 2.04 .

Biochemical parameters depending on the achievement of target levels of LDL-C (70 mg/dl) in patients with coronary artery disease with DM 2 with HF aEF and HF pEF before and after treatment (M \pm m).

Indicators	CH ср ФВ (n-9)		CH с ФВ (n-12)	
	До лечения	После лечения	До лечения	После лечения
Total cholesterol, mg/dl	141,7 \pm 18,7	116 \pm 9,58###	193 \pm 9,38	144 \pm 1,42**
CHLDP, mg/dl	68,4 \pm 17,4	43,5 \pm 7,64###	82,7 \pm 15,1	64,1 \pm 4,28
CHHDL,mg/dl	32 \pm 2,81	37 \pm 3,31	31,9 \pm 3,67	35,6 \pm 1,02
CHVLDP, mg/dl	32,8 \pm 3,54	32 \pm 3,75###	77,5 \pm 1,02	63 \pm 0,61**
TG, mg / dL	167 \pm 19,4	164 \pm 18,9#	220 \pm 4,89	202 \pm 0,61**
GFR,ml/min/1.73m ²	66,9 \pm 8,32	61,8 \pm 5,72	69 \pm 8,57	74 \pm 2,04
PCI, (number)	7		7	0(χ^2)
PICS, (number)	7		5	0,18(χ^2)
DM (years)	10,5 \pm 0,59		9,5 \pm 0,81	
Дозы С/М, мг	61,1/705,5 \pm 7,34/82,6	61,1/705,5 \pm 7,34/82,6	62,5/850 \pm 10,2/30,61	54,1/850 \pm 10,2/30,61
Doses S/M, mg	18,8 \pm 2	19,4 \pm 0,55	19,7 \pm 4,26	17,9 \pm 2,04
Fasting blood glucose, mmol/l	8,6 \pm 0,42	7,57 \pm 0,42*	11,1 \pm 0,75	9 \pm 0,97
Postprandial blood glucose, mmol/l	13,6 \pm 1,26	10,3 \pm 0,52	14,8 \pm 2,24	11,6 \pm 1,95*
HbA1,%	7,64 \pm 0,59	7,28 \pm 0,22###	9,8 \pm 0,64	8,35 \pm 0,31*

* $P<0.05$; ** $P<0.01$, *** $P<0.001$ between baseline and stage of therapy in the analyzed groups.

CONCLUSION

The increase in blood sugar and lipid index was an interrelated process, and in both groups a positive change in lipid profile was noted as a result of the pleiotropic effect of the drug metformin. In the 1st group 9 (52.9%) and in the 2nd group 12 (36%) patients reached the target level for CHLDLP. CHVLDP and TG in the HF pEF group decreased significantly after treatment compared with the HF aEF group. Blood sugar levels also dropped significantly. Changes in the parameters of the lipid spectrum in patients with HF pEF do not depend on the state of carbohydrate metabolism compensation. While in the group of patients with HF aEF content is 1.3 times lower, especially at the final stage ($t=3.061$; $P=0.003$), the CHLDLP in the outcome is 1.6 and after treatment is 2.1 times lower in terms of compared with the group of heart failure with pEF, especially in decompensated patients with the same doses of statins and sitagliptin / metformin.

The combination of sitagliptin/metformin in the regimen of hypoglycemic therapy in patients with type 2 diabetes is well tolerated by patients and did not cause hypoglycemia.

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The Network EPES8–2



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ABSTRACT: The article presents the EPES8–2 network with two round functions using the same algorithm for encryption and decryption.

KEYWORDS: Feystel network, Lai-Massey scheme, encryption, decryption, round keys, round functions.

INTRODUCTION

Currently, block encryption algorithms based on the Feystel network are widely used. Block encryption algorithms based on the Feystel network include encryption algorithms such as DES, GOST 28147-89, as well as block encryption algorithms such as CAST-256, DFC, E2, LOKI97, which participated in the competition announced by NIST. The advantage of this network is that a single algorithm is used for encryption and decryption, only the encryption round keys are used in reverse order for decryption. Encryption and decryption processes of the Feistel network can be expressed by the following formulas:

$\begin{cases} L_i = R_{i-1} \\ R_i = L_{i-1} \oplus F(R_{i-1}, K_i) \end{cases}, i = \overline{1..n} \quad (1)$	$\begin{cases} R_{i-1} = L_i \\ L_{i-1} = R_i \oplus F(L_i, K_i) \end{cases}, i = \overline{n..1} \quad (2)$
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The PES [7] block encryption algorithm was developed in 1990 and is based on the Lai-Massey scheme. In 1991, the authors modified this block encryption algorithm and named it IDEA [8]. In these block encryption algorithms, round keys $2^{16} + 1$ are multiplied by the module on the part blocks, 2^{16} added by the module, and in MA transformation, $2^{16} + 1$ modular multiplication, 2^{16} module addition operations are used, i.e. not used operations such as shift, substitution with S-box, etc. However, a single algorithm is used in encryption and decryption, as well as encryption round keys are used in reverse order in decryption, just like the Feistel network. The IDEA NXT block encryption algorithm is based on the extended Lai-Massey scheme developed by P. Junod, S. Vaudenay. Later, the IDEA NXT algorithm came to be known as FOX [9]. Using the structure of the PES block encryption algorithm, networks with round function PES4–2, PES8–4, PES32–16 and PES2m–m were created [1-6].

In this article based on the structure encryption algorithm PES the EPES8–2 (extended PES) network was developed, which consists of eight subblocks and two round functions.

NETWORK STRUCTURE

In the proposed EPES8-2 network, the operations \otimes (mul), \boxplus (add) ва \oplus (xor) can be used as operations z_0, z_1, z_2, z_3 . Here \otimes – multiplication of 32 (16, 8) bit blocks by module $2^{32} + 1 (2^{16} + 1, 2^8 + 1)$, \boxplus – addition of 32 (16, 8) bit blocks by module $2^{32} (2^{16}, 2^8)$ and \oplus – addition of 32 (16, 8) bit blocks by XOR. It is possible to create block encryption algorithms with a block length of 256 bits when the length of the subblocks of the network is 32 bits, 128 bits with a block length of 16 bits, and 64 bits with a block length of 8 bits. The network encryption formula (3) and the functional scheme are shown in Figure 1.

$\left\{ \begin{array}{l} X_i^0 = (X_{i-1}^2(z_1)K_{10(i-1)+2}) \oplus T_i^0 \oplus T_i^1 \\ X_i^1 = (X_{i-1}^3(z_1)K_{10(i-1)+3}) \oplus T_i^0 \\ X_i^2 = (X_{i-1}^0(z_0)K_{10(i-1)}) \oplus T_i^0 \oplus T_i^1 \\ X_i^3 = (X_{i-1}^1(z_0)K_{10(i-1)+1}) \oplus T_i^0 \\ X_i^4 = (X_{i-1}^6(z_3)K_{10(i-1)+6}) \oplus T_i^0 \oplus T_i^1 \\ X_i^5 = (X_{i-1}^7(z_3)K_{10(i-1)+7}) \oplus T_i^0 \\ X_i^6 = (X_{i-1}^4(z_2)K_{10(i-1)+4}) \oplus T_i^0 \oplus T_i^1 \\ X_i^7 = (X_{i-1}^5(z_2)K_{10(i-1)+5}) \oplus T_i^0 \end{array} \right., i = \overline{1 \dots n}$	(3)
$\left\{ \begin{array}{l} X_{n+1}^0 = (X_n^0(z_0)K_{10n}) \\ X_{n+1}^1 = (X_n^1(z_0)K_{10n+1}) \\ X_{n+1}^2 = (X_n^2(z_1)K_{10n+2}) \\ X_{n+1}^3 = (X_n^3(z_1)K_{10n+3}) \\ X_{n+1}^4 = (X_n^4(z_2)K_{10n+4}) \\ X_{n+1}^5 = (X_n^5(z_2)K_{10n+5}) \\ X_{n+1}^6 = (X_n^6(z_3)K_{10n+6}) \\ X_{n+1}^7 = (X_n^7(z_3)K_{10n+7}) \end{array} \right., \text{ in the output transformation}$	

where T_i^0, T_i^1 round functions are described in the following formulas:

$$T_i^0 = F_0(((X_{i-1}^0(z_0)K_{10(i-1)}) \oplus (X_{i-1}^2(z_1)K_{10(i-1)+2})) \oplus ((X_{i-1}^4(z_2)K_{10(i-1)+4}) \oplus (X_{i-1}^6(z_3)K_{10(i-1)+6})), K_{10(i-1)+8}),$$

$$T_i^1 = F_1(((X_{i-1}^1(z_0)K_{10(i-1)+1}) \oplus (X_{i-1}^3(z_1)K_{10(i-1)+3})) \oplus ((X_{i-1}^5(z_2)K_{10(i-1)+5}) \oplus (X_{i-1}^7(z_3)K_{10(i-1)+7})), K_{10(i-1)+9})$$

In the network EPES8–2 the length of round keys $K_{10(i-1)}, K_{10(i-1)+1}, \dots, K_{10(i-1)+7}, i = \overline{1 \dots n+1}$, the input and output bits of round functions F_0, F_1 is equal (16, 8) bits. The length of round keys $K_{10(i-1)+8}, K_{10(i-1)+9}, i = \overline{1 \dots n}$ optional to 32 (16, 8) bits.

The Network EPES8-2

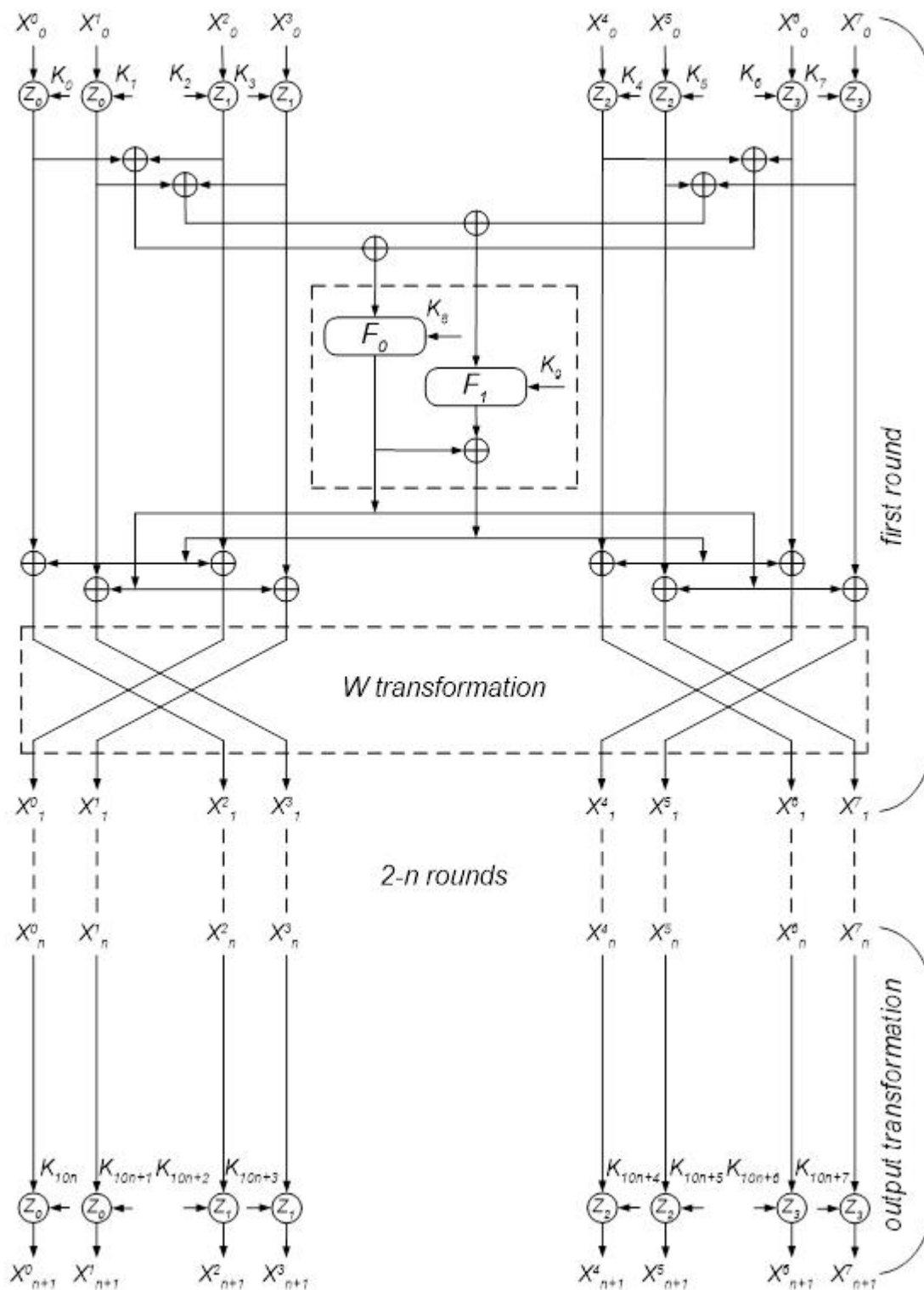


Figure 1. The scheme of EPES8-2 network

In W transformation in each round the subblocks X^0_{i-1} and X^2_{i-1} , X^1_{i-1} and X^3_{i-1} , X^4_{i-1} and X^6_{i-1} , X^5_{i-1} and X^7_{i-1} will be replaced between themselves. Based on the replacement of subblocks, each variant of networks EPES8-2 can be built. The networks represented in fig.1 accept as first variants,

- only subblocks X^0_{i-1} and X^2_{i-1} , X^4_{i-1} and X^6_{i-1} , $i = \overline{1..n}$ replaced, as second variant
- subblocks not replaced, as third variant,
- only subblocks X^1_{i-1} and X^3_{i-1} , X^5_{i-1} and X^7_{i-1} , $i = \overline{1..n}$ replaced, as fourth variant can be accepted as a network.

The Network EPES8-2

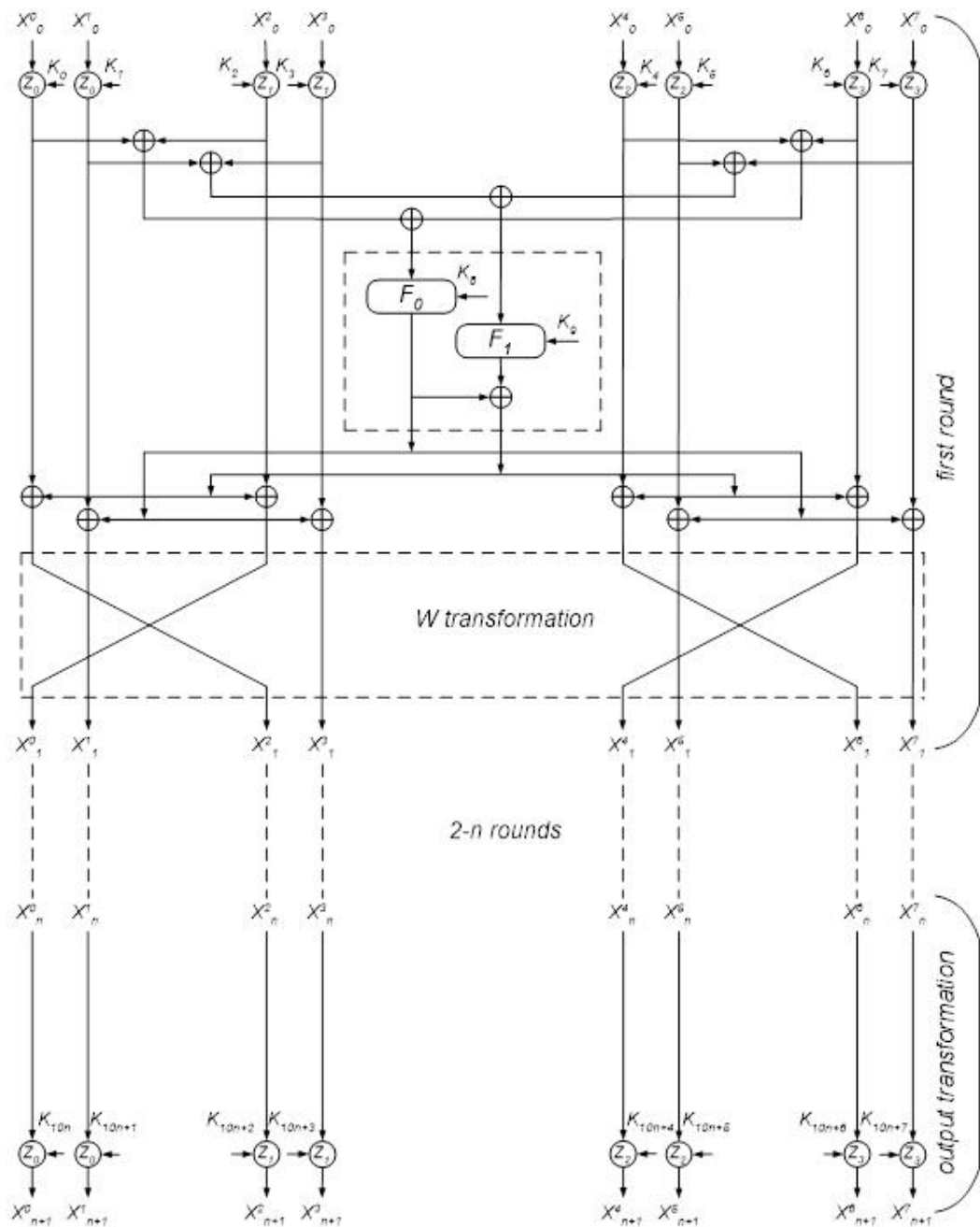


Figure 2. The scheme of second variant EPES8-2 network

The Network EPES8-2

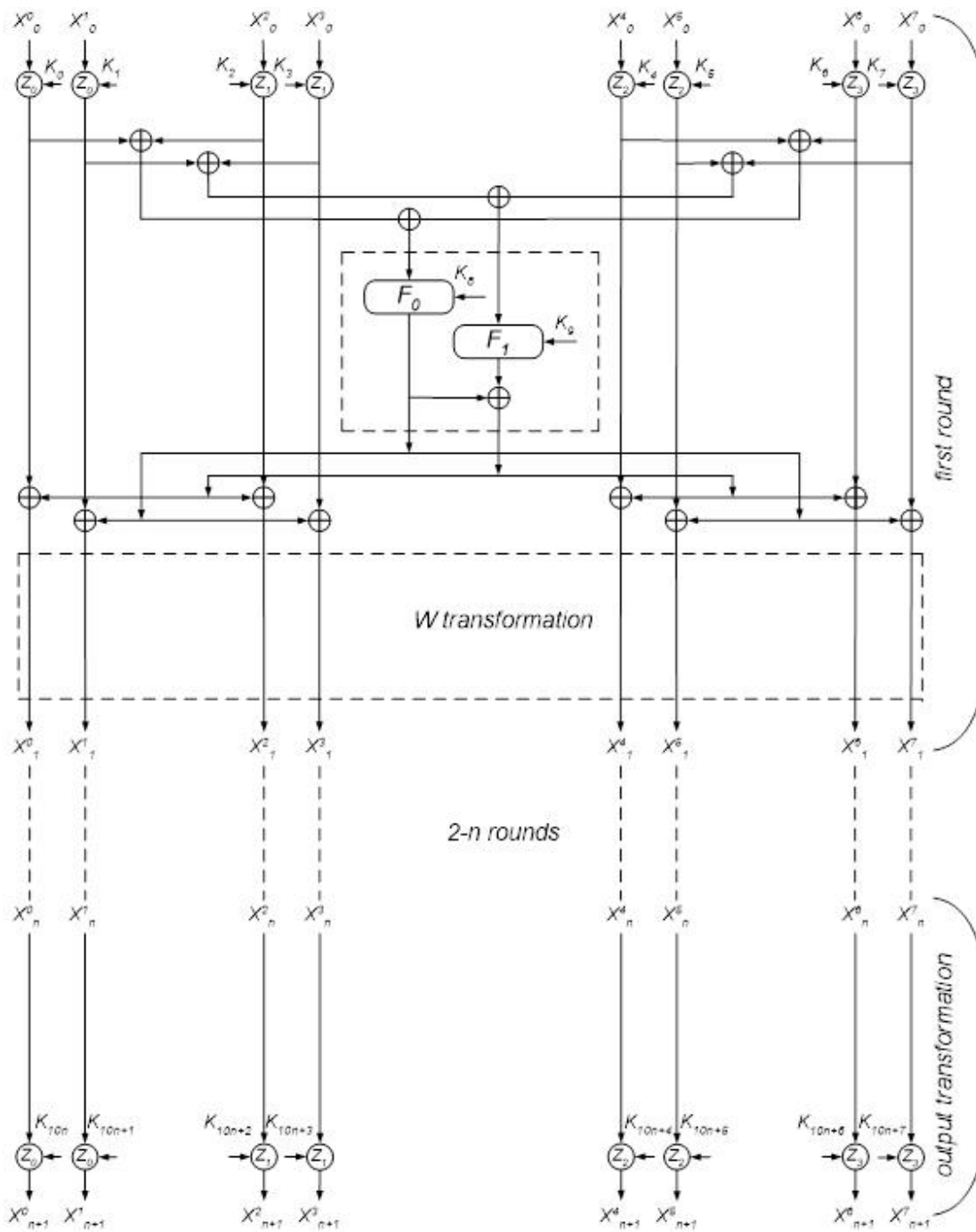


Figure 3. The scheme of third variant EPES8-2 network

The Network EPES8-2

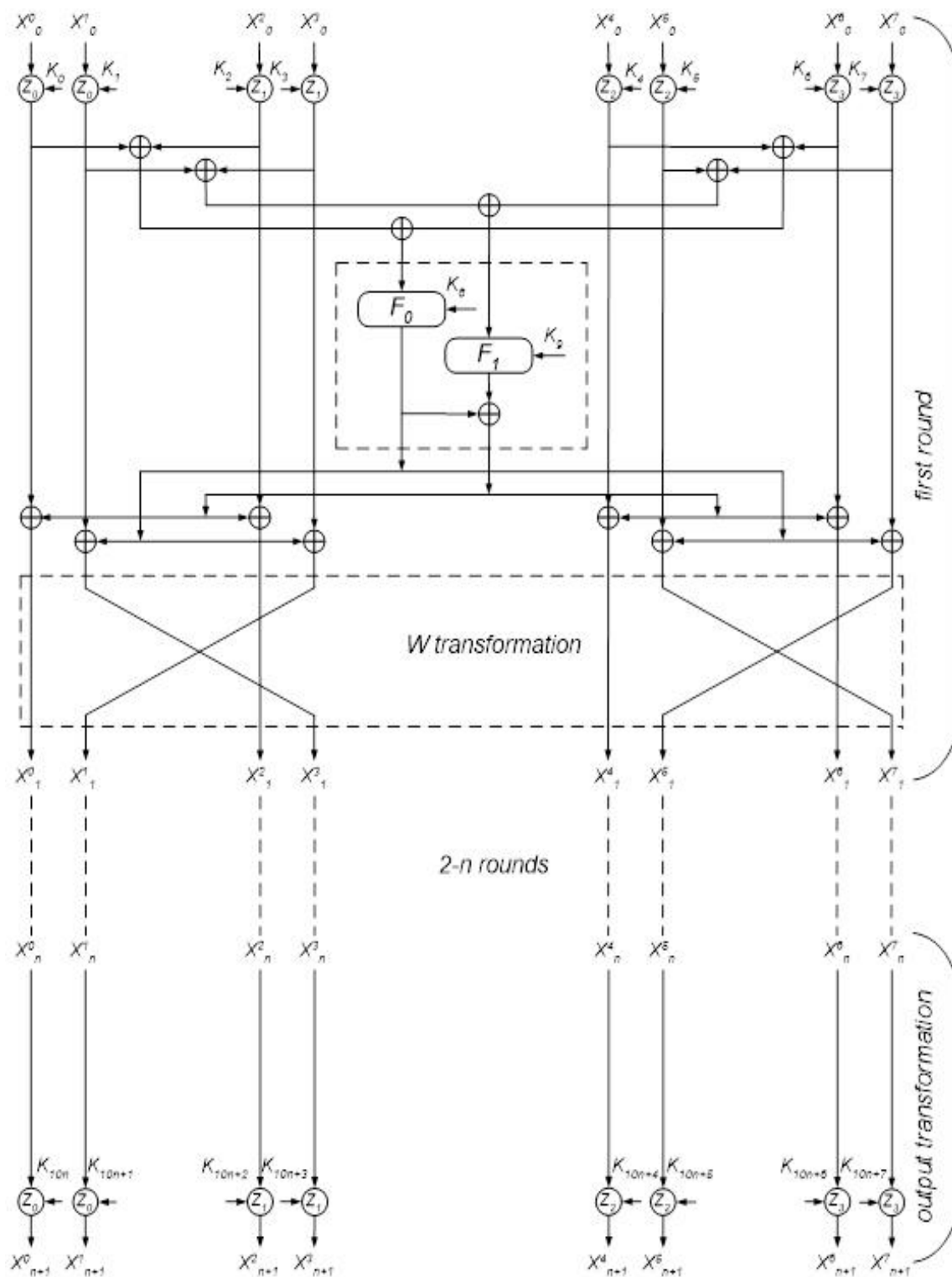


Figure 4. The scheme of fourth variant EPES8-2 network

KEYS GENERATION

n – rounded EPES8-2 network, in each round applied 10 round keys and in the output transformation applied 8 round keys, i.e. the total number of round keys is $10n+8$. In encryption, the basis of key K generating encryption round keys K_i^c . Decryption round keys K_i^d are created based on encryption round keys K_i^c . In encryption process in Figure 1 and formula (3), uses an encryption round key K_i^c instead of K_i and decryption process uses a decryption round key K_i^d , i.e. a single algorithm is used for encryption and decryption, only the order of the round keys. The n -round EPES8-2 network in all variants The first, second and n -round decryption round keys are associated to the encryption round keys as follows:

The Network EPES8–2

$$\begin{aligned} & (K_{10(i-1)}^d, K_{10(i-1)+1}^d, K_{10(i-1)+2}^d, K_{10(i-1)+3}^d, K_{10(i-1)+4}^d, K_{10(i-1)+5}^d, K_{10(i-1)+6}^d, K_{10(i-1)+7}^d, K_{10(i-1)+8}^d, K_{10(i-1)+9}^d) = \\ & ((K_{10(n-i+1)}^c)^{z_0}, (K_{10(n-i+1)+1}^c)^{z_0}, (K_{10(n-i+1)+2}^c)^{z_1}, (K_{10(n-i+1)+3}^c)^{z_1}, (K_{10(n-i+1)+4}^c)^{z_2}, (K_{10(n-i+1)+5}^c)^{z_2}, \\ & (K_{10(n-i+1)+6}^c)^{z_3}, (K_{10(n-i+1)+7}^c)^{z_3}, K_{10(n-i)+8}^c, K_{10(n-i)+9}^c), i = \overline{1 \dots n}. \end{aligned} \quad (4)$$

If z_0, z_1, z_2, z_3 applied as \otimes operations, then $K = K^{-1}$, \boxplus operations are applied, then $K = -K$ and \oplus are applied, then $K = K$, here K^{-1} – multiplication inversion K by modulo $2^{32} + 1$ ($2^{16} + 1, 2^8 + 1$), $-K$ - additive inversion K by modulo 2^{32} ($2^{16}, 2^8$). For 32 bit numbers $K \otimes K^{-1} = 1 \pmod{2^{32} + 1}$, 16 bit numbers $K \otimes K^{-1} = 1 \pmod{2^{16} + 1}$, 8 bit numbers $K \otimes K^{-1} = 1 \pmod{2^8 + 1}$ and $-K \boxplus K = 0, K \oplus K = 0$.

The decryption round keys of the output transformation are associated with encryption round keys as follows:

$$\begin{aligned} & (K_{10n}^d, K_{10n+1}^d, K_{10n+2}^d, K_{10n+3}^d, K_{10n+4}^d, K_{10n+5}^d, K_{10n+6}^d, K_{10n+7}^d) = ((K_0^c)^{z_0}, (K_1^c)^{z_0}, (K_2^c)^{z_1}, \\ & (K_3^c)^{z_1}, (K_4^c)^{z_2}, (K_5^c)^{z_2}, (K_6^c)^{z_3}, (K_7^c)^{z_3}). \end{aligned} \quad (5)$$

RESULTS

In article on the basis of the encryption algorithm PES developed EPES8–2 network. In developed network as round function can choose any transformation, including one-way functions. Because when decryption no need to calculate inverse round functions. The advantage of the developed networks is that the encryption and decryption using the same algorithm. It gives comfort for creating hardware and software-hardware tools.

In addition, as the round function using the round function of the existing encryption algorithms for example, encryption algorithms based on Feistel networks, you can develop these algorithms on the basis of the above networks.

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ICT Skills, E-Supervision Scheme of School Heads, And Teacher Development in Distance Learning Among Selected Private Schools in Cainta



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ABSTRACT: The study aimed at examining the interplay the relationship among the ICT skills, e-supervision scheme of school heads, and teacher development in distance learning which longed to be a valuable undertaking in the time of pandemic where alternative delivery mode of education is implemented; skills of school heads in Information and Communication Technology (ICT) have been challenged and brought impact to their administrative and academic role. Descriptive-correlational design was employed. The study revealed that school heads had very high ICT skills level in terms of utilization and competence, had very high e-supervision scheme level in terms of video conferencing, instant messaging, and office suite, and very high level of teacher development in distance learning. Correlation indicated that the higher the ICT skills level of school heads' in terms of competence and utilization, the better is their e-supervision scheme and teacher development in distance learning. In essence, these findings demonstrate importance to maintain the high-level ICT skills, e-supervision scheme of school heads, and teacher development in distance learning, Similarly, data served as basis for a training program to make the school heads' skills level higher on the indicators that ranked last.

KEYWORDS: ICT Skills, E-supervision, Teacher Development, Distance Learning, Descriptive-correlational study, Philippines.

INTRODUCTION

UNICEF 2019 Annual Report: Information and Communication Technology Division stated that over the past two decades, the advent of digital information and communication technologies (ICTs) has expanded and spread rapidly [1]. Notably, the integration of ICT into education has become a process whose implications go far beyond the technological tools nurturing the educational environment [2]. Specifically, ICT integration in basic education classrooms in the Philippines has been progressively embraced and has brought impacts on the technical core, administrative tasks, and innovative processes in schools. Without a doubt, ICT has become essential in teaching and learning in classrooms, in educational management, and in improving the functional effectiveness of school systems [3]. The application of ICT in school administration is indeed a necessity and worthwhile venture especially in this era of globalization.

From the above-mentioned premises, it depicts that ICT skills are an indispensable skill of a school head to facilitate an e-supervision scheme in the implementation of curriculum during distance learning. ICT offers unprecedented opportunities to the education systems with its capacity to integrate, enhance and interact with each other over a wide geographic distance in a meaningful way to achieve the learning objectives [4]. The studies made by Eremie and Agi [5], and Ibrahim, Adu-Gyamfi, and Kasim [6] identified the ICT skills needed by principals and application tools relevant to school administration which enhance efficient management of educational resources and gives direct effect on improving the effectiveness of administrative functions of an institution. Hence, leading through this uncertain time requires leadership that is flexible and can adapt to changing circumstances [7]. The transformation of the practice of supervision in schools should be implemented so as to produce a positive impact on teachers [8]. Meanwhile, in the study of Lapid [9], and Iroegbu and Eyo [10] explained the objective of supervision in an online environment which serves as a mechanism to evaluate and validate teachers' performance towards the achievement of school goals, aims and objectives. However, the principals experienced several obstacles in conducting online-based academic supervision due to the absence of standard

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applications provided by the government to facilitate the process of supervision [11]. Also, the extent of their application is very slow as school administrators are incompetent in handling ICT facilities for the effective administration of schools [12]. Further, the COVID-19 pandemic brought about an alternative delivery mode of education utilizing ICT, challenging school heads to a greater extent for their administrative and supervisory role.

Teacher development on the other hand creates readiness and effective delivery of distance learning. Wilichowski and Cobo explained the importance of developing teachers' pedagogical skills which is needed to critically assess and decide when and how to incorporate digital tools, and realistically define their impact to support or enhance learning [13]. Teachers need specific professional development opportunities in order to increase their ability to use ICT for formative learning assessments, individualized instruction, accessing online resources, and fostering student interaction and collaboration [14]. Remarkably, in the study of Kim and Lee [15], they explained that principals can have more impact on teacher development by formally arranging opportunities and resources for teachers' collaborative learning. Principals need to devise professional improvement programs to help teachers implement digital teaching practices [16]. It is therefore recommended to provide more training in the context of technology during distance education [17]. Consequently, in the study of Gustafson & Haque [18] stated that professional development could actually be easier in a virtual school however professional development on best practices in online teaching was actually very limited. Thus, the British Council [19] found out that teacher educators and teachers feel they need more training and support in how to teach online. This study aimed to determine the level and relationship of the ICT skill, e-supervision scheme of school heads, and teacher development in distance learning. The findings of the study may serve as guide in the enhancement of school heads' ICT skills, online supervision, and implementation of teacher development in distance learning.

METHODS

The study used descriptive-correlational research design since it determined the level of ICT skills, level of the e-supervision scheme of school heads, and level of teacher development in distance learning among selected private schools in Cainta of Academic Year 2021-2022. Likewise, it determined the relationship that exist among variables and their correlations. Data used in the investigation came from 174 teachers of five private schools in Cainta of Academic Year 2021-2022. Out of 174 teachers, Raosoft Calculator was used arriving at 120 sample respondents who were given research instruments through Google Form. All the respondents were able to accomplish and return the completed survey questionnaire, representing 100 percent retrieval rate.

The researcher used a survey questionnaire with three parts. Part 1 dealt with the level of ICT skill of the school head. Part 2 pertained to the level of the e-supervision scheme of the school head. Part 3 covered the level of teacher development in distance learning. All parts of the questionnaire were measured using the four-point Likert Type Scale: Strongly Agree (3.25-4.00), Agree (2.50-3.24), Disagree (1.75-2.49), Strongly Disagree (1.00-1.74). Notably, the researcher personally wrote a letter to the Schools Division Superintendent for her approval to conduct the study. Afterwards, the researcher sought permission to the school heads among selected private schools in Cainta for the distribution of research instrument through Google Form. After gaining permission, link to the survey questionnaire were distributed to respondents through their respective school head. To make sure that data gathered were precisely treated; weighted mean was used to describe the school heads' ICT skills in terms of competence and utilization, e-supervision scheme of school heads in terms of instant messaging, office suite and videoconferencing, and teacher development in distance learning. Pearson r Moment Correlation Coefficient was utilized to determine the significant relationship between the school heads' ICT skills and e-supervision scheme, ICT skills of school heads and teacher development, and e-supervision scheme of school heads and teacher development.

RESULTS AND DISCUSSION

Discussion of the ICT skills, e-supervision scheme of school heads, and teacher development in distance learning is presented in the succeeding tables and textual presentation.

It is depicted in Table 1 that school heads got a very high overall weighted mean of 3.46 as the respondents strongly agreed with the indicators of their ICT skills in terms of competence. It implies that they are competent in providing an ICT driven educational environment and learning communities. This finding is aligned with the statement of Leong, Chua, & Sathiamoorthy [20] that principals stay abreast of emerging trends regarding effective use of technology; model and promote effective communication and collaboration among school communities using ICT; and encourage evaluation of new technologies potential to improve student learning. It depicts

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that school heads competence as postulated by Griffin, McGraw, & Care (cited in Al-Khateeb) [21] involves (digital) skills which exceed searching for information online, and includes more demanding services and advanced expertise such as problem-solving, sharing, and collaborating with peers. However, it debunks Abraham et.al [22] observation that the principal's knowledge of ICT is basic with the goal that systems can be set up to make organizational procedures progressively effective, including the work of faculty to oversee and direct the ICT foundation.

Table 1. ICT Skills Level of School Heads in Terms of Competence

Indicators	Weighted Mean	Categorical Response	Verbal Interpretation
1. demonstrates the use of technological tools, online applications, or software	3.54	Strongly Agree	Very High
2. solves technological issues encountered by teachers	3.37	Strongly Agree	Very High
3. implements technology-infused organizational procedures	3.48	Strongly Agree	Very High
4. evaluates teacher competence in an online platform	3.47	Strongly Agree	Very High
5. provides technology learner-centered environment to meet the diverse need of learners	3.51	Strongly Agree	Very High
6. facilitates learning sessions to update teachers' digital skills	3.39	Strongly Agree	Very High
Overall Weighted Mean	3.46		Very High

From the data shown in Table 2, school heads got a very high overall weighted mean of 3.70 as the respondents strongly agreed with the indicators of their ICT skills in terms of utilization. This suggests that they utilize information and communication technologies in their administrative and supervisory functions. Likewise, it confirms that principals utilize information technology to acquire information to analyze existing situations, identify problems in school, facilitate communication between and among stakeholders, evaluate the desirability and feasibility of policy options, and access online schools' historical records to evaluate current performance [23]. It also conforms with the study of Abraham et.al [22] that principals had high proficiency in the usage of the following ICT materials; internet for accessing the information on the computer, email to communicate with colleagues, family, and friends, computer for performing assignments, computer for keeping records/data, computer for making a presentation, computer for teaching, browse on the internet using different websites, projector for doing presentations, Microsoft word, excel, and PowerPoint for document preparation. Moreover, the data supports the study of Barrido and Abadiano [24] that academic heads have very high utilization of ICT application tools because as academic heads, they encouraged the use of PowerPoint during instruction, applied PowerPoint presentation in giving instruction, and in the conduct of in-house training, applied ICT applications to prepare the school, teacher and staff meetings, announcements and reports, and being an academic head they have the basic skills of using ICT in school daily administrative and management job.

Table 2. ICT Skills Level of School Heads in Terms Utilization

Indicators	Weighted Mean	Categorical Response	Verbal Interpretation
1. communicates or sends feedback through several online communication tools such as e-mail, messenger, etc.	3.67	Strongly Agree	Very High
2. disseminates information through	3.72	Strongly Agree	Very High

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several online communication tools such as e-mail, messenger, Viber, etc.			
3. collaborates to create academic plans using office suite or productivity applications like online spreadsheets, Google Docs, Slides, etc.	3.66	Strongly Agree	Very High
4. conducts meetings, orientations, and workshops via an online platform like Zoom, Google Meet, etc. with the use of advanced features of the communication tools used to enhance the presentation	3.74	Strongly Agree	Very High
5. supervises teaching-learning processes via online platforms such as Zoom, Google Meet, etc.	3.67	Strongly Agree	Very High
6. shares documents and/or teaching materials using cloud-based storage solutions like Google Drive	3.68	Strongly Agree	Very High
7. uses cloud-based storage solutions like Google Drive in collecting academic reports and learning materials i.e. class records, learners' profiles, learning plans, learning videos, etc.	3.74	Strongly Agree	Very High
Overall Weighted Mean	3.70		Very High

Table 3. Summary Table of School Heads' ICT Skills

Indicators	Weighted Mean	Categorical Response	Verbal Interpretation
1. Competence	3.46	Strongly Agree	Very High
2. Utilization	3.70	Strongly Agree	Very High
Overall Weighted Mean	3.58		Very High

The composite table presented in Table 3 reflects that the school heads have a very high level of ICT skills (mean = 3.58). It implies that school heads are abreast in the use of different ICT tools and applications. The finding is in conformity with Hernandez [2] statement that the integration of ICT into education has become a process whose implications go far beyond the technological tools nurturing the educational environment. It strengthened the idea postulated by Tyagi et. al [25] that technical competence mainly encompasses handling hardware and software, and application competence include the capability to handle and make use of ICT for specific purposes, personal and professional applications. The finding is also related to the study of Barrido & Abadiano [26] which stated that academic heads have very high utilization of ICT application tools during instruction, in giving instruction, and in the conduct of in-house training, applied ICT applications to prepare the school, teacher and staff meetings, announcements and reports.

Table 4. School Heads' E-Supervision Scheme

Indicators	Weighted Mean	Categorical Response	Verbal Interpretation
Instant Messaging 1. lesson plan review	3.30	Strongly Agree	Very High

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2. assessment of online instructional materials	3.46	Strongly Agree	Very High
3. virtual classroom observation and monitoring	3.54	Strongly Agree	Very High
4. monitoring of learners' needs, progress, and achievements	3.53	Strongly Agree	Very High
5. feedbacking, coaching, and/or mentoring	3.42	Strongly Agree	Very High
Average	3.44		Very High
Office Suite			
1. lesson plan review	3.34	Strongly Agree	Very High
2. assessment of online instructional materials	3.48	Strongly Agree	Very High
3. virtual classroom observation and monitoring	3.50	Strongly Agree	Very High
4. monitoring of learners' needs, progress, and achievements	3.45	Strongly Agree	Very High
5. feedbacking, coaching, and/or mentoring	3.38	Strongly Agree	Very High
Average	3.43		Very High
Video Conferencing			
1. lesson plan review	3.38	Strongly Agree	Very High
2. assessment of online instructional materials	3.47	Strongly Agree	Very High
3. virtual classroom observation and monitoring	3.58	Strongly Agree	Very High
4. monitoring of learners' needs, progress, and achievements	3.53	Strongly Agree	Very High
5. feedbacking, coaching, and/or mentoring	3.51	Strongly Agree	Very High
Average	3.50		Very High
Overall Weighted Mean	3.46		Very High

It can be gleaned from table 4 that school heads got a very high overall weighted mean of 3.46 as the respondents strongly agreed with the indicators of the school heads e-supervision scheme. Specifically, it showed that the respondents strongly agreed that the school heads have e-supervision scheme in terms of instant messaging (mean = 3.44), office suite (mean = 3.43), and video conferencing (mean = 3.50). This means that school heads are capable of using different electronic modes of supervision for curriculum implementation. Specifically, this study agrees with Cha, Kim, Park, Yi, & Lee [27] findings that instant messaging is primarily used for relationship maintenance purposes, such as planning, coordinating, sharing, discussing, and reflecting on everyday activities. Also, it coincides with the suggestion of Mutter & Marescaux (as cited in Byrnes, Kiely, Dunne, McDermott, Coffey) [28] that video conferencing technology may be applied to a range of academic activities, including teaching sessions, large group webinars, examinations, research meetings, and academic conferences. They noted that supervisors would engage in conversations with the teachers in the videos, not just disseminate information. By engaging in instructional supervision conversations through the video channel, the teachers felt like they were not just being told information but having authentic conversations [29].

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Table 5. Teachers' Development in Distance Learning

Indicators	Weighted Mean	Categorical Response	Verbal Interpretation
1. teacher development is a school-based activity conducted by the school head or a resource speaker	3.52	Strongly Agree	Very High
2. teacher development are sourced from webinars	3.48	Strongly Agree	Very High
3. teacher development topics are directed by the school head	3.43	Strongly Agree	Very High
4. teacher development provided to improve teachers' technology teaching practices	3.55	Strongly Agree	Very High
5. teacher development given is on pedagogical approaches for distance learning	3.55	Strongly Agree	Very High
6. teacher development prepared are for designing learning activities for online instruction	3.58	Strongly Agree	Very High
7. teacher development provided focus on creating distance learning materials	3.56	Strongly Agree	Very High
8. teacher development given is for effective learning assessment during distance learning	3.55	Strongly Agree	Very High
9. workshops are conducted in an online platform like Google Meet during teacher development	3.42	Strongly Agree	Very High
10. teacher development is done through video conferencing	3.51	Strongly Agree	Very High
Overall Weighted Mean	3.51		Very High

It is depicted in Table 5 that the implementation of teachers' development in distance learning got a very high overall weighted mean of 3.51 as the respondents strongly agreed with the indicators. The finding further illustrates that professional development to develop teachers' necessary skills in carrying out their role are implemented during distance learning. The findings of the study are much related to Sadler et. al [30] observation from their facilitated teacher professional development project in the midst of the COVID-19 pandemic with the aim of collaboratively designing instructional activities to teach about COVID-19 using videoconferencing technologies worked well. The ability to form smaller design teams and flow between full group sessions and small group workspaces seemed to facilitate productivity. All of the teachers made substantive contributions to the development of novel curriculum materials. Many researches, like those of Hamzah, Nasir, & Wahab [16] reveal that in a time of distance learning due to pandemics principals need to devise professional improvement programs to help teachers implement digital teaching practices. Thus, the highest means of professional development is institution professional development, i.e. webinars and online workshops [31].

Table 6. Relationship Between the School Heads' ICT Skills and E-Supervision Scheme

Variables	ICT Skills	
	Competence	Utilization
	Instant Messaging r=.698 (high correlation)	Instant Messaging r=.724 (high correlation)

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E-supervision Scheme	p=.000 Decision: Null hypothesis rejected Interpretation: Significant	p=.000 Decision: Null hypothesis rejected Interpretation: Significant
	Office Suite r=.657 (high correlation) p=.000 Decision: Null hypothesis rejected Interpretation: Significant	Office Suite r=.733 (high correlation) p=.000 Decision: Null hypothesis rejected Interpretation: Significant
	Videoconferencing r=.711 (high correlation) p=.000 Decision: Null hypothesis rejected Interpretation: Significant	Videoconferencing r=.721 (high correlation) p=.000 Decision: Null hypothesis rejected Interpretation: Significant

Significant @ .01

As observed from the data in table 6, a high correlation was found between school heads’ ICT skills and e-supervision scheme, specifically between competence and instant messaging (r=.698), office suite (r=.657) and videoconferencing (r=.711) and between utilization and instant messaging (r=.724), office suite (r=.733) and videoconferencing (r=.721). It is worth noting that all p-values of .000 were lower than the test of significance at .01 which revealed that there is significant relationship existed. The result showed that the higher are the ICT skills level of the school heads in terms of their competence and utilization, the better is their e-supervision scheme along with instant messaging, office suite and videoconferencing. This relationship can be explained with the premise that the ICT knowledge acquired by the school head actuate effective application of ICT on the supervisory function in curriculum implementation through the different technological platforms. This finding solidifies the idea revealed by Uğur & Koç [32] that principals, as instructional leaders, who do not understand how to use technology cannot properly evaluate the use of it by teachers for instruction and students for achievement. The ICT skills needed by principals include among others: knowledge of operating ICT devices, good knowledge of using ICT devices in teaching, ability to use ICT devices to store and retrieve information. They also posited that ICT skills enhance efficient management of educational resources through enhancing proper keeping of records, effective communication, and proper accountability of educational resources among others [5]. However, it contradicts the observation of Abraham et.al [22] that the principal's knowledge of ICT is basic with the goal that systems can be set up to make organizational procedures progressively effective, including the work of faculty to oversee and direct the ICT foundation.

Table 7. Relationship Between the School Heads’ ICT Skills and Teacher Development

Variables	Statistical Treatment (Pearson r)	p-value	Decision	Interpretation
Competence and Teacher Development	.724 (high correlation)	.000	Null hypothesis rejected	Significant
Utilization and Teacher Development	.699 (high correlation)	.000	Null hypothesis rejected	Significant

Significant @ .01

As disclosed in table 7, a high correlation was found between the school heads’ ICT skills and teacher development specifically between competence and teacher development (r=.724) and utilization and teacher development (r=.699). Both the p-values of .000 were lower than the test of significance at .01, leading to the rejection of the null hypothesis. This showed that the higher are the ICT skills

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level of the school heads in terms of their competence and utilization, the better is the teacher development in distance learning. This relationship can be explained by the modality used in delivery of teachers training in distance learning. It connotes that school heads being abreast to different communication technologies positively ramifies the professional learning of teachers. As elucidated by N., Dzakpasu, and Amenyedze [33] that in this era of information, principals must incorporate ICT into their day-by-day practice and give steady and positive leadership to technology use in the instructing learning process. School leaders should ensure that processes are in place during professional development opportunities to support the diverse learning styles of teachers. By providing a variety of learning options, districts can guarantee their teachers will have support and access to training, ownership of their learning, and the ability to assess their technical skill levels [34]. Along this line, school heads ought to motivate a mutual vision for far-reaching reconciliation of technology and cultivate a domain and culture helpful for the acknowledgment of that vision. Principals ought to depict an enthusiastic responsibility for giving proper ICT proficient staff improvement for individual staff members [35]. Hence, Cadiente, Acob, & Bagon [39] concurred in their study that literacy skills of school principals as a contributory factor may lead to effective instruction and facilitate managerial functions in the school setting.

Contrary to the finding, it opposes the study of Apsorn, Sisan, & Tungkunan [36] telling that even though school directors may be effective and fine examples of how to plan and implement ICT for use by teachers and supporting staff, they are not necessarily experts in using ICT, but need to give school teachers and staff knowledge and opportunities and establish a culture of ICT in order to shape learning communities.

Table 8. Relationship Between the School Heads' E-Supervision Scheme and Teacher Development

Variables	Statistical Treatment (Pearson r)	p-value	Decision	Interpretation
Instant Messaging and Teacher Development	.741 (high correlation)	.000	Null hypothesis rejected	Significant
Office Suite and Teacher Development	.708 (high correlation)	.000	Null hypothesis rejected	Significant
Videoconferencing and Teacher Development	.794 (high correlation)	.000	Null hypothesis rejected	Significant

Significant @ .01

Table 8 unveils a significant relationship between the respondents' e-supervision scheme and teacher development, specifically between instant messaging and teacher development ($r=.741$), office suite and teacher development ($r=.708$) and videoconferencing and teacher development ($r=.794$), as evidenced by their obtained probability values of .000 which were lower than the test of significance at .01. This showed that the better is the school heads' e-supervision scheme in terms of instant messaging, office suite and videoconferencing, the better is their teacher development. This relationship can be explained by the process of drawing authentic information through an e-supervision scheme to determine the overall need of teachers in curriculum implementation that might be included in the teacher development program. Kim & Lee [15] revealed that principals can have more impact on teacher development by formally arranging opportunities and resources for teachers' collaborative learning. Mentoring, peer observation, and coaching activities are regarded as effective forms of professional development in that they rely on interactions and co-development of expertise between teachers and focus on teachers' individual needs to improve instructional practices. This finding supported by what was stressed by Abdullaha, Sulongb, & Rahimc [37] that a high percentage of teacher trainees felt that using the Google Classroom application was a good and effective e-supervision system that supported traditional supervision methods. Also, as what Van Boxtel [38] had noted, a video-based remote supervision method in strategic implementation of an asynchronous video-based remote supervision model is feasible and equally effective or preferred over traditional face-to-face observations by teacher candidates and cooperating teachers for self-reflection, professional growth, and convenience.

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CONCLUSION AND RECOMMENDATION

The school heads are confident to claim that they manifest a very high level of ICT skills in terms of competence and utilization for it makes them abreast with the use of instant messaging, office suite, and video conferencing for e-supervision scheme. Meanwhile, teachers among selected private schools in Cainta had a very high level of teacher development in distance learning. Hence, it can be viewed that the higher the ICT skills level of school heads the better is their e-supervision scheme and teacher development in distance learning. The investigation, however, has some limitations particularly on the sample size which was used in the study since it was only limited to the teachers among 5 selected private schools in Cainta during Academic Year 2021-2022. To have a better generalization of the study, it is recommended to future researchers to conduct similar study considering a larger number of respondents including school heads. Training program implementation is highly recommended to make the school heads' skills level higher on the indicators that ranked last.

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Working Capital Strategy on Profitability before and During the Covid-19 Pandemic in the Indonesia Stock Exchange



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ABSTRACT: The purpose of this study was to determine the effect of working capital strategy on profitability before and during the Covid-19 pandemic on the Indonesia Stock Exchange. The population used in this study is the restaurant, hotel & tourism sub-sector companies; pharmaceutical sub-sector; as well as the telecommunications sub-sector listed on the Indonesia Stock Exchange which was conducted in the 2nd quarter of 2018 to the 3rd quarter of 2021 (14 periods). With a total sample of 22 companies. The sampling technique was carried out using purposive sampling method. This study uses secondary data in the form of financial statements obtained from the official website of the Indonesia Stock Exchange www.idx.co.id.

The data analysis technique in this study used multiple linear regression analysis with dummy variables. By calculating descriptive statistics, multiple linear regression test, multicollinearity test, autocorrelation test, heteroscedasticity test, model fit test, regression coefficient test, and different test. The results showed that CCC, WCIA, WCFA, and Dummy together had a significant effect on ROA. CCC has no and no significant effect on ROA, WCIA and WCFA partially have a significant effect on ROA, Dummy has a negative and significant effect on ROA. And WCIA has a parallel different influence on ROA before and during the Covid-19 pandemic, WCFA has an intersecting different influence on ROA before and during the Covid-19 pandemic.

1. INTRODUCTION

At the end of 2019, the world was shocked by the emergence of new and infectious and dangerous diseases. This disease is called Coronavirus Disease of 2019 or known as Covid-19. Covid-19 was first discovered at the end of 2019, precisely in Wuhan City, Hubei Province, China. On March 2, 2020, Joko Widodo as President of Indonesia stated that Indonesia had been exposed to the corona virus, this was stated by the presence of two Indonesian citizens who were positively infected with the Covid-19 virus. (Ihsanuddin, 2020). Haryadi as General Chair of the Indonesian Hotel and Restaurant Association (PHRI) assessed that working capital incentives can provide resilience for the business world directly in tackling the impact of the Covid-19 pandemic due to the implementation of community activity restrictions (PPKM) which has made the tourism industry deserted (Santoso, 2021).

In contrast to the restaurant, hotel and tourism industries. The pharmaceutical industry and the telecommunications industry can survive the Covid-19 pandemic. (Gayetri, Dijaya, Atmojo, & Sari, 2020) stated PT. Kalbe Farma Tbk. which is one of the companies in the pharmaceutical industry that has had a positive impact due to the Covid-19 pandemic because it saw an increase in sales where in the first quarter of 2020 it got sales of 5,796 billion or an increase of 8.0% compared to the first quarter of 2019.

The telecommunications industry has also become one of the industries that was able to survive the Covid-19 pandemic. Director and Chief Financial Officer of PT. Tower Bersama Infrastructure Tbk. (TBIG), Helmy Yusman Santoso said "the telecommunications industry has the potential to grow rapidly, because the number of smartphone users in 2021 will increase rapidly, of course it will also increase internet users. This is because 80% of the 160 million internet access in Indonesia comes from smartphones." (Hastuti, 2021).

From the information above, it can be seen that various industries such as the restaurant, hotel & tourism industry; pharmaceutical industry; as well as the telecommunication industry feeling the impact of the Covid-19 pandemic, both from companies that experienced a decline as well as those that experienced an increase in revenue. One that affects income is the size of the working capital used by the company. The company's working capital is divided into two types, namely gross working capital and net working capital. Gross working capital is all the components in current assets, while net working capital is the component of current assets minus current liabilities or short-term debt. (Cashmere, 2016). Working capital management can be carried out with two approaches, namely an aggressive working capital approach and a conservative working capital approach. (Basyith, Djazuli, & Fitriya, 2021) To see the working capital strategy used by a company, the working capital investment

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approach (WCIA) and the working capital financing approach (WCFA) ratio can be used. The WCIA ratio is used to measure the level of conservativeness/aggressiveness of the investment approach in current assets. while the WCFA ratio is used to measure the level of conservativeness/aggressiveness of the financing approach in short-term liabilities.

Based on the description of the background, the formulation of the problem in this study is how does the working capital strategy affect profitability before and during the covid-19 pandemic on the Indonesia Stock Exchange?

Profitability Ratio

Profitability ratio is the ratio used to assess the company's ability to seek profit (Cashmere, 2016). The types of profitability ratios that can be used are:

1. Profit margin (profit margin on sales)

Profit margin or profit margin on sales is a ratio used to measure the company's ability to earn a profit on the company's sales. There are two formulas to find the profit margin, namely for the gross profit margin and for the net profit margin.

a. Gross profit margin

Gross profit margin is a ratio that indicates the company's ability to generate gross profit from its sales. The formula used to calculate the gross profit margin is:

$$\text{Profit Margin} = \frac{\text{Penjualan bersih} - \text{HPP}}{\text{Penjualan}}$$

b. Net profit margin

Net profit margin is a ratio that indicates the company's ability to generate net profit from its sales. The formula used to calculate the net profit margin is:

2. Return on investment (ROI)

Return on investment (ROI) is a ratio that shows the results of the total assets used in the company. Return on investment is also known as return on total assets (ROA) which is used to measure the effectiveness of the company's overall operations. The formula used to measure return on investment is:

$$\text{Profit Margin} = \frac{\text{Earning After Interest and Tax (EAIT)}}{\text{Penjualan}}$$

$$\text{Return on Investment (ROI)} = \frac{\text{EAIT}}{\text{Total Assets}}$$

$$\text{Return on Total Assets (ROA)} = \frac{\text{EAIT}}{\text{Total Assets}}$$

3. Return on equity (ROE)

Return on equity (ROE) or profitability of own capital is a ratio used to measure net profit after tax with own capital. The formula used to measure return on equity is:

$$\text{Return on Equity (ROE)} = \frac{\text{EAIT}}{\text{Equity}}$$

4. Earnings per share (Earnings per share/EPS)

Earnings per share or the so-called book ratio is a ratio used to measure the success of management in achieving profits for shareholders. The formula used to measure earnings per share of common stock is:

$$\text{Laba Per Lembar Saham (EPS)} = \frac{\text{Laba Saham}}{\text{Saham yang Beredar}}$$

In this study, the indicator used is return on assets (ROA) because it measures the extent to which the company's ability to achieve profits.

Working capital

According to (Cashmere, 2018) Working capital is defined as the capital used to finance the daily operations of the company, especially those with a short period of time. In other words, working capital is an investment invested in current assets or short-term assets such as cash, banks, securities, receivables, inventory, and other current assets. Every company needs working capital. To calculate the company's working capital requirements, the cash conversion cycle (CCC) concept can be used. (Anwar, 2019) CCC or cash turnover cycle is a cycle that occurs from the start of the company issuing cash (cash) until the company gets cash back. The formula for calculating the cash conversion cycle is used the following formula:

$$\text{CCC} = \text{AAI} + \text{ACP} - \text{APP}$$

1. Average age of inventory (AAI) is the average age of the company's inventory in a period.

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$$AAI = \frac{\text{Persediaan}}{\text{Harga Pokok Penjualan}} \times 365 \text{ hari}$$

2. Average collection period (ACP) is the average length of time the company collects collectible receivables.

$$ACP = \frac{\text{Piutang}}{\text{Penjualan Bersih}} \times 365 \text{ hari}$$

3. Average payment period (APP) is the average length of time a company pays its debts to suppliers.

$$APP = \frac{\text{Utang}}{\text{Pembelian}} \times 365 \text{ hari}$$

According to (Brigham & Houston, 2019) the formula used to calculate the average payment period is:

$$APP = \frac{\text{Utang}}{\text{Harga Pokok Penjualan}} \times 365 \text{ hari}$$

Working Capital Strategy

According to (Anwar, 2019) The strategy to fulfill working capital needs can be divided into two, namely:

1. Aggressive funding strategy

Aggressive funding strategy is a strategy to fulfill working capital with long-term funding sources used to meet permanent working capital needs and short-term financing sources used to meet seasonal working capital.

2. Conservative funding strategy

A conservative funding strategy is a strategy to fulfill working capital by using long-term financing sources to meet all the company's working capital needs.

(Basyith, Djazuli, & Fitriya, 2021) To see the working capital strategy used by a company, the working capital investment approach (WCIA) and the working capital financing approach (WCFA) ratio can be used.

$$WCIA = \frac{\text{Total Aset Lancar}}{\text{Total Aset}}$$

If the WCIA ratio is less than 0.5, the company tends to have an aggressive working capital investment strategy and vice versa, if the WCIA ratio is more than 0.5, the company tends to use a conservative working capital investment strategy.

$$WCFA = \frac{\text{Total Utang Lancar}}{\text{Utang Jangka Panjang}}$$

If the WCFA ratio is less than 0.5 then the company tends to have an aggressive working capital financing strategy and vice versa, if the WCFA ratio is more than 0.5 then the company tends to use an aggressive working capital financing strategy.

2. METHODOLOGY

The type of research used in this research is associative research, uses secondary data, which is a source of research data obtained by researchers indirectly through intermediary media, namely from the official website of PT. Bursa Efek Indonesia through www.idx.co.id, in this study is the data for the period 2018-2021.

The population in this study were all companies in the restaurant, hotel & tourism sub-sector; pharmaceutical sub-sector; and the telecommunications sub-sector listed on the Indonesia Stock Exchange in 2018-2021. The sample used is as many as 22 companies with a sampling technique carried out using the purposive sampling method.

The data analysis used in this research is quantitative analysis. The analytical technique used in this research is multiple linear regression analysis with dummy variables and different tests are carried out to see the effect before and during the Covid-19 pandemic.

3. RESULTS AND DISCUSSION

Descriptive Statistics Test

1. Restaurant, Hotel & Tourism Sub-Sector

Table 1. Descriptive Statistics of Restaurant, Hotel & Tourism Sub-Sector

Descriptive Statistics					
	N	Minimum	Maximum	mean	Std. Deviation
ROA	140	-.1221	1.1103	-.006728	.0389388
CCC	140	-13521.6611	18927.4184	776.247546	3364.9455674
WCIA	140	.0159	2.7970	.255769	.2432783

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WCFA	140	.1044	7.9603	.978481	1.3067394
Valid N (listwise)	140				

Source: Diolah Penulis, 2022

Table 1 explains that the average ROA value is -0.006728 or -0.67% with the minimum ROA value being -0.1221 or 12% and the maximum ROA value being 0.1103 or 11%. This indicates that the spread of ROA is more skewed to the left.

The average value of the cash conversion cycle (CCC) is 776.25 or 776 days. This means that the turnover of assets from cash to cash back is 776 days or more than 25 months. The minimum value of CCC is -13521.66 or -13522 days and the maximum value of CCC is 18927 days.

The average value of working capital investment approach (WCIA) is 0.255769, this indicates that companies use an aggressive working capital investment approach more than using a conservative working capital investment approach. The minimum value of WCIA is 0.0159 or 1.59% and the maximum value of WCIA is 2.7970 or 279.7% or the ratio of the value of current assets to total current is 279.7%.

The average value of the working capital financial approach (WCFA) is 0.978481 or 97.8%, the value of current liabilities is 97.8 times higher than long-term debt. This shows that companies use an aggressive working capital financing approach more than using a conservative working capital financing approach. The minimum WCFA value is 0.1044 or 10.44% with the maximum WCFA value is 7.9603 or 796.03%. This means that the value of current debt is 796.03 greater than long-term debt.

2. Pharmaceutical Sub-Sector

Table 2. Pharmaceutical Sub-Sector Descriptive Statistics

Descriptive Statistics					
	N	Minimum	Maximum	mean	Std. Deviation
ROA	112	.0009	1.0000	.082251	.1296223
CCC	112	45.8243	1559.5406	334.183310	258.5532775
WCIA	112	.3469	.8468	.619590	.1283881
WCFA	112	.2455	29.0903	4.216014	4.2093530
Valid N (listwise)	112				

Source: Diolah Penulis, 2022

Table 2 explains that the average ROA value is 0.082251 or 8.2% with the minimum ROA value being 0.0009 or 0.09% and the maximum ROA value being 1.0000 or 100%.

The average value of the cash conversion cycle (CCC) is 334.18 or 334 days. This means that the turnover of assets from cash to cash back is 334 days or more than 9 months. The minimum CCC value is 45.8243 or 46 days and the maximum CCC value is 1559.5406 or 1560 days.

The average value of working capital investment approach (WCIA) is 0.619590, this indicates that companies use a conservative working capital investment approach rather than using an aggressive working capital investment approach. The minimum value of WCIA is 0.3469 or 34.69% and the maximum value of WCIA is 0.8468 or 84.68% or the ratio of the value of current assets to total current is 84.68%.

The average working capital financial approach (WCFA) is 4.216014 or 421.6%, current liabilities are 421.6 times higher than long-term debt. This shows that companies use an aggressive working capital financing approach more than using a conservative working capital financing approach. The minimum WCFA value is 0.2455 or 24.55% with the maximum WCFA value is 29.0903 or 2909.03%. This means that the value of current debt is 2909.03 greater than long-term debt.

3. Telecommunication Sub Sector

Table 3. Telecommunication Sub Sector Descriptive Statistics

Descriptive Statistics					
	N	Minimum	Maximum	mean	Std. Deviation
ROA	56	-.1409	.1308	.010528	.0574237
CCC	56	-529.1014	6.7691	-138.579931	123.8062232
WCIA	56	.0423	1.3343	.141937	.0657805
WCFA	56	.4561	1.6555	.867417	.2730384
Valid N (listwise)	56				

Source: Diolah Penulis, 2022

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Table 3 explains that the average ROA value is 0.010528 or 1% with the minimum ROA value being -0.1409 or -14.09% and the maximum ROA value being 0.1308 or 13.08%.

The average value of the cash conversion cycle (CCC) is -138.579931 or -139 days, this indicates that the age of debt in the telecommunications sub-sector is greater than the age of the receivables. The minimum CCC value is -529.1014 or -529 days and the maximum CCC value is 6.77 or 7 days.

The average value of working capital investment approach (WCIA) is 0.141937, this indicates that companies use an aggressive working capital investment approach more than using a conservative working capital investment approach. The minimum value of WCIA is 0.423 or 42.3% and the maximum value of WCIA is 0.2589 or 25.89% or the ratio of the value of current assets to total current is 25.89%.

The average value of working capital financial approach (WCFA) is 0.867417 or 86.74%, the value of current liabilities is 86.74 times higher than long-term debt. The minimum WCFA value is 0.4561 or 45.61% with the maximum WCFA value is 1.6555 or 165.5%. This means that the value of current debt is 165.5 greater than long-term debt.

Normality test

The normality test was conducted to test whether the regression model of the dependent variable and the independent variable had a normal distribution or not. Based on the results of the normality test on each variable used by removing the extreme data contained in each variable, it can be said that the data is normally distributed and is suitable for use in research because it meets the assumption of normality.

Regression analysis

Table 4. Multiple Linear Regression Test Results with Dummy Variables

Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	T	Significance
		B	Std. Error	Beta		
1	(Constant)	-.034	.007		-4.748	.000
	CCC	7.072E-6	.000	.025	.416	.678
	WCIA	.116	.013	.517	8,566	.000
	WCFA	.030	.007	.189	4.106	.000
	DUMMY	-.017	.005	-.164	-3,595	.000

a. Dependent Variable: ROA

Source: Diolah Penulis, 2022

From table 4 above, the results of multiple linear regression with variables of working capital requirements (CCC), working capital investment strategy (WCIA), working capital financing strategy (WCFA), dummy (D) on profitability (ROA) are shown. The regression equation can be written as follows:

$$ROA = -0.034 + 7.072CCC + 0.116 WCIA + 0.030WCFA - 0.017D$$

D = 0, Before the Covid-19 Pandemic

D = 1, During the Covid-19 Pandemic

The regression equation at D = 0, before the Covid-19 pandemic is as follows:

$$ROA = -0.034 + 7.072 CCC + 0.116 WCIA + 0.030 WCFA - 0.017(0)$$

$$ROA = -0.034 + 7.072 CCC + 0.116 WCIA + 0.030 WCFA$$

The regression equation at D = 1, during the Covid-19 pandemic is as follows:

$$ROA = -0.034 + 7.072 CCC + 0.116 WCIA + 0.030 WCFA - 0.017(1)$$

$$ROA = -0.034 + 7.072 CCC + 0.116 WCIA + 0.030 WCFA - 0.017$$

$$ROA = -0.051 + 7.072 CCC + 0.116 WCIA + 0.030 WCFA$$

Based on the calculation of the regression equation above, the constant value is -0.033, meaning that if CCC, WCIA, WCFA, D are equal to 0, then the ROA is -0.034. The calculation result of the coefficient of working capital requirement (CCC) is 7.072, indicating that working capital requirement (CCC) has a positive effect on profitability (ROA). This means that if the CCC increases by 1%, the profitability (ROA) will increase by 7.072. The calculation result of the working capital investment strategy (WCIA) coefficient value is 0.116. shows the working capital investment strategy (WCIA) has a positive effect on profitability (ROA). This means that if the WCIA increases by 1%, the profitability (ROA) will increase by 0.116.

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The calculation result of the coefficient of working capital financing strategy (WCFA) is 0.030, indicating that the working capital financing strategy (WCFA) has a positive effect on profitability (ROA). This means that if WCFA increases by 1%, the profitability (ROA) will increase by 0.030.

The result of the calculation of the value of the dummy coefficient (D) is -0.017. From the results of the regression equation on the value of the dummy coefficient, it can be interpreted that there is a difference between before and during the Covid-19 pandemic. Because before the pandemic it was marked with the number 0 and during the pandemic it was marked with the number 1, it can be concluded that the negative sign on the dummy regression coefficient is that the Covid-19 pandemic has a negative effect on ROA. This means that if before the Covid-19 pandemic the ROA value was equal to 0, then during the Covid-19 pandemic the ROA value decreased by 0.017.

Classic assumption test

Based on the results of the classical assumption test that has been carried out, it can be concluded that the data does not contain multicollinearity, autocorrelation, and does not occur heteroscedasticity.

Hypothesis testing

a. Model Fit

Table 5. Model Fit Test Results

ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Significance
1	Regression	.301	4	.075	45,292	.000b
	Residual	.504	303	.002		
	Total	.806	307			
a. Dependent Variable: ROA						
b. Predictors: (constant) DUMMY, CCC, WCFA, WCIA...						

Source: Diolah Penulis, 2022

Based on table 5 shows that the significant value of $F_{\text{count}} 45.292 > F_{\text{table}} 2.4014$ and $\text{sig. alpha } 0.000 < \text{sig. } 0.05$, then H_0 is rejected and H_a is accepted, which means that all independent variables CCC, WCIA, WCFA, and DUMMY have an influence on the dependent variable ROA.

b. Regression Coefficient Test

Table 6. Regression Coefficient Test Results

Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	T	Significance
		B	Std. Error	Beta		
1	(Constant)	-.034	.007		-4.748	.000
	CCC	7.072E-6	.000	.025	.416	.678
	WCIA	.116	.013	.517	8,566	.000
	WCFA	.030	.007	.189	4.106	.000
	DUMMY	-.017	.005	-.164	-3,595	.000
a. Dependent Variable: ROA						

Source: Diolah Penulis, 2022

Determine t_{table} with 95% confidence level and error rate (α) 5% = 0.05 and df 303. So the value of $t_{\text{table}} = 1.9678$

Based on table 6 for CCC of $0.416 < 1.9678$, with a significant level of $0.678 > 0.05$ (not significant), then H_a cannot be rejected and H_0 is accepted, meaning that there is no effect and no significant CCC on ROA before and during the Covid-19 pandemic. 19 on the Indonesia Stock Exchange.

The value for WCIA is $8.566 > 1.9678$, with a significant level of $0.000 < 0.05$ (significant), then H_0 is rejected and H_a is accepted, meaning that there is a significant effect of WCIA on ROA before and during the Covid-19 pandemic on the Indonesia Stock Exchange.

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The value for WCFA is $4.106 > 1.9678$, with a significant level of $0.000 < 0.05$ (significant), then H_0 is rejected and H_a is accepted, meaning that there is a significant effect of WCFA on ROA before and during the Covid-19 pandemic on the Indonesia Stock Exchange.

The value for DUMMY is (negative) $3.595 > 1.9678$, with a significant level of $0.000 < 0.05$ (significant), then H_0 is rejected and H_a is accepted, meaning that before the Covid-19 pandemic and during the Covid-19 pandemic had a significant effect on profitability (ROA).

Different Test

1. WCIA Difference Test with ROA

Table 7. WCIA Regression Equation

Model	Source	Sum of Square	df	Mean Square	F	Sig
1	Regression	.252	1	.252	139,549	.000
	Residual	.553	306	.002		
2	Regression	.273	2	.137	78.332	.000
	Residual	.532	305	.002		
3	Regression	.278	3	.093	53,511	.000
	Residual	.527	304	.002		

Source: Diolah Penulis, 2022

a. Coincidence Test for WCIA Line

Based on table 7, the coincidence test can be carried out as follows:

$$\begin{aligned}
 F(XD, D|X) &= \frac{[\text{regression SS}(X, D, XD) - \text{regression SS}(X)]/2}{\text{MS residual}(X, D, XD)} \\
 &= \frac{[0.278 - 0.252]/2}{0.002} \\
 &= \frac{0.013}{0.002} \\
 &= 6.5
 \end{aligned}$$

$F_{\text{count}} 6.5 > F_{\text{table}} 2.6343$ then H_0 is rejected and H_a is accepted, which means that the two WCIA lines are not coincidental, meaning that they are not in the same line, then proceed with the Parallel test.

b. Parallel Test for WCIA Line

Based on table 7, parallel tests can be carried out as follows:

$$\begin{aligned}
 F(XD|X, D) &= \frac{\text{regression SS}(X, D, XD) - \text{regression SS}(X, D)}{\text{MS residual}(X, D, XD)} \\
 &= \frac{0.278 - 0.273}{0.002} \\
 &= 2.5
 \end{aligned}$$

$F_{\text{count}} 2.5 < F_{\text{table}} 2.6443$, then H_0 cannot be rejected and H_a is accepted, which means the two WCIA lines are parallel. This means that the WCIA line to ROA both before and during the Covid-19 pandemic is parallel.

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2. WCFA Difference Test with ROA

Table 8. WCFA regresi regression equation

Model	Source	Sum of Square	df	Mean Square	F	Sig
1	Regression	.044	1	.044	17.639	.000
	Residual	.762	306	.002		
2	Regression	.075	2	.037	15,655	.000
	Residual	.731	305	.002		
3	Regression	.113	3	.038	16.518	.000
	Residual	.693	304	.002		

Source: Diolah Penulis, 2022

a. Coincidence Test for WCFA Line

Based on table 8, the coincidence test can be carried out as follows:

$$\begin{aligned}
 F(XD, D|X) &= \frac{[\text{regression SS}(X, D, XD) - \text{regression SS}(X)]/2}{\text{MS residual}(X, D, XD)} \\
 &= \frac{[0,113 - 0,044]/2}{0,002} \\
 &= \frac{0,0345}{0,002} \\
 &= 17,25
 \end{aligned}$$

F (0.05) V1 = 3 and V2 = 304

$F_{\text{count}} 17.25 > F_{\text{table}} 2.6343$, then H_0 is rejected and H_a is accepted, which means that the two WCFA lines are not a coincidence.

b. Parallel Test for WCFA Line

Based on table 8, parallel tests can be carried out as follows:

$$\begin{aligned}
 F(XD|X, D) &= \frac{\text{regression SS}(X, D, XD) - \text{regression SS}(X, D)}{\text{MS residual}(X, D, XD)} \\
 &= \frac{0,113 - 0,075}{0,002} \\
 &= 19
 \end{aligned}$$

$F_{\text{count}} 19 > F_{\text{table}} 2.6343$, then H_0 is rejected and H_a is accepted, which means the two WCFA lines are not parallel.

c. Equal Intercepts Test for WCFA Lines

Based on table 8, the equal intercepts test can be carried out as follows:

$$\begin{aligned}
 F(D|X) &= \frac{\text{regression SS}(D, X) - \text{regression SS}(X)}{\text{MS residual}(X, D, XD)} \\
 &= \frac{0,075 - 0,044}{0,002} \\
 &= 15,5
 \end{aligned}$$

$F_{\text{count}} 10.5 > F_{\text{table}} 2.4014$, then H_0 is rejected and H_a is accepted, which means that the two WCFA lines do not have the same intercepts or have intersecting lines. That is, the WCFA line to ROA both before and during the Covid-19 pandemic is intersecting.

4. CONCLUSION

Based on the results of research and discussion, the following conclusions can be drawn:

1. Cash conversion cycle, working capital investment strategy, working capital financing strategy simultaneously affect return on assets before and during the Covid-19 pandemic on the Indonesia Stock Exchange.

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2. Cash conversion cycle partially has no effect and is not significant on return on assets before and during the Covid-19 pandemic. Working capital investment strategies and working capital financing strategies partially have a significant effect on return on assets before and during the Covid-19 pandemic. The dummy for "0" before and "1" during the Covid-19 pandemic partially had a significant effect on return on assets.
3. Working capital investment strategies have different effects in parallel or parallel to return on assets before and during the Covid-19 pandemic. Working capital financing strategies have different intersecting or intersecting effects on return on assets before and during the Covid-19 pandemic.

5. SUGGESTION

Based on the results of research that has been done, the suggestions that can be given by the author are as follows:

1. It is advisable for further researchers to add variables and use populations and samples with a wider scope with the aim of obtaining better results from this research and increasing knowledge.
2. Extend the research period to maximize results at the end of the study.

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Influence of COVID-19 on Student's Classroom Learning and Their Academic Performance



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ABSTRACT: Right from 2019 to the present (2021), the whole world is suffering from pandemic situation due to COVID-19, thus India has enforced lockdowns from 24th of March 2020 to stop faster spreading of the disease. The COVID-19 has resulted in schools shut all across the world. Globally, more than 1 billion children are out of the classroom. Physical distancing of at least 1 meter between individuals is needed for security measures, thus Indian government had implemented many schools and colleges to quarantine peoples separately from their family. As a result, education system has changed from class room learning to virtual learning, whereby teaching is undertaken remotely with the help of digital platforms on mobile phone. But previous literatures shows that excess use of mobile phone is affecting on students academic performance and it may lower academic performance of students as well. In this study researcher analyze the impact of Covid-19 on education and also check whether virtual learning is better than class room learning.

KEYWORDS: Covid-19, Pandemic, virtual learning, ICT.

LITERATURE REVIEW

Before Covid-19 pandemic, all parents has anxiety about the use of mobile phone and social media, because excess use of mobile phone is affecting on students academic attendance and it may lower academic performance of their children. Amali Ismaila, Onche. O, Bello Muhinat and Hassan, Ibrahim (2012), hypothesize that the use of mobile phones is unfair during lectures. But during pandemic situation, most of the parents brought new mobile phones for their children's to attend online lectures. As we know that, at one side student listen lecture on mobile phone and on other side they play game on same device. "How students concentrate on lectures?" that is the question. This indicates that mobile phones have become negative influence on academic performance.

ICT reduces the teaching time and it makes teaching and learning process more productive [7].

Effective ICT teaching methods increase the student engagement in the class. It will improve the class climate and student concentration in the subject teaches by teachers [4]. But if you use ICT for online lectures, it affects students' commitment to their academic work.

CORONA VIRUS (COVID-19) STATISTICS IN INDIA

Currently the whole world is suffering from pandemic situation due to COVID-19 which is transmitted from animals to people and peoples to people. In December 2019, it is originated from seafood market of Wuhan city in China. COVID-19 is part of corona viruses family and it can lead a lung infection which causes acute respiratory syndrome, pneumonia, some time multi-organ failure and even death in the cases having pre-existing disease like blood sugar, blood presser etc. .

On 30th January 2020, first five case of Covid-19 were found in India then after on 2nd feb 2020 again newly one case was found, day by day the rate of cases had been increased and till 23rd of March 2020 there were 434 case, thus India has enforced lockdowns from 24th of March 2020 to stop faster spreading of the disease. Indian government enforced to close down schools and colleges, stop public events and gathering, closing borders of country, states and districts.

Until then, the World Health Organization (WHO) has encouraged to take basic precautionary measures to stop Covid-19 infection through TV channels and media. Indian government encouraged to the peoples to washing hands regularly, encouraged them to covering the mouth and nose with mask and enforced to avoiding contact with infected people. Instead of that India reported 2nd

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highest cases of COVID-19 throughout the world. On 31st Oct 2020, the United States has the 1st highest, India has 2nd highest and Brazil has 3rd highest number of COVID-19 cases and deaths of any country worldwide [2].

Statistics of cases is as below:

2020 Year	Confirmed cases	Deaths
31st Jan	5	0
29th Feb	7	0
30th Mar	1251	32
31st Apr	33050	1074
31st May	182147	5164
30th Jun	566840	16893
31st July	1638870	35747
31st Aug	3621245	64469
30th Sep	6225763	97497
31st Oct	8137119	121641

Source: [3] <https://covid19.who.int/region/searo/country/in>

COVID-19 negatively affecting human health as well as their attitude towards survivals. Aside from that, this pandemic has also negatively effecting education industries such as the physical contact lecture, annual sports, cultural activities etc. WHO recommends carrying out early detection program and testing to find out infected persons, and then trace the people who are in contact with covid-19 patient and quarantine them for atleast 14 days. Physical distancing of atleast 1 meter between individuals is needed for security measures, thus Indian government had implemented many schools and colleges to quarantine peoples separately from their family.

III. RATIONALE

This investigation aims to check impact of Covid-19 on education in Maharashtra state. Although based on geographically and numerically wide sample, the findings of such an investigation may be useful in highlighting an importance and drawback of virtual learning due to Covid-19 pandemic situation in Maharashtra.

IV. OBJECTIVE

1. To analyze the impact of Covid-19 on education.
2. To determine how virtual learning control students' academic performance.

V. HYPOTHESIS

H0: There is no significance relationship between student's classroom learning and their academic performance.

VI. ANALYSIS

The present study is mainly based on primary data which has been collected from 205 students score sheets. Data has been collected through field visit, which is classified and presented in tables. Analysis is done by using Wilcoxon Signed Ranks Test under following conditions.

- Data type is discrete.
- Pre and Post data has been studied.

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Table 1. 10th standard student's test scoring during pandemic situation (online learning) and test scoring after pandemic situation(classroom learning).

A= Score out of 20 during pandemic situation.

B= Score out of 20 after pandemic situation.

Student ID	A (online learning)	B (classroom learning).
1	16	18
2	13	19
3	16	17
4	14	17
5	14	14
6	5	14
7	13	13
8	9	12
9	14	15
10	13	13
11	14	17
12	10	13
13	11	11
14	14	16
15	7	13
16	12	13
17	12	15
18	14	17
19	8	11
20	11	14
21	10	11
22	15	17
23	6	11
24	16	17
25	15	15
26	12	13
27	12	16
28	12	14
29	12	12
30	12	13
31	11	12
32	10	14
33	16	17
34	12	13
35	10	13
36	11	12
37	12	12
38	10	11
39	11	13
40	11	12
41	12	15
42	5	10

Student ID	A (online learning)	B (classroom learning).
104	11	13
105	12	15
106	8	10
107	12	13
108	10	10
109	12	13
110	13	15
111	11	13
112	12	12
113	12	14
114	11	11
115	6	9
116	12	13
117	13	15
118	13	14
119	11	14
120	12	12
121	13	15
122	10	12
123	10	12
124	10	10
125	12	13
126	8	12
127	11	12
128	11	11
129	11	12
130	11	11
131	13	14
132	11	13
133	12	17
134	11	13
135	12	15
136	6	11
137	12	14
138	13	16
139	13	15
140	11	14
141	13	15
142	13	15
143	10	12
144	11	13
145	10	10

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43	13	14
44	13	13
45	13	14
46	11	13
47	13	13
48	12	15
49	11	11
50	10	11
51	11	15
52	12	12
53	7	14
54	12	12
55	10	16
56	12	12
57	10	12
58	12	12
59	13	14
60	14	14
61	10	11
62	12	12
63	13	14
64	10	10
65	9	13
66	12	12
67	12	12
68	11	12
69	12	13
70	11	11
71	14	17
72	9	11
73	12	13
74	12	13
75	10	11
76	10	11
77	11	15
78	14	16
79	13	14
80	13	19
81	12	12
82	16	18
83	12	15
84	10	16
85	11	11
86	11	11
87	12	12
88	5	9
89	13	16
90	13	13
91	13	16
92	11	11

146	13	15
147	8	11
148	12	13
149	10	13
150	12	12
151	11	11
152	10	14
153	11	11
154	12	12
155	11	11
156	11	12
157	12	13
158	11	13
159	5	10
160	13	15
161	13	15
162	13	14
163	10	10
164	13	13
165	13	13
166	10	13
167	11	14
168	11	14
169	13	17
170	8	12
171	12	15
172	10	10
173	12	12
174	5	5
175	13	13
176	13	13
177	13	13
178	10	17
179	13	15
180	12	17
181	10	18
182	10	17
183	10	15
184	13	18
185	7	10
186	12	12
187	10	10
188	11	12
189	13	11
190	11	10
191	12	12
192	11	12
193	12	13
194	6	15
195	12	12

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93	13	15
94	12	12
95	11	12
96	10	12
97	11	12
98	12	15
99	7	11
100	12	14
101	10	13
102	12	13
103	11	13

196	13	16
197	13	15
198	11	12
199	13	13
200	13	13
201	10	10
202	11	11
203	10	10
204	13	13
205	8	15

Table 2. Wilcoxon Signed Ranks Test Statistics (Hypothesis)

	N	Mean Rank	Sum of Ranks
During pandemic- Negative Ranks	2(a)	44.50	89.00
After pandemic Positive Ranks	144(b)	73.90	10642.00
Ties	59(c)		
Total	205		

a During pandemic < After pandemic b During pandemic < After pandemic
c During pandemic = After pandemic

Result

	During pandemic - After pandemic
Z	-11.669
Asymp. Sig. (2-tailed)	.000

Sources : Compiled by researcher

Table 2 shows the Wilcoxon Signed Ranks Test Statistics, $Z = -11.669$, and $p = 0.000$; ie, a very small probability of this result occurring by chance, under the null hypothesis of no difference. The null hypothesis is rejected, since $p < 0.05$ (in fact $p = 0.000$), reject the null hypothesis and accept the alternate hypothesis that is, there is significance relationship between student's classroom learning and their academic performance. Researcher can conclude that, class room learning is more effective than online learning.

VII. CONCLUDING REMARKS

This study demonstrates some interesting findings related to the consequences of virtual-learning process and it shows, there is significance relationship between student's classroom learning and their academic performance. Researcher can conclude that, class room learning is more effective than online learning. On the bases of score of the students where mean of marks during pandemic (virtual learning) $A_m = 11.263$ which is less than mean of marks score after pandemic (Class room learning) $B_m = 15.160$. Because of Covid-19 we enforce the students towards online learning but Covid-19 influences student's classroom learning and their academic performance.

Through an interview technique, researcher found some parents view, and 82% parents agreed that, students concentration can increase in classroom learning. Covid-19 pandemic had changed the way of learning which results for lower academic performance of students. Though virtual learning given flexibility and comfort of learning it also distract the student from the academic curriculum. India is suffering from this virus and students are suffering from this virtual learning which may causes lack in health as well as skillful learning. The above analysis shows the effect of studies done by the students online as well as offline. So we can say that offline learning has an edge over online learning. Although we don't have any other alternative way

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of learning but still we need to look how we can make use of our old learning method so that academic progress of students along with their skill with not disturb.

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Prison Administration in context with Prisoner's rights in India



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ABSTRACT: Prisons are those dark wells, which are kept separate from the society. Suffering and torture of prisoners are remained in existence from the ancient time. Numerous agonies are faced by prisoners' in name of punishment during their detention as maltreatment, third degree torture, overcrowding or congestion, sanitation etc. The stories of prisons don't come out of their walls generally. Administering of the prison must be in accordance with the law so that the prisoners can live behind walls of prisons with human dignity. Administration of prison and prison rights jurisprudence is linked to each other. The prisoners' rights jurisprudence is evolved and developed because of inhuman attitude with prisoners in jails and growth of human right jurisprudence. Different human rights of the detained persons are protected and enforced through various laws at different times. However, even after the enactment of plethora of legislations not only the instances of violations are still continue but also many sufferings remain untold. The area of human rights is a dynamic in itself, it has been changed with the growth of civilizations. This paper deals with administration of prisons, types of prisons, officers of prisons and their duties. The paper examines the duties of jail officials. The paper has come to an end with the help of doctrinal method of research.

KEYWORDS: Prison Administration, Prison, officers of prisons and their duties, human rights.

INTRODUCTION

Human rights jurisprudence advocates that no crime should be punished in a cruel, degrading or in an inhuman manner.¹ On the contrary, it can be held that any punishment that amounts to cruel, degrading or inhuman should be treated as an offence by itself.² The protection to rights of prisoners is a recognized issue throughout the world but the scope of rights and their protection varies from country to country. In prisons there are different types of prisoners such as convicted, under trials, preventive detainees, women inmates, juveniles in care home, all are having distinct rights according to their needs and requirements. The primary effect of the incarceration is the loss of liberty and the right to locomotion because of which many other liberties and rights are restricted by law. *Mahatma Gandhi* observed in 1917 "*Criminals should be treated as patients in hospitals, and jails should be hospitals admitting such patients for treatment and cure. The outlook of the jail staff should be that of physicians in hospitals. The prisoners should feel that the officials are their friends*".³ From the twentieth century the issue of protection to rights of prisoners became vibrant and came into focus and come to the end of the century the concern did spread all over the world. The learned justice *V.R. Krishna Iyer* told that "*Imprisonment does not spell farewell to fundamental rights*".⁴ Government recommends to run jails as indoor hospitals and boarding schools and to avail this goal it is necessary that prison officials would be obligated to behave humanly with jail inmates. The officers must be obligated for not treating them inhumanly.⁵

Parliament with the judiciary in their combined efforts have been giving strength to the prison jurisprudence. The protection to prisoners from being abused by the police officials is a major interest in a democratic and welfare state. The tendency of dehumanization or inhuman treatment with prisoners by the prison authorities cannot be appreciated at all. Judicial decisions, given by the Indian Judiciary regarding giving protection to human rights of prisoners indicates that the judiciary has been playing a role of guardian and protector of human rights, whereas the executive and legislature have failed to address the problems of the people. The Supreme Court has come forward to take corrective measures and issued necessary directions to the executive

¹ Convention against Torture and Other Cruel, Inhuman or Degrading Treatment or Punishment, 1984.

² *ibid* Article 4.

³ Quoted, Report of All India Jail Manual Committee, 1957-59, para. 3.

⁴ *Charles Sobhraj vs. Superintendent Central Tihar Jail, Tihar New Delhi*, AIR 1978 SC 1514.

⁵ http://upprison.gov.in/pdf/admin_rpt_2010_final.pdf last visited on 25/7/21

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and legislature for the sake of prisoners. From the perusal of the above contribution it is evident that the Indian Judiciary is very sensitive and alive to the protection of the human rights of the prisoners. Judicial activism was applied as tool and new remedy for the purpose of vindicating the most precious of the precious human right to life and dignity.

The scope of prisoner's rights is expanded by the judiciary with the help of the Constitution of India art. 21. The Supreme Court has observed in *Sunil Batra II*, "human rights jurisprudence in India has a constitutional status and sweep ... so that this *Magna Carta* may well toll the knell of human bondage beyond civilized limits.⁶ Though, Parliament has enacted lots of laws to protect the prisoners from inhuman treatment and to expand their rights but only the law cannot make a miracle. The pious efforts should be taken to protect them, and the process should be due process. The enforcement machinery should take the step in such a way so that the aspiring goals can be achieved. As the learned Justice Krishna Iyer opined prison as: A reformatory philosophy, rehabilitative strategy, therapeutic prison treatment and enlivening of prisoner's personality through a technology of fostering the fullness of being such a creative art of social defence and correctional process activating fundamental guarantees of prisoner's rights is the hopeful note of national prison policy struck by the constitution and the court.⁷

PRISON ADMINISTRATION IN INDIA

Prison⁸ means any jail or place used permanently or temporarily under the general or special orders of a State Government for the detention of prisoners, and includes all lands and buildings appurtenant thereto, but does not include—

- (a) any place for the confinement of prisoners who are exclusively in the custody of the police;
- (b) any place specially appointed by the State Government under section 541 of the Code of Criminal Procedure, 1882;
- or
- (c) any place which has been declared by the State Government, by general or special order, to be a subsidiary jail:

Prisons in official language may be called as, jail, workhouse, penitentiary, reformatory, state prison, house of correction or whatever else, it is simply a place where the punishment of imprisonment is executed. Prisons serve main three purposes, which may be described as custodial, coercive and correctional. Adequate administration of prisons, care homes would not harass the rights of prisoners'. The purpose of prison administration is to reform the prisoners through the discipline of punishment. Prison is a State subject under List-II of the Seventh Schedule of the Constitution of India. The administration of prisons fall exclusively in the domain of the State governments, and is governed by the Prisons Act, 1894 and the Prison Manuals of the respective State Governments. Thus, States have the primary role, responsibility and authority to change the current prison laws, rules and regulations. Indian Penal Code, 1860 recognizes death penalty, imprisonment for life, simple and rigorous imprisonment, forfeiture of property and fine as a punishment to be imposed.⁹

- i) **Ancient India:** The penology in ancient India developed under the connotation of "*danda-niti*" which literally means principles of punishments. The history of early penal systems of different countries reveals that punishments were cruel and barbaric in nature. It was towards the end of 18th century that humanitarianism began to assert its influence on penology. The common modes of punishment prevalent in different parts of the world included corporal punishments such as flogging, mutilation, branding, pillories, chaining prisoners together, imprisonment, forfeiture of property and fine. In ancient India at the time of *Arthashastra*, justice was administered in accordance with legal rules which fell under one or the other of the following heads:
 - (a) Sacred Law (dharma),
 - (b) Secular Law (vyabhara),
 - (c) Custom (charitra)
 - (d) Royal commands (rajasasana).

Sacred law is the personification of truth, Secular law depends upon evidence. Custom is decided by the opinion of the people, and Royal Edicts constitute administrative law.¹⁰ Vedic Culture in India laid a solid foundation for an overriding importance of

⁶ *Sunil Batra vs. Delhi Administration (II)*, AIR 1980 SC 1579.

⁷ P. C. Harigovind, "*The Indian Jurisprudence on Prison Administration and the Legislative Concerns*", *IOSR Journal of Humanities and Social Science (IOSR-JHSS) Volume 9, Issue 5 (Mar. - Apr. 2013)*, PP 24-29 e-ISSN: 2279-0837, p-ISSN: 2279-0845. www.Iosrjournals.Org

⁸ section 3(1) of The Prisons Act, 1894.

⁹ Section 53 of Indian Penal Code, 1860 (Act no. 45 of 1860)

¹⁰ John Lewis Gillin, "*Criminology & Penology*", rev. ed., 1935, pp.203-204

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Dharma in private and public life.¹¹ Dharma was conceived as conducive for highest good and welfare of all. The omnipresent character of Dharma provided a unified forum for interaction and balancing of several individual and social interests. There was no prison in the Vedic periods, but the house of the accused served the purpose for jail and he was practically imprisoned in his own house till he managed to compensate the plaintiff.¹²

It is on record that Brahaspati laid great stress on imprisonment of convicts in closed prisons.¹³ In the age of Ramayana when *Sita* was confined by *Ravana* he kept her in *Ashoka Vatika* (open prison) under the surveillance of female soldiers. There is a reference from the Mahabharata, where Kansa threw his sister *Devaki* and her husband *Vasudeva* into jail. In the early years of *Ashoka*, there was an unreformed prison in which most of the traditional fiendish torture were inflicted and from which no prisoners come out alive. But from his moral edicts which belong to his later period of rule when he was influenced by Buddhism it appears that many reformatory measures were taken. Another reformatory method introduced by *Ashoka* was the visit to the prisoners made by the authorities concerned once a day, sometimes, once in five days, to enquire about their conditions.¹⁴ *Arthashastra*¹⁵ describes that the jail should be well guarded with many compartments provided with separate accommodation for men and women. Another interesting feature of the administration of justice in ancient India is that the offenders in most cases were allowed to pay fines to escape punishments.

- ii) Medieval India:** The cruel and barbarous penal system of the ancient days continued for a long time in our country until the down fall of Mughal empire. In this regime only the Quranic law was applicable in our country, Quran was the prominent source of law in the medieval period which prescribed brutal punishments for crimes. During the Muslim rule in India Punishment by imprisonment was not as common as in ancient Hindu India. Besides, convicted prisoners under trials were also kept confined in jails.¹⁶ During the period of the Sultanate, there were no regular prisons. Only old forts and castles were used as prisons. In Muslim India prisons were used both for detention and punishment of offenders. Muslim law divided punishment into Hadd, Tazir, Qusas, Tash-hir.¹⁷ Hadd had the purpose to deter others from committing similar offence and was considered 'the right of God'.

The forms of punishment in this category included stoning to death for adultery, cutting off the right hand for theft etc. Tazir is a punishment intended to reform the criminal and inflicted for such crimes as have no hadd punishment. It was not 'the right of God'. It could take the forms of Tajib or public condemn or threat, dragging the offender to the door and exposing him to public scorn, imprisonment or exile, boxing on the ear; scouring. Quisas or retaliation rested on the personal types of crimes such as a murder. Tash-hir or public degradation was a popular devised punishment of universal currency throughout the Muslim world and even in Hindu India and Medieval Europe. It included such punishments as shaving off the offender's head, making him ride on an ass with his face turned towards its tail, and his body covered with dust, sometimes with a garland of old shoes placed around his neck, parading him in this posture through the streets with noisy music and finally turning him out of the city.¹⁸

- iii) British India:** The modern prison in India originated with the historic Minute by T.B. Macaulay in 1835. The contemporary prison administration in India is thus a legacy of British rule. It was only after 1858, a uniform system of legal justice was initiated in India. It was the first time in 1835 when the Lord Macaulay drew the attention of Legislative Council of India to the deplorable conditions of Indian prisons and he termed it as a "shocking to humanity"¹⁹ consequently, proposed to appoint a committee for the purpose of collecting information as to the state of Indian prisons and of preparing an improved plan of prison discipline. The Council accepted Macaulay's proposal and a Prison Discipline Committee was appointed by Lord William Bentinck. The report of the committee came out in 1838. The committee highlighted the vices of prison administration prevailing in India at that time. The committee was of the view about the

¹¹ Manu Smriti VII, 15 quoted by P.Ishwara Bhat, in "Fundamental Rights" Eastern Law House, page 56

¹² Indra J. Singh, *Indian Prison-A sociological Enquiry*, concept, New Delhi, p. 20.

¹³ Prof. N.V.Paranjape, "Criminology, Penology & Victimology", Central Law Publications, 15th Ed. Reprint 2012, page 428.

¹⁴ Mohammad Hamid Khuraishi, Rajgir, revised by A. G. Ghose, Director General of Archaeology, New Delhi, 1958, p.p.27-28

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¹⁶ A.L. Srivastava, "The History of India: 1000A.D. 1707 A.D", 1st Edn.1964, p.522

¹⁷ C.S.Malliah, *op. cit.*, p. 36.

¹⁸ Jadunath Sarkar, *Mughal Administration*, M.C. Sarkar Sons Calcutta 1952, pp. 103-107.

¹⁹ Zubair Ahmed, "Jail reforms in India: A study of Indian jail Reform Committees", published in International Journal of Multidisciplinary Education and Research ISSN: 2455-4588; Volume 1; Issue 3; May 2016; Page No. 01-04(page 1)

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purpose of punishment is the great end of punishment is, according to our view, to deter all men from crime who are capable of committing it and susceptible of the fear of punishment. The committee went through various aspects like housing of prisoners, discipline, health, diet, remunerative rewards, punishments, education and labour in details. The committee suggested that prisoners should be classified into different categories and should be kept separated according to their categories.

The second committee appointed in 1864 took into considerations the aspects of juvenile delinquency, female prisoners, diet.²⁰ Afterwards in 1876 third jail committee was appointed for introducing more uniform regulations and for making short sentence more deterrent.²¹ Then the committee of 1888 was appointed by Lord *Dufferin*, the work of this committee was corroborated by the recommendations of All India Committee of 1892. It resurveyed the general prison administration in India and drew up proposals on the subject of prison offences and punishment. This report, as a manuscript was accepted by the Government of India and got confirmed as the Prisons Act 1894. It provided for the classification of different offenders and tried to secure uniformity of treatment to all offenders in jails. This Act was basically based on principle of deterrence.²² 'All India Jail Committee' (1919-1920) was appointed to suggest measures for prison reforms was headed by Sir Alexander Cardew. It is indeed a major landmark in the history of prison reforms in India and is appropriately called the corner stone of modern prison reforms in the country. For the first time, in the history of prison administration, reformation and rehabilitation of offenders were identified as one of the objectives of prison administration.²³ The prisons should not only have deterring influence but they should also have a reforming effect on inmates. It recommended utilization of prison inmates in productive work so as to bring about their reformation. The Committee also emphasized the need for an intensive after-care programme for the released prisoners for their rehabilitation.²⁴

iv) Post Independence India: After the advent of freedom, a new phase of humanitarian prison administration has begun in India. Overcrowding in prisons, prolonged detention of under trial prisoners, unsatisfactory living conditions, lack of treatment programmes and allegations of indifferent and even inhuman approach of prison staff have repeatedly attracted the attention of the critics over the years.²⁵ In 1957, the Government of India appointed All India Jail Manual Committee for preparing an All India Skeleton Jail Manual, examining the Prisons Act, 1894 and other relevant central laws, making proposals for prison reforms throughout the country. The committee believed in the philosophy of Mahatma Gandhi that '*hate the crime not the criminal*' the report of the committee held that the problems cannot be solved neither by making punishment more deterrent nor by making the system of punishment too weak and diluted. The Committee wanted prisons to be transformed into correctional institutions to achieve the goal of rehabilitation of offenders.

In 1980, The Indian Government appointed an All India Jail Reform Committee under the chairmanship of *Justice A.N. Mulla*.²⁶ The Committee suggested Setting up of a National Prison Commission as a continuing body to bring about modernisation of prisons in India.²⁷ The Committee suggested that conditions of prisons should be improved by making adequate arrangement for food, clothing, sanitation, ventilation, etc. It was also focussed that prison staff should be properly trained and emphasized to have focus upon the reformation and rehabilitation of prisoners. Referring to the Justice Mulla Committee Report the Apex Court observed that "All prisoners under sentence should be required to work to their physical and mental fitness as determined medically. Work is not to be conceived as additional punishment but as a means of furthering the rehabilitation of the prisoners....."²⁸

²⁰ Reforms of Indian Jail Committee, 1864

²¹ The Imperial Gazetteer of India, *The Indian Empire*, Vol. IV-Administrative, p. 399.

²² R.N. Datir, *op. cit.*, p. 58.

²³ *supra* noted at 15.

²⁴ N.V. Paranjape, *Criminology & Penology with Victimology*, Central Law Publications; Sixteenth Edition; 2014, p 479

²⁵ Govt. of India: Ministry of Home Affairs, Report of All India Committee on Jail Reforms, 1980-83, p.1. (Referred also in Article Rights of the Prisoners: Behind the Bars, published in Criminal Law Journal, 2010 Journal 179p.)

²⁶ Prof. N. V. Paranjape, "Criminology & Penology with Victimology", Central Law Publications, Reprint 2012, page 431.

²⁷ Justice Mulla submitted its' Report on Jail Reforms to Home Ministry on 31st March, 1983.

²⁸ *State of Gujarat vs. Hon'ble High Court of Gujarat*, AIR 1998 SC 3164.

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Further Justice Thomas held that "The rehabilitation of a prisoner need not be by closing our eyes towards the sufferings of victims of crimes. Dispensing justice to victims of crime cannot any longer be ignored."²⁹ The Committee made a demand for making possible visits of media persons and public men.³⁰ The Committee recommended the variety of institutions for catering to the needs of different categories of offenders. Afterwards, the another appointed National Expert Committee on Women Prisoners headed by Justice V.R. Krishna Iyer in its' report submitted to the Government in 1988 recommended induction of more women in the police force in view of their special role in tackling women and child offenders. The UP Jail Manual classified jails in Uttar Pradesh in four categories:

1. central prisons;
2. district jails;
3. juvenile jail; and
4. lock-up jails

Central prisons have accommodation ordinarily for more than 1,000 prisoners. Adult prisoners sentenced to imprisonment for life or to terms of imprisonment exceeding seven years will be sent to these jails.

There are five classes of district jails. First class, having accommodation ordinarily for prisoners exceeding 500. Prisoners sentenced to terms of imprisonment exceeding three years but not exceeding seven years will be admitted to these jails. Second class, having accommodation ordinarily for prisoners exceeding 300 but not exceeding 500 Prisoners, sentenced to terms of imprisonment exceeding two years but not exceeding three years will be imprisoned in this category of jail. Third class, having accommodation ordinarily for prisoners exceeding 150 but no exceeding 300. Fourth class, having accommodation ordinarily for prisoner exceeding 100 but not exceeding 150. In third and fourth category district jails prisoners sentenced to terms of imprisonment exceeding two years but not exceeding three years will be imprisoned. Fifth class of district jail, will have accommodation ordinarily for 100 prisoners or less. Prisoners sentenced to terms of imprisonment not exceeding one years will be imprisoned thereto. The jail authorities and their duties and responsibilities are composed in Prisons Act, 1894.

OFFICERS OF PRISONS AND THEIR DUTIES

Prison Act, 1894 states, an Inspector General shall be appointed for the territories and shall exercise, subject to the orders of the State Government the general control and superintendence of all prisons situated in the territories under such Government.³¹ For every prison there shall be a superintendent, a Medical Officer (who may also be the Superintendent), a Medical Subordinate, a Jailer and such other officers as the State Government thinks necessary.³²

Superintendent shall manage the prison in all matters relating to discipline, labour, expenditure, punishment and control.³³ The Superintendent shall keep, or cause to be kept a register of prisoners admitted; a book showing when each prisoner is to be released; a punishment-book for the entry of the punishments inflicted on prisoners for prison offences; a visitors' book for the entry of any observations made by the visitors touching any matters connected with the administration of the prison; a record of the money and other articles taken from prisoners; and all such other records as may be prescribed by rules under section 59 of the Prisons Act. The superintendent or jailor shall receive and detain all the prisoners committed to his custody. The superintendent shall report at once to the district magistrate about wounds, injuries, contusions found on prisoners which are not relevant to crime and case for which he is committed.³⁴ The Bombay High Court held that the principle of justice must be adhered to by the Superintendent himself and no other person. He must 'examine' the prisoners himself. He cannot simply rely on a readymade statement that would not be an 'examination'. The enquiry is of a quasi-judicial nature and includes the right of the prisoner to be heard, to be fully informed and to cross examine. Finally, the Superintendent must pass the reasoned order. In the instance case petitioner was punished by the prison authorities on account of an offence he had committed while serving a prison term.³⁵

²⁹ *State of Gujarat vs. Hon'ble High Court of Gujarat*, AIR 1998 SC 3164, referred in an article by Apoorva Goyal, "Victim's Right to Access to Justice", *Criminal Law Journal* 2012 Journal 196 p.

³⁰ supra noted as 19, page 432

³¹ Section 5 of the Prisons Act, 1894.

³² Section 6 of the Prisons Act, 1894

³³ Section 11 of the Prisons Act, 1894

³⁴ UP Jail Manual, 1894, Rule 22.

³⁵ *Damal H Walcott v. Superintendent, Nagpur Central Prison*, 1971 Bom LR 436

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Medical Officer shall have charge of the sanitary administration of the prison, and shall perform such duties as may be prescribed by rules made by the State Government³⁶ under section 59. Whenever the medical officer has reason to believe that the mind of a prisoner is or is likely to be, injuriously affected by the discipline or treatment to which he is subjected, he will inform to the superintendent.³⁷ When the death is caused of any prisoner it is the duty of the medical officer to record in a register, the day on which he was first complained of illness, when he was admitted to the hospital, the diet on that day, the labour in which he was engaged on that day, the nature of illness, when he died and when he was last seen before the death by the medical officer.³⁸ Whenever a prisoner is admitted to prison he will be medically checked under the general or special order of the medical officer. Every prisoner on arrival at the main gate, and before he is locked up in the quarantine enclosure shall be examined carefully by the assistant medical officer³⁹ in the presence of the jailer or other officer on duty. The name of the prisoner, the time of examination and the result of the examination, with reference to any injuries, wounds, contusions or abrasions detected shall be entered in the jailer's report-book and the entries shall be signed by the jailer or another officer duly authorized by the superintendent and the assistant medical officer. The clothing of all prisoners shall be carefully examined, and if it is found to contain any stains of a suspicious character the district magistrate shall be informed and the clothing shall be stored under lock and key.⁴⁰ If the prisoner is transferred from one jail to another jail then the medical officer will certify that he is free from illness and can be transferred. The medical examiner shall examine the labouring prisoner from time to time.

Jailor shall reside in the prison, unless the Superintendent permits him in writing to reside elsewhere.⁴¹ Upon the death of a prisoner, the Jailer shall give immediate notice thereof to the Superintendent and the Medical Subordinate.⁴² The Jailer shall be responsible for the safe custody of the records to be kept under section 12 of the Prisons Act, for the commitment warrants and all other documents confined to his care, and for the money and other articles taken from prisoners.⁴³ The Jailer shall not be absent from the prison for a night without permission in writing from the Superintendent; but, if absent without leave for a night from unavoidable necessity, he shall immediately report the fact and the cause of it to the Superintendent.⁴⁴ Section 20 of the said Act states that where in a prison Assistant Jailer and Deputy Jailer is appointed subject to the order of superintendent he shall be competent to do all the duties of the Jailer. If any prisoner is sick then the jailor immediately will inform to the medical officer and will apply the directions given by medical officer or medical subordinate.

Subordinate officers as gate keeper is also the officer of the prison and he can examine anything carried in or out of the prison, search or stop any person to ascertain, what is going into or coming out of prison and has to give immediate notice to the jailor on finding any prohibited article or property. Officers subordinate to the jailer shall not be absent from the prison without leave from the Superintendent or from the jailer. Prisoners who have been appointed as officers of prisons shall be deemed to be public servants within the meaning of Indian Penal Code, 1860.⁴⁵

No officer of a jail shall sell or let, nor shall any person in trust for or employed by him sell or let, or derive any benefit from selling or letting, any article to any prisoner or have any money or other business dealings, directly or indirectly, with any prisoner. No officer of a prison shall, nor shall any person in trust for or employed by him, have any interest, direct or indirect, in any contract for the supply of the prison; nor shall he derive any benefit, directly or indirectly, from the sale or purchase of any article on behalf of the prison or belonging to prisoners.⁴⁶ Prison officers are obligated to treat prisoners sympathetically. They are obligated to listen inmates are to sort out the problems of prisoners as well as not to irritate with them.⁴⁷

In the present age, the society seems to have a variety of objectives in regard to control of crime and it considers imprisonment of the means for attaining each of them. First, as is implied by the relatively recent emphasis on reform, rehabilitation and treatment of criminals, society wants criminal changed, so that they will commit no more crimes.⁴⁸ The prison is expected to

³⁶ Section 13 of the Prisons Act, 1894

³⁷ Section 14 of the Prisons Act, 1894

³⁸ Section 15 of the Prisons Act, 1894

³⁹ Medical subordinate referred to in section 6 of the Prison Act, 1894 (IX of 1894), in this Manual described as Assistant Medical Officer.

⁴⁰ UP Jail Manual, 1894, Rule 20

⁴¹ Section 16 of the Prisons Act, 1894

⁴² section 17 of the Prisons Act, 1894

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⁴⁴ section 19 of the Prisons Act, 1894

⁴⁵ Section 21, 22, 23 of The Prisons Act, 1894

⁴⁶ Section 10 of Prisons Act, 1894

⁴⁷ upprison.gov.in/pdf/admin_rpt_2010_final.pdf.

⁴⁸ Sutherland and Cressey, "Principles of Criminology", Sixth Edition, Surjeet Publications, p. 460-461

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reform or rehabilitate criminals. Society wants protection from criminals. The prison keeps exclude offenders from society so that they cannot cause harm by commission of crimes during certain periods of time. Society wants retribution also. The prison is expected to cause suffering in routine life of criminals as they have made other's life intolerable. It is in the benefit of the society to minimise crime rate not only by reforming criminals but also by deterring the general public from behaviour which is punishable by imprisonment.⁴⁹ Since the prison has been assigned the task of working toward each of society's goals, the attainment of goals may be considered the objective of punishment.⁵⁰ Within the prison, the attempt to perform the duties and for achieving the goals of incarceration various theories of punishment are made applicable to the penal structure.

SUGGESTION AND CONCLUSION

Effective prison administration is essential for the betterment of criminal jurisprudence. It will not only give strength to the system but will also helpful in making the policies of government transparent as well as the ultimate goal of penal system will become easy to achieve by reformation of prisoners. In the absence of proper administration of prisons prisoners' right will become futile. Vacant seats of prison staff must be filled without undue delay as the staff in jails are very less in comparison of required. Problems of sanitation, congestion are very serious issues of jails which must be resolved.⁵¹ Implementation of reformation schemes in an effective way will make the administration effective and proper in prisons. The provisions relating to arrest and their rights during detention cannot be by-passed by alleging that that there was no arrest in real but that was only informal detention.⁵² Informal detention or restraint of any kind by the police is not authorised by law.⁵³ Jailors are bound by rule of law and cannot defeat the primary purpose of improvement. Prison staff is the backbone of prison administration. Smooth function of prison administration, enforcement of rights in effective way is possible by the sufficient prison staff. Their needs and requirement must be taken into the consideration. The Court has power and responsibility to intervene and protect the prisoner against the mayhem, crude or subtle and may use habeas corpus for enforcing imprison humanism and forbiddance of harsher restraints. Sense and sympathy are not enemies of penal asylums. The aim of incarceration is not only punitive but restorative to be an offender a non-offender. Rehabilitation is a prized purpose of prison hospitalization. A criminal must be cured and cruelty is not curative even as poking a bleeding wound is not healing.

Law has been playing an important role in all the modern societies. It has become a norm of organizing all the societies because of its promise to be universal, uniform and equal. The prisoners whether they are convicted or under trials cannot be deprived of their human rights except the right to liberty. Dignity of a prisoner is not diminished on being convicted for the crime. Prisons are for reform and rehabilitation. Human rights are an essential component in any measure of penal reform. The humanitarian approach should be considered in a penal administration. Prison houses are made within the geographical boundaries of the nation and when Part IIIrd, Constitution of India is invoked by a prisoner it cannot be said at bay by the courts of law. The right guaranteed under the Constitution spread the humanity. The non-compliance of the related provisions and failure to inform the accused about his rights would nullify the trial.⁵⁴

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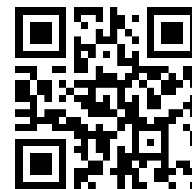
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Total Quality Management School Practices, Implementation of ISO 9001: 2015 Quality Management System and Performance of Schools in the Division of Santa Rosa City, Laguna



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ABSTRACT: The study aimed at determining the total quality management school practices, level of implementation of ISO 9001: 2015 quality management system and level of performance of schools in the Division of Santa Rosa City, Laguna. Descriptive-correlational research method was employed using self-made survey questionnaire. The study revealed that the respondents strongly agreed on the total quality management school practices with an overall weighted mean of 3.50. Similarly, the level of implementation of ISO 9001: 2015 quality management system was very high with an overall weighted mean of 3.48 and the level of performance of schools was very high with an overall average of 3.53. The relationship ranged from moderate to high correlation with a probability value of 0.000 for all variables at 0.01 level of significance revealed a significant relationship between the total quality management school practices and level of implementation of ISO 9001: 2015 quality management system, between the total quality management school practices and level of performance of schools, between level of implementation of ISO 9001: 2015 quality management system and level of performance of schools. From the salient findings, it is imperative to conclude that the schools in the division of Santa Rosa City focus on school practices that would instill commitment to the learning success of the students visible in a very high learning and teaching processes with the support of school resources and external engagement. Recognizing the value of implementing ISO 9001: 2015 quality management system for the improvement of the school operations gives significant impact both in the micro or macro level of school management, thus improves the performance of school heartened on a learner-centered, inclusive and inspiring learning environment.

KEYWORDS: Descriptive correlational research, Total Quality Management, Quality Management System, Performance.

INTRODUCTION

Total Quality Management (TQM) has a great contribution in forming the education system, adapting to it would make important changes not only in the school operations but also in the dispense of quality education among learners, and has vital superiorities in development of education system can meet the expectations of the stakeholders.

The concept of Total Quality Management (TQM) is considered as one of a popular concept which is used to manage the quality of product and services comprehensively (Permana et al., 2021). Likewise, it is a structured effort by employees to continuously improve the quality of their products and services through proper feedbacks and research, thus ensuring superior quality of a product or service is not the responsibility of a single member (Juneja, 2021). Goetsch and Davis (2016) as cited in Pambreni (2019) posited that total quality in reference with quality assurance is an approach to doing business that endeavors to maximize the competitiveness of an organization through the continuous improvement of the quality of its products, services, people, processes, and environments.

Moreover, TQM raises the entire process of encouraging everyone in the organization to participate in attempts to improve or enhance the quality of the organizational operations. Likewise, it is the management of initiatives and procedures which aims to achieve quality products and services. It includes key principles such as executive management, training, customer focus, decision making, continuous improvement, organization culture, and employee involvement (Murray, 2019). With the said perspective, TQM as mentioned by Sallis (2019) is undeniably considered as a concept of continuous improvement that may equip every educational institution with a set of practical tools for addressing the requirements, wants and expectations of the stakeholders.

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Educational institutions benefit from the ISO 9001 Certificate to the fullest extent possible. The Institutions' ISO 9001: 2015 Quality Management Systems aims for retrospective archiving, more regularity, and a comprehensive understanding of the operations done. By adopting an approach that begins to use more efficient work procedures and focuses on the organization's business goals, ISO 9001 standards will assist employees and boost customer satisfaction (Celik, 2018).

As comprehensively assumed by most organizations, Quality Management System must usually align all aspects of the delivery of the company's value proposition including procedural aspect and strategic objectives through its policies, operational procedures, leadership and motivational methods, resource allocation, and distribution of information. In linking to the educational practice, Quality Management System contributes to the overall system of quality processes of the educational organizations (Gordon, 2021). Thus, it forms an integral part of the current socio-economic and environmental challenges, quality standards which ought to be dynamic and flexible so as to cater for the different stakeholders of the educational institutions (Kounis, 2018).

Furthermore, QMS (Quality Management System) is as useful as it can be for it serves as a coherent framework for systematically integrating, aligning and focusing organizational processes. In connecting the above-mentioned principle in the educational set up, it guides the educational institutions to focus on processes that would help the schools in accomplishing its network of objectives and infrastructure of goals effectively and efficiently for the value and adeptness of processes the ensure maximization of shareholders' satisfaction. Such a scope of QMS has intriguing implications on the structure of the educational institutions considering its culture, knowledge management practices and climate.

Silva et al., (2021) posited that the organizations could follow the suggested pathway to evolve their QMS to support solutions to some of the current challenges. At the same time, quality managers could reflect on their future professional challenges. This work has taken a step forward, indicating sustainable quality management systems as a viable pathway to explore QM knowledge regarding the emergency paradigm, thus enhancing leadership's role (Silva, et al., 2021).

Consequently, an empirical research confirms that, in accordance with its conformance purpose, ISO 9001 is successful in building conformance capability and that by using ISO 9001 practices companies can also benefit in relation to production economics through improved process efficiency, and also to other competitive capabilities. On the other hand practitioners cannot expect ISO to improve the level of product quality, and consecutively provide associated customer satisfaction and continuous improvement. Improving the level of product quality is not within the scope of ISO 9001; instead it has to be determined within the process of developing business strategy (Rusjan & Castka, 2021).

In view of this, the Department of Education (DepEd) issued DO 009 s.2021 or called Institutionalization of a Quality Management System in the Department of Education which aims to provide offices of DepEd and schools with guidelines and standards to integrate DepEd internal systems and processes, upgrade people capacity, ensure consistency in the delivery of quality services, and foster continuous improvement that will result in enhanced and sustained client satisfaction. The department saw the benefits on establishing a QMS certifiable to ISO standards which includes improvement of quality of service through streamlining and standardization of processes and reduction of variability in implementation, increase on productivity and efficiency through clarity in processes and process holders, strengthened accountability through transparent communication within and among offices and personnel in the organization and its external stakeholders, enhancement of client satisfaction through improvement of the organization's ability to fully understand and consistently meet client requirements, and continuous performance excellence through institutionalization of continuous improvement as a core value and practice of the Department. The establishment of DepEd National Quality Management System (QMS) wherein the respective QMS of DepEd offices and schools are established, implemented, and aligned in accordance with standards in these guidelines aimed at integrating DepEd's internal process within and across governance levels to ensure consistency in the delivery of quality services to achieve client satisfaction (DepEd Circular, 2016).

Nonetheless, despite the number of studies that investigated particularly on knowledge and adherence to total quality management, ISO standards and Quality Management System in selected public secondary schools in the country, no study yet has been conducted in the schools in the division of Santa Rosa City, Laguna concerning total quality management school practices, implementation of ISO 9001: 2015 quality management system and performance of schools.

Thus, the study is valued for it would help the schools in the division of Santa Rosa City, Laguna particularly the school heads to identify skills deficiencies among the members of the teaching force which can easily be addressed through the conduct of the necessary training activities and implementation of comprehensive educational programs and reforms. With emphasis on collaboration, this can serve as a guide for the schools in the division of Santa Rosa City, Laguna in the creation of the cross-functional academic teams and knowledge sharing mechanisms that would indeed contribute to the attainment of quality education needed in today's learning continuum and for the improvement of the school operations as a whole. From the

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forementioned viewpoints, the researcher underscored that Total Quality Management school practices and implementation of ISO 9001: 2015 Quality Management System could be the antecedents of the performance of selected schools in the city divisions of Laguna province.

METHODS

The study used descriptive-correlational research method since it determined the total quality management school practices, implementation of ISO 9001: 2015 quality management system and level of performance of schools in the Division of Santa Rosa City, Laguna for the Academic Year 2021-2022. Likewise, it sought significant relationships that exist among variables and it measured the strength and level of such correlation. The primary data used in the study was randomly selected from Teachers I-III and Master Teachers of ten (10) public secondary schools in the division of Santa Rosa city, Laguna. The sample size was taken using the Slovin's formula with 5% margin of error resulting to 263 out of 767 Teachers I-III and 27 Master Teachers with a total of 290 respondents from 794 total population.

The researcher used three sets of self-made survey questionnaire. The survey questionnaire was validated using the Cronbach's reliability test. The first set contained statements to determine total quality management school practices which was measured using the Likert-Typed Scale (4-Strongly Agree, 3-Agree, 2-Disagree, 1- Strongly Disagree). The second set of survey questionnaire included statements to determine the level of implementation of ISO 9001: 2015 quality management system which was measured using the Likert-Typed Scale (4-Strongly Agree/Very high, 3-Agree/High, 2-Disagree/ Low, 1- Strongly Disagree/Very Low). The third set composed of statements to determine the level performance of schools in terms access, quality and governance using the Likert-Typed Scale (4-Strongly Agree/Very high, 3-Agree/High, 2-Disagree/ Low, 1- Strongly Disagree/Very Low).

Following the ethical principles of the study, the researcher secured a letter of request asking approval from the Schools Division Superintendent of Santa Rosa City for the conduct of the study. Upon received of an endorsement and approval letter, the researcher sought the approval of to the concerned school heads of the selected schools. The questionnaire was administered by the researcher to the respondents of the study following the safety protocols to adhere to the health standards set by the Inter-agency Task Force (IATF) related to the COVID - 19 pandemic. The researcher explained to the respondents about the nature of their participation in the investigation and discussed with them the instructions to follow for easy and convenient ways of answering the survey forms. The respondents were assured that the information that they would provide with the researcher would be treated with confidentiality as part of the ethical considerations of the study. Individual consent of the respondent was obtained explaining to them that this investigation was simply an academic requirement and would be kept with utmost privacy. The accomplished questionnaires were collected right after they had answered by the respondents and the gathered data were tallied, tabulated, analyzed and interpreted. Pearson -r was used to ascertain the relationship between variables while weighted mean and ranking were used to determine the total quality management school practices, level of implementation of ISO 9001:2015 Quality Management System and the level of performance of schools.

RESULTS AND DISCUSSIONS

Discussion of the total quality management school practices, ISO 9001:2015 quality management system, and performance of schools is presented in the succeeding tables:

Table 1. Composite Table for the Total Quality Management School

Indicators	Weighted Mean	Verbal Interpretation	Rank
1. Service to customer	3.49	Strongly Agree	6.5
2. Leadership	3.47	Strongly Agree	9
3. Physical environment and resources	3.52	Strongly Agree	3.5
4. Effective learning and teaching	3.54	Strongly Agree	1
5. Students	3.49	Strongly Agree	6.5
6. Staff	3.44	Strongly Agree	8
7. External relations	3.52	Strongly Agree	3.5
8. Organizations	3.53	Strongly Agree	2
9. Standards	3.51	Strongly Agree	5
Overall Weighted Mean	3.50	Strongly Agree	

Legend: 3.25-4.00- Strongly Agree (4), 2.5-3.24 Agree (3), 1.75-2.49 Disagree (2) 1.00- 1.74 Strongly Disagree (1)

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It is shown in table 1 that the respondents strongly agreed on the total quality management school practices as evidenced by overall weighted mean of 3.50 in all practices revealed that the schools in the Division of Santa Rosa City improved learners' academic competence through enhancement of the learning and teaching processes which in turn may help the teachers develop their pedagogical skills. In addition, an effective management of resources and external supports. Kistian and Permana (2019), theorized that Total quality management is the management of initiatives and procedures which aims to achieve quality products and services through leadership and physical environment and resources of the organization. It includes key principles such as executive management, training, customer focus, decision making, continuous improvement, organization culture, and external relations (Murray, 2019).

Paragas (2020) made a descriptive study which determined and analyzed the total quality management practices of public secondary school heads. The study included the school heads and teachers in all Schools Division in Pangasinan. The identified quality management practices are based on the parameters of APPES Manual. Findings of the study revealed that stakeholders were truly a great agent in improving the public secondary schools. Therefore, school heads must be eager to do this to have a strong partnership and participation of the stakeholders in the school.

On the other hand, Suleman (2017) revealed that public secondary schools encountered a lot of obstacles in implementing TQM. Poor and ineffective leadership; a lack of proper physical environment and resources; workforce insubordination; a lack of management commitment; poor and ineffective planning; poor teacher morale; political interference and external relations; poor PTA performance; poor infrastructural facilities; a lack of competent teaching staff; an unstable curriculum; an unfavorable school environment; and a lack of textbooks and instructional materials were among the challenges. TQM has unquestionably great promise in the field of education. It should not be assumed that there will be no difficulties or roadblocks in implementing TQM in education. However, in terms of service to customer, the schools in the Division of Santa Rosa City made appropriate strategies like creating different platforms to guarantee that information reach the customers on time. Establishing a pro-active leadership results a sense of ownership among personnel that leads to become more socially responsible and accountable in every decision they make in all levels of organization and carried out well a continuous improvement in the quality of education services and labor processes to ensure the attainment of the expected standards.

Table 2. Composite Table for the Level of Implementation of ISO 9001: 2015 Quality Management System of Schools

Indicators	Weighted Mean	Verbal Interpretation	Rank
1. Leadership	3.48	Very High	4.5
2. Engagement of people	3.50	Very High	1.5
3. Improvement	3.46	Very High	7
4. Customer focus	3.49	Very High	3
5. Process approach	3.47	Very High	6
6. Evidenced-based decision making	3.48	Very High	4.5
7. Relationship engagement	3.50	Very High	1.5
Overall Weighted Mean	3.48	Very High	

Legend: 3.25-4.00- Strongly Agree/Very High (4), 2.5-3.24 Agree/High (3)

1.75-2.49 Disagree/low (2), 1.00- 1.74 Strongly Disagree/Very Low (1)

From the data shown in table 2, an average weighted mean of 3.48 revealed that the level of implementation of ISO 9001: 2015 quality management system of schools in the division of Santa Rosa city, Laguna was very high. Nabaho et al., (2020) stated in their study the overall impact of implementation of ISO on various business performance factors. These performance factors include information quality, operating performance, design performance, environmental performance, product and service quality, supplier and customer focus, relationship engagement, process approach and competitive priorities.

Nabaho et al., (2020) stated in their study the overall impact of implementation of ISO on various business performance factors. These performance factors include information quality, operating performance, design performance, environmental performance, product and service quality, supplier and customer focus, relationship engagement, process approach and competitive priorities. This is obviously implied that the schools' objectives for refining its products or services, processes, structures and management system using the results of the analysis and evaluation of its performance were well defined and the people were empowered to join in and contribute to the fruitful attainment of school initiatives.

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Rusjan and Castka (2021), which postulated that, in accordance with its conformance purpose, ISO 9001 is successful in building conformance capability and that by using ISO 9001 practices companies can also benefit in relation to production economics through improved process efficiency, people engagement, customer focus and also to other competitive capabilities. On the other hand, practitioners cannot expect ISO to improve the level of product quality, and consecutively provide associated customer satisfaction and continuous improvement. Improving the level of product quality is not within the scope of ISO 9001; instead, it has to be determined within the process of developing business strategy.

Kenya Seed Company has adopted organizational practices in line with ISO 9000:2008. The study analyzed the effect of ISO 9000:2008 certification practices of leadership, continual process improvement, people involvement, customer focus and mutual beneficial supplier relationship on operational performance of Kenya Seed Company, Kenya. The objective of the study was to determine the effect of these practices on operational performance. A conclusion came up with a need for the company to assess the company's engagement with suppliers. This means that the schools in the Division of Santa Rosa City, Laguna, recognized their institutional allies for the support extended to them hence, invited concerned parties that could help achieve the institutional objectives and a well-communicated mission and vision to the entire school community for the employees to internalize the very essence of the organization's existence.

Table 3. The Level of Performance of Schools in the Division of Santa Rosa City, Laguna

Indicators	Weighted Mean	Verbal Interpretation	Rank
Access			
1. establishes enrolment processes in school to ensure that all-aged learners are included in quality basic education.	3.61	Very High	1
2. uses an accurate and reliable computer-based enrolment system that updates learners' information data to ensure consistency in registration of learners.	3.53	Very High	5
3. prepares safe learning environment conducive for learning and development of learners.	3.59	Very High	2
4. strengthens community participation in all processes and activities.	3.58	Very High	3
5. implements intervention initiatives that help improve students' retention rate .	3.55	Very High	4
Average	3.57	Very High	
Quality			
1. provides technical assistance on instruction consistent to teaching standards and pedagogies to improve practice and performance.	3.55	Very High	2
2. institutionalizes integration of career awareness and opportunities into the school curriculum and other learning experiences.	3.50	High	5
3. initiates on the innovative use of learning assessment tools and strategies consistent with curriculum requirements.	3.52	Very High	3
4. contextualizes learning standards to effectively assist teachers in making the curriculum relevant for learners.	3.51	Very High	4
5. promotes a learner-centered, inclusive and motivating learning environment .	3.56	Very High	1
Average	3.53	Very High	
Governance			
1. implements the school developmental plans that reflect institutions' goals and objectives.	3.53	Very High	1

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2.promotes a culture of research to produce data driven and evidence-based innovations to improve school performance and foster continuous improvement.	3.47	Very High	4.5
3.establishes a culture of transparency in the delivery of basic education services such as allocation, procurement and disbursement.	3.49	Very High	3
4.creates collaborative actions with stakeholders in solving complex issues on learner development and evolving needs of school.	3.50	Very High	2
5.empowers school personnel in designing and implementing needs-based programs in the school that support the development of learners.	3.47	Very High	4.5
Average	3.49	Very High	
Overall Weighted Mean	3.53	Very High	

Legend: 3.25-4.00- Strongly Agree (4), 2.5-3.24 Agree (3), 1.75-2.49 Disagree (2)
1.00- 1.74 Strongly Disagree (1)

From the data shown, the level of performance of schools in the Division of Santa Rosa City in has a weighted mean of 3.75 for access, 3.53 for quality and 3.49 for governance with an overall weighted mean of 3.53. The overall weighted mean of 3.53 revealed a very high level of implementation in terms of access, quality and governance.

Liniao & Gosadan (2019) aimed to find out if the school-based management system level of implementation significantly influences the school performance. Most of the administrators' school performance was meeting the standards in the NAT average rating. School-based management system level of implementation in terms of leadership and governance, curriculum and instruction, accountability, and continuous improvement and management of resources significantly influence school performance. All of these indicators are the best significant predictors of school performance. These results further indicate that the higher is the administrators' level of implementation on leadership and governance, curriculum and instruction, accountability and continuous improvement, and management of resources, the higher is the level of school performance. The developed enrolment processes in school heartened a learner-centered, inclusive and inspiring learning environment, and implemented the school developmental plans that reflected institutions' goals and objectives.

Msallam et.al (2020), suggested a higher management focus on deepening and increasing awareness of total quality management among university college administrative leaders and employees by incorporating them into training programs, workshops, conferences, and seminars, as well as informing them of successful international university experiences in the field of total quality management. Moreover, school performance is measured through the level of School – based management. SBM practices related to school leadership, the school improvement process, and school performance accountability were discovered to be linked to school leadership and staff development.

Table 4. Relationship between Total Quality Management School Practices and Level of Implementation of ISO 9001: 2015 Quality Management System of Schools in the Division of Santa Rosa City, Laguna

TQM School Practices	Level of Implementation of ISO 9001: 2015 Quality Management System						
	Leadership	Engagement of people	Improvement	Customer focus	Process approach	Evidencebased decision making	Relationship engagement
Service to customer	r=0.700** Moderate correlation p=0.000	r=0.698** Moderate correlation p=0.000	r=0.669** Moderate correlation p=0.000	r=0.732** Moderate correlation p=0.000	r=0.702** Moderate correlation p=0.000	r=0.706** Moderate correlation p=0.000	r=0.727** Moderate correlation p=0.000

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Leadership	r=0.747** Moderate correlation p=0.000	r=0.729** Moderate correlation p=0.000	r=0.734** Moderate correlation p=0.000	r=0.742** Moderate correlation p=0.000	r=0.734** Moderate correlation p=0.000	r=0.745** Moderate correlation p=0.000	r=0.713** Moderate correlation p=0.000
Physical environment and resources	r=0.715** Moderate correlation p=0.000	r=0.722** Moderate correlation p=0.000	r=0.738** Moderate correlation p=0.000	r=0.742** Moderate correlation p=0.000	r=0.720** Moderate correlation p=0.000	r=0.699** Moderate correlation p=0.000	r=0.696** Moderate correlation p=0.000
Effective learning and teaching	r=0.753** Moderate correlation p=0.000	r=0.732** Moderate correlation p=0.000	r=0.753** Moderate correlation p=0.000	r=0.763** Moderate correlation p=0.000	r=0.740** Moderate correlation p=0.000	r=0.741** Moderate correlation p=0.000	r=0.727** Moderate correlation p=0.000
Students	r=0.656** Moderate correlation p=0.000	r=0.675** Moderate correlation p=0.000	r=0.664** Moderate correlation p=0.000	r=0.710** Moderate correlation p=0.000	r=0.668** Moderate correlation p=0.000	r=0.668** Moderate correlation p=0.000	r=0.694** Moderate correlation p=0.000
Staff	r=0.700** Moderate correlation p=0.000	r=0.779** Moderate correlation p=0.000	r=0.761** Moderate correlation p=0.000	r=0.761** Moderate correlation p=0.000	r=0.763** Moderate correlation p=0.000	r=0.726** Moderate correlation p=0.000	r=0.722** Moderate correlation p=0.000
External Relations	r=0.752** Moderate correlation p=0.000	r=0.746** Moderate correlation p=0.000	r=0.762** Moderate correlation p=0.000	r=0.801** High correlation p=0.000	r=0.756** Moderate correlation p=0.000	r=0.739** Moderate correlation p=0.000	r=0.778** Moderate correlation p=0.000
Organizations	r=0.806** High correlation p=0.000	r=0.828** High correlation p=0.000	r=0.805** High correlation p=0.000	r=0.823** High correlation p=0.000	r=0.827** High correlation p=0.000	r=0.798** Moderate correlation p=0.000	r=0.798** Moderate correlation p=0.000
Standards	r=0.803** High correlation p=0.000	r=0.803** High correlation p=0.000	r=0.792** Moderate correlation p=0.000	r=0.815** High correlation p=0.000	r=0.823** High correlation p=0.000	r=0.797** Moderate correlation p=0.000	r=0.780** Moderate correlation p=0.000
**Significant @ 0.01							

As shown in table 4, the relationship ranged from moderate to high correlation with a probability value of 0.000 for all variables which were lower than the significance level at 0.01. The result revealed a significant relationship between the total quality management school practices and level of implementation of ISO 9001: 2015 quality management system of schools in the Division of Santa Rosa City, Laguna. The results showed that more total quality management school practices, the higher is the level of implementation of ISO 9001: 2015 quality management system of schools in the division of Santa Rosa City, Laguna. The findings support the study made by Sadikoglu & Olcay (2017) which explained the impacts of TQM practices on various performance measures as well as the reasons and the barriers of the TQM practices of firms. This shown that different TQM practices significantly affect different implementation and performance outcomes. Results revealed that primary obstacles that

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the firms face were lack of employee involvement, awareness and commitment of the employees, inappropriate firm structure, and lack of the resources.

Table 5. Relationship between the Total Quality Management School Practices and Level of Performance of Schools in the Division of Santa Rosa City, Laguna

TQM School Practices	Level of Performance of School		
	Access	Quality	Governance
Service to customer	r=0.699** Moderate correlation p=0.000	r=0.710** Moderate correlation p=0.000	r=0.688** Moderate correlation p=0.000
Leadership	r=0.683** Moderate correlation p=0.000	r=0.725** Moderate correlation p=0.000	r=0.731** Moderate correlation p=0.000
Physical environment and resources	r=0.720** Moderate correlation p=0.000	r=0.715** Moderate correlation p=0.000	r=0.673** Moderate correlation p=0.000
Effective learning and teaching	r=0.776** Moderate correlation p=0.000	r=0.758** Moderate correlation p=0.000	r=0.752** Moderate correlation p=0.000
Students	r=0.675** Moderate correlation p=0.000	r=0.733** Moderate correlation p=0.000	r=0.692** Moderate correlation p=0.000
Staff	r=0.710** Moderate correlation p=0.000	r=0.704** Moderate correlation p=0.000	r=0.729** Moderate correlation p=0.000
External relations	r=0.758** Moderate correlation p=0.000	r=0.757** Moderate correlation p=0.000	r=0.762** Moderate correlation p=0.000
Organizations	r=0.801** High correlation p=0.000	r=0.805** High correlation p=0.000	r=0.782** Moderate correlation p=0.000
Standards	r=0.792** Moderate correlation p=0.000	r=0.791** Moderate correlation p=0.000	r=0.783** Moderate correlation p=0.000
**Significant @ 0.01			

As shown in table 5, there was a significant relationship between the total quality management school practices and level of performance of schools in the division of Santa Rosa City, Laguna since the relationship ranged from moderate to high correlation with a probability value of 0.000 for all variables which were all lower than the significance level at 0.01. This means that the more total quality management school practices, the higher is the level of performance of schools in the division of Santa Rosa City, Laguna.

The findings support the study of Pambreni et al. (2019) mentioned in their study that the effect of total quality management (TQM) practices on the organization performance of Small and Medium Enterprises of four critical elements of TQM namely customer focus, continuous improvement, strategically based, and total employee involvement are used as an important factor influencing on organization performance. The research finding indicate that TQM elements; namely customer focus, continuous improvement, strategically based, and total employee involvement have a positive and significant effects on organization performance.

Lushi et al. (2017), which posited that Quality management systems (QMs) are business practices that may benefit various companies. As several empirical studies show, implementing QM effectively influences firm performance positively. Firms that implement QM focus on providing more value for their customers or stakeholders and improving the efficiency of processes. In this context, management system standards (MSSs) have enjoyed enormous success over the years, in the sphere of QM (ISO

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9001). This means that the quality and the satisfaction of the employees for increasing productivity, their motivation and rewarding, the use of performance evaluation and performance measurement techniques, elimination of errors and mistakes in the organization, concentrating on teamwork, benefitting from the experience of successful organizations, making the strategic planning and such like targets underline at the sense of Total Quality Management (TQM).

Table 6. Relationship between the Level of Implementation of ISO 9001: 2015 Quality Management System and Level of Performance of Schools in the Division of Santa Rosa City, Laguna

Level of Implementation of ISO 9001: 2015 Quality Management System	Level of Performance of School		
	Access	Quality	Governance
Leadership	r=0.815** High correlation p=0.000	r=0.821** High correlation p=0.000	r=0.856** High correlation p=0.000
Engagement of people	r=0.835** High correlation p=0.000	r=0.797** Moderate correlation p=0.000	r=0.808** High correlation p=0.000
Improvement	r=0.802** High correlation p=0.000	r=0.812** High correlation p=0.000	r=0.853** High correlation p=0.000
Customer focus	r=0.826** High correlation p=0.000	r=0.821** High correlation p=0.000	r=0.859** High correlation p=0.000
Process approach	r=0.801** High correlation p=0.000	r=0.845** High correlation p=0.000	r=0.849** High correlation p=0.000
Evidenced-based decision making	r=0.829** High correlation p=0.000	r=0.846** High correlation p=0.000	r=0.860** High correlation p=0.000
Relationship engagement	r=0.808** High correlation p=0.000	r=0.851** High correlation p=0.000	r=0.817** High correlation p=0.000
**Significant @ 0.01			

As shown in table 6, the relationship ranged from moderate to high correlation with a probability value of 0.000 for all variables which were all lower than the significant level of 0.01 which revealed that there was a significant relationship between the level of implementation of ISO 9001: 2015 quality management system and level of performance of schools in the division of Santa Rosa City, Laguna. The results imply that higher the level of implementation of ISO 9001: 2015 quality management system, the higher the level of performance of schools in the division of Santa Rosa City, Laguna.

The findings support the study made by Bhatia (2018), which explicated that a number of organizations have implemented Quality Management Systems (QMS) to create a culture of continuous quality improvement and improve business performance. These standards cover aspects such as management leadership, process management, teamwork, quality improvement, and supplier and customer relations. He found out the impact of implementation of QMS on various business performance factors which include information quality, operating performance, design performance, environmental performance, product and service quality, supplier and customer relationships and competitive priorities. The assessment of Figueroa (2020) on the returns of the Quality Management System (QMS) in relation to Capitol University's quest for excellence covering School Year 2005-2009 revealed that this university's QMS has constantly implemented and maintained management responsibility; has at all times implemented and maintained its human resource quality management; and that QMS has often achieved its product realization. Implementation and constant monitoring of QMS find satisfaction in the university's employees.

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CONCLUSION

The schools in the division of Santa Rosa City, Laguna recognized the value of total quality management school practices and effective implementation of ISO 9001: 2015 quality management system. High level of school performance is dependent on the number total quality management practices and the level of implementation of quality management system. Teachers looked at all these practices and implementation as essential in its mission of towards the achievement of vision. Moreover, the developed pedagogical skills among teachers helped improve the learning and teaching processes to achieve a very high level of high academic competence for the students in response to the target quality basic education, heartened a learnercentered, inclusive and inspiring learning environment, and implemented the school developmental plans that reflected institutions' goals and objectives.

RECOMMENDATION

The study has some limitations particularly on the sample size since the respondents covered only teachers 1-3 and master teachers of the division of Santa Rosa during the Academic year 2021-2022 and the use of quantitative method of research. For a more comprehensive result, it is recommended for future researchers to replicate the study using a qualitative method of research presentation including head teachers as participants. to understand deeply the teachers' context of practices and implementation in their respective schools. Moreover, the city schools should prepare a contingency plan in the event that the level of implementation and practices fall below the high level of implementation and adapting agreeable school programs with stakeholders to sustain external and relationship engagement such as parents working with their children to develop learning skills, teachers collaborate with co-workers, and LGUs support in school programs. This would also ensure that services rendered are based on customer satisfaction.

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The Effect of Teenage Girls Class Model to Reduce Anxiety Symptoms of Premenstrual Syndrome



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ABSTRACT: Premenstrual Syndrome (PMS) occurs about 75% in women of reproductive age. The impact of anxiety symptoms experienced during PMS is that it can interfere with daily activities both academic, work, family and social problems. The PMS symptom reduction strategy carried out in this study was the Young Women Class with the guidance of a Young Women Class Implementation Module which was created by the researcher containing Stress Management Materials, Personal Hygiene Guidelines and Yoga Exercises for teenagers. The purpose of this study was to analyze the effect of female adolescent class on reducing anxiety symptoms of premenstrual syndrome in female adolescents in 2021. The research method used a quasiexperimental design with a pretest-pottest with control design. This Young Women class starts after menstruation is over. Therapy is given once a month and observed 4 weeks later. Reassessment (post test) of premenstrual syndrome anxiety by using the Hamilton Anxiety Rating Scale (HAM-A) on the respondents of both groups. The results showed that most of the control group had a menstrual period of less than 7 days (70%), and had no history of PMS (56.7%). Likewise with the intervention group, most of the menstruation was less than 7 days (60%), and had no history of PMS (83.3%). There was a significant difference in the level of PMS anxiety reduction between the intervention and control groups, where the difference in the mean before and after the intervention in the form of regular counseling in the control group was only 0.97, while in the intervention group that carried out the Young Women's Class program it was 5.94. Based on the results of data analysis with the Mann Whitney test, a significance value of 0.000 was obtained. Based on this value, because the p value < 0.005, it can be concluded that the Young Women Class has an effect on reducing PMS anxiety. The results of the multivariate analysis showed that the adolescents who did not attend the class had a higher anxiety level of 5.88 than those who attended the female youth class and those who had menstruated for more than 7 days experienced a higher anxiety level of 0.76 than those who had menstruation for less than 7 days. 7 days. It is recommended that midwife education and services can develop midwifery care on adolescent reproductive health in achieving optimal health status for adolescents, so that it becomes an investment to prepare for the process of pregnancy and give birth to a quality generation.

KEYWORDS: Young Women Class, PMS, adolescent reproductive health

I. INTRODUCTION

Women who will menstruate can experience physical and psychological changes called Premenstrual Syndrome (PMS). Premenstrual Syndrome (PMS) occurs about 75% in women of reproductive age. The impact of anxiety symptoms experienced during PMS is that it can interfere with daily activities both academic, work, family and social problems. This situation can cause teenagers to experience problems in terms of achievement in school and social relations with peers or disruption of daily activities if PMS is not handled properly. This situation is exacerbated by the COVID-19 pandemic, which can cause academic stress due to online learning and piling up assignments. To reduce PMS symptoms can be done with stress management, complementary therapies such as yoga and breathing exercises. The PMS symptom reduction strategy carried out in this study was the Young Women Class with the guidance of a Young Women Class Implementation Module which was created by the researcher containing Stress Management Materials, Personal Hygiene Guidelines and Yoga Exercises for teenagers.

Before taking action on the 2 groups, the researcher informed that the purpose of the study was to reduce the symptoms of anxiety experienced by premenstrual syndrome. In the control group, regular counseling was given, while in the intervention group, the Young Women class was made which started after menstruation was over.³⁷ Based on the literature that 2 weeks

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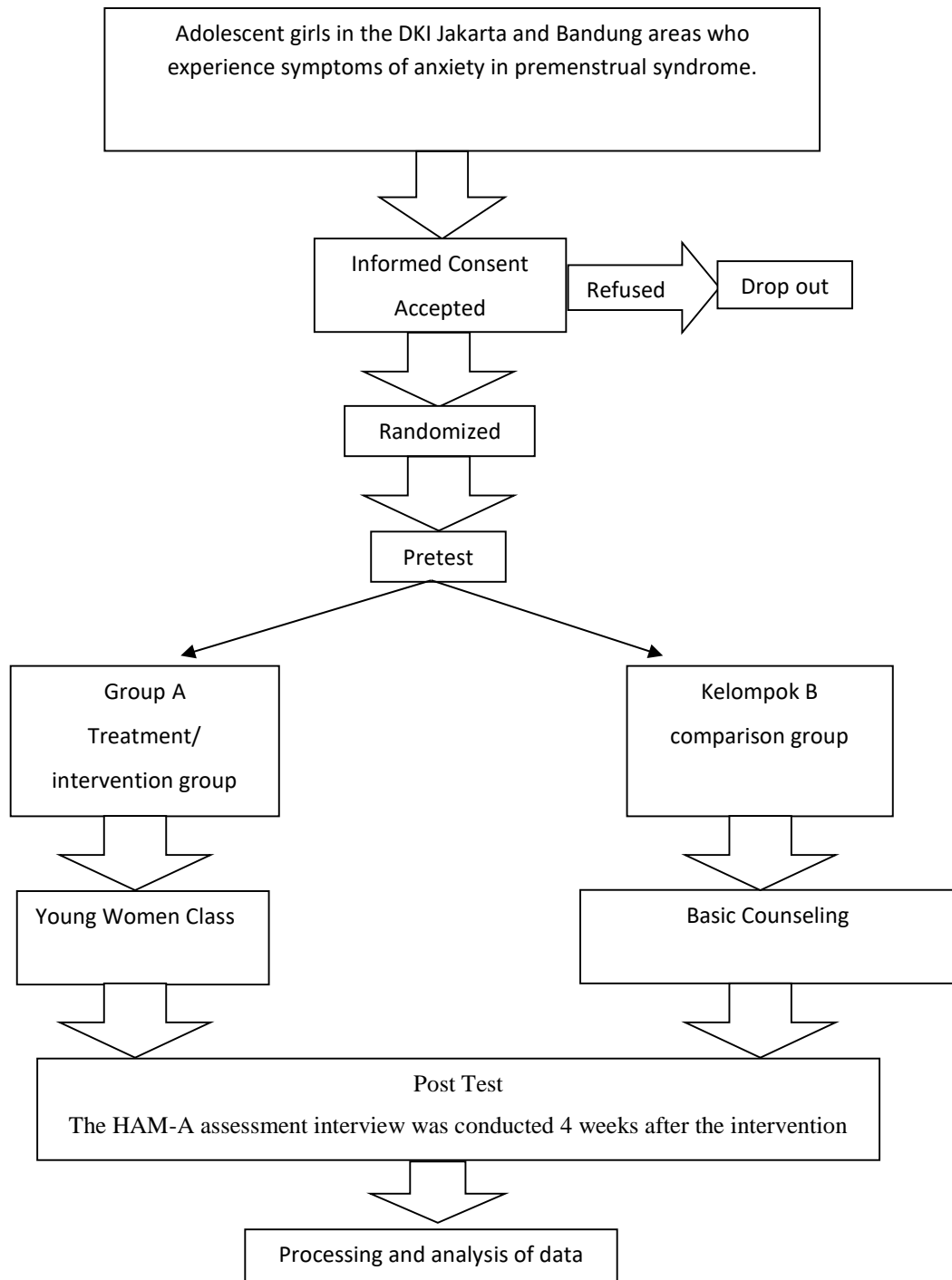
before menstruation is the luteal phase where PMS symptoms occur, so the researcher assumes that before the PMS phase occurs, young women are already equipped with strategies to reduce anxiety during PMS. Therapy is given once a month and observed 4 weeks later.^{18,28,32} Reassessment (post test) of premenstrual syndrome anxiety using HAM-A on both respondents in both groups. The final results of this study are expected to be able to contribute to midwifery services and midwifery education in order to support fitness care for adolescents. The results of this study are also expected to be a guide for adolescent health service providers so that young women in Indonesia become adolescents who are physically and psychologically prosperous so that they are able to prepare themselves for the next reproductive phase (pregnancy, childbirth and postpartum).

II. METHOD

This research method is Quasi Experimental with Pretest-Pottest with Control Design. This study aims to analyze the influence of female adolescent classes to reduce anxiety symptoms of premenstrual syndrome in young women in 2021. The population in this study were young women who experienced premenstrual syndrome who lived in the DKI Jakarta area. Due to the Covid-19 Pandemic conditions, the research which was originally going to be conducted face-toface (outside the network), was finally conducted online (within the network) to young women in the DKI Jakarta area from April to November 2021. The number of respondents was 60 people, consisting of of 30 control groups and 30 intervention groups.

The instrument in this study was a questionnaire used to collect data. The instrument used is the Shortened Premenstrual Assessment Form (SPAF) to identify subjects who experience PMS symptoms and not PMS.^{15,16} After getting the subjects who had PMS, the subjects were then weighed and weighed to calculate the Body Mass Index (BMI). Respondents were given an anxiety scale assessment questionnaire using the Hamilton Anxiety Rating Scale (HAM-A) to obtain research subjects (adolescent girls) who experienced anxiety. HAM-A assessed by Researchers.¹⁸ Each HAM-A scale varies from 0 to 4, with higher scores indicating more severe anxiety. The classification of symptoms on each sub-scale can be rated with 0 if none, 1 if mild, 2 if moderate, 3 if severe and Anxiety 4 if very severe. This instrument has been widely used in research both in America and in other countries including Indonesia and this instrument has been validated.^{17,18,32} Data collection was done by distributing questionnaires via google form. Then the subject filled out a questionnaire for 1430 days according to their menstrual cycle. Adolescent Class Interventions and adolescent health counseling are conducted online via Zoom. Both groups continued to fill out the questionnaire until the next menstruation return. Bivariate data analysis using Mann-Whitney test, and multivariate analysis using multiple logistic regression.

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Gambar 1. Alur Penelitian

III. RESULTS

This research is a collaboration between Poltekkes Kemenkes Jakarta 1 and STIKES Budi Luhur which aims to analyze the Effect of Adolescent Girls Classes to Reduce Anxiety Symptoms of Premenstrual Syndrome in Young Women. This research was conducted by taking data from DPN Junior High School students who were given treatment in the Young Women class for the intervention group and the control group who was given counseling.

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Table 1. Univariate analysis of respondent characteristics based on age, menarche age, menstrual cycle, weight, Height, and BMI

Variable	Intervention Group			Control Group		
	Mean	Min-Max	SD	Mean	Min-Max	SD
Age	14,13	13-16	0,973	17,93	13-16	2,137
Menarche Age	11,57	9-14	1,278	15,23	9-14	2,003
Menstrual Cycle	30,33	28-35	6,177	30,43	25-47	4,057
Weight	50,13	35-71	9,723	48,43	40-63	5,500
Height	156,77	140-172	7,074	155,80	146-175	5,536
BMI	20,43	14-30	3.540	19,93	13-25	2,333

In table 1, it can be concluded that the average age of respondents in the intervention and control groups is 14 and 17 years and the minimum age is 13 years and the maximum age is 16 years. The average age at menarche of respondents in both groups was 11 and 15 years with a minimum age of 9 and a maximum age of 14 years. The average menstrual cycle of respondents in both groups was 30 days with a minimum of 25 days and a maximum of 3 days. The average body weight of respondents in both groups was 50 kg and 48 kg with a minimum weight of 35 kg and a maximum of 71 kg. The average height of the respondents in both groups was 156 cm with a minimum height of 140 cm and a maximum of 172 cm. The average BMI of respondents in both groups is 20 with a minimum BMI of 14 and a maximum of 30.

Table 2. Univariate analysis of respondents' characteristics based on the length of menstruation and maternal history

Variable	Intervention Group		Control Group	
	Frequency (n =30)	%	Frequency (n = 30)	%
Menstruation Length				
➤ Less than 7 days	18	60	21	70
➤ More than 7 days	12	40	9	30
Mother's PMS History				
➤ Yes	5	16,7	13	43,3
➤ No	25	83,3	17	56,7

Based on table 2, obtained from 60 respondents consisting of 30 intervention groups and 30 control groups. In both groups, the majority of respondents experienced menstruation less than 7 days with a percentage of 60% in the intervention group and 70% in the control group. In the history of the respondent's mother who experienced PMS, the majority in both groups found that the mother did not experience PMS, which was 83.3% in the intervention group and 56.7% in the control group.

Table 3. Bivariate Analysis of the Effect of Young Women's Class on Reducing PMS Anxiety in Both Groups

PMS Anxiety	Mean	Different Mean	SD	P Value
Intervention Group				
Before Afetr	23,77		2,063	0,000
	17,83	5,94	0,834	
Control Group				
Before Afetr	24,60	0,97	2,415	0,000
	23,63		2,205	

From table 3, it is known that there is an effect of the treatment of the female adolescent class which is shown in a significant difference in the mean in the intervention group between the PMS anxiety scores before and after the intervention with a mean difference of 5.94. While in the control group there is a mean difference of about 0.97 after being given regular counseling.

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Table 4. Bivariate Analysis of the Effect of Young Women's Class on Reducing PMS Anxiety In Both Groups

PMS Anxiety	Mean	Different Mean	Z	P Value
Intervention Group(N=30)	15.50	30	-6.709	0,000
Control Group (N=30)	45,50			

From table 4, it can be analyzed that there is a significant difference in mean between the group that was given the intervention of the adolescent class and the control group who was given counseling of 30. Based on the results of data analysis with the Mann Whitney test, a significance value of 0, 000 was obtained. Based on this value, because the p value < 0.005 it can be concluded that the Young Women Class has an effect on reducing PMS anxiety.

Table 5. Multivariate Analysis of the Influence of Young Women's Class on PMS Anxiety Reduction

Model	Standardized B	Coefficients Std.Error	Standardized Coefficients Beta	t	Sig.
(Constant)	10.889	.947		11.501	.000
Groups	5.876	.425	.882	13.802	.000
Menstruation Length	.763	.446	.109	1.710	.093

From table 5 above, the following equation can be made:

$$Y = 10,889 + 5.88 \text{ Youth Class} + 0.76 \text{ Menstruation Length}$$

- In adolescents who do not attend classes, their anxiety level will be 5.88 higher than those who take youth classes
- Adolescents who experience menstruation for more than 7 days will experience higher anxiety 0.76 compared to those who experience menstruation for less than 7 days

IV. DISCUSSION

Effect of Young Women Class on PMS Anxiety Reduction

Based on the results of the study, there was a significant effect between the intervention group who received the female adolescent class and the control group who only received intervention counseling, showing a significant decrease in anxiety indicators in PMS during 3 months of observation compared to the control group who only received regular counseling interventions. The follow-up results showed that the effects continued and persisted even after 3 months. This proves that the integration of a holistic stress management program for adolescent girls combined with Yoga for adolescents can effectively reduce PMS stress and anxiety levels. This finding is similar to the results of previous studies (Deckor, et al, 2016) (Johnson, et al, 2016) (Galegos, et al 2015) which highlighted that providing interventions related to stress management, mind management and yoga in adolescents significantly reduced anxiety, depression, and stress. This study provides research evidence for classroom/group interventions among adolescent girls and facilitates wider coverage for primary care providers to implement such interventions in school settings.

On the concept of mental health, as a general aspect that refers to all measures used to prevent the development of mental disorders, the mental health training developed can be considered as one of the most effective methods for creating a healthy society and preventing stress and anxiety. (Kokkinis, 2017) The results showed that the training class, in this case the young women class, was effective in reducing the average anxiety and sleep disturbances. The results of the study by Vigerland et al. (2016) Kilburn et al (2018) and Li et al (2017) are in line with this study. The results of Chandra-Mouli and Patel's research show that class/group training is effective in reducing menstrual symptoms and problems (PMS) and helps obtain information about this period. (Mouli, et al, 2017). These studies confirm that support from family and friends along with class/group health training can reduce anxiety and will improve mental health in adolescent groups. In addition, training interventions are effective in providing information and problem-solving skills; they can improve their quality of life and reduce their anxiety. (Willems, et al, 2017).

The results showed that the average incidence of PMS anxiety in the intervention group was significantly lower than the control group. The research of Khodakarami et al. which aims to investigate the effect of group counseling on the severity of premenstrual syndrome among high school students in Hamedan found a positive effect of training. (Khodakarami, 2017) The

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results of research conducted by Akbarzadeh et al. (2018) Zheng et al. (2015) and Li et al. (2015) is also consistent with this study. According to a report by the World Health Organization, in developing countries there are observed rapid changes in social behavior, economic problems and PMS disorders are increasing. The findings of this study identify the importance of psychological characteristics and their interactive effects on the emergence of high-risk behaviors in adolescents and indicate the need for effective assessments and interventions in eliminating negative indicators of mental health and encouraging positive indicators of mental health.

The results showed that the training class was effective in reducing the severity of depression in adolescent girls. Parker et al. (2016) and de Jonge-Heesen et al. (2016) also found that psychological interventions and simple training reduced depressive symptoms. Among the limitations of this study not to mention the many factors that influence PMS anxiety disorder in most of the studies considered a nuisance to investigate the factors that influence the desired PMS anxiety reduction. According to the results of this study, it is recommended that schools, communities, and health workers can work together for the prevention and treatment of mental disorders, emotional growth, and prevention of abnormal behavior in girls and anxiety disorders during PMS.

V. CONCLUSION

The conclusion of this study is that the Young Women Class Model can affect the decrease in symptoms of premenstrual syndrome anxiety, so that teenagers can be more productive. The integration of a holistic stress management program for adolescent girls combined with Yoga for adolescents can effectively reduce PMS stress and anxiety levels. The suggestion in this study is that the Young Women Class can be continued as the development of midwifery care on adolescent reproductive health to practice the health efforts that have been taught as an effort to help reduce physical and psychological discomfort throughout the menstrual cycle. The hope is that teenagers can achieve optimal health status, so that it becomes an investment to prepare for the process of pregnancy and give birth to a quality generation.

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Servant Leadership, Decision Making, and Instructional Leadership Practices of School Heads in Selected Elementary Schools in Deped Cabuyao



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ABSTRACT: The study aimed at examining the relationship among the school heads' level of servant leadership, level of decision making and instructional leadership practices in elementary schools particularly in the City Schools Division of Cabuyao. Descriptive correlational research design was employed. The study revealed that there was a significant relationship between the school heads' level of servant leadership skill and their level of decision-making skill, school heads' level of servant leadership skill and their instructional leadership practices and school heads' level of decision-making skill and their instructional leadership practices. Correlations indicated that the higher the level of servant leadership skill of school heads, the higher is their level of decision-making skill, the higher the level of servant leadership skill of school heads, the more they confirm their instructional leadership practices, and the higher the level of decision making skill of school heads, the more they confirm their instructional leadership practices. In essence, the results yield substantial implications to school heads' leadership and decision making. Similarly, an understanding of the relationship among the school heads' level of servant leadership skill, level of decision making skill and instructional leadership practices helps the

KEYWORDS: Descriptive correlational study, Southeast Asia, Quantitative Research. Servant Leadership. Decision Making. Instructional Leadership Practices

INTRODUCTION

Leadership in the current global crisis, the COVID-19, requires prioritizing mental well-being of employees. Almost every leader in an educational institution has been faced with moments of crisis, ranging from small bumps on the road to more gigantic boulders along the path. The current crisis involving the COVID-19 pandemic is different than anything we all have faced in over a century, one that looks to be a lengthy and possibly ethereal challenge for every organization. Servant leadership in a prolonged crisis with such serious consequences is formidably necessary for an organization and its people, and requires physical, psychological and emotional fortitude of the leader.

Cahapay (2022) sought to discover the essence of educational leadership practices of school principals in the context of the current COVID-19 crisis in the form of educational leadership practices during a crisis such as navigating the crisis with adaptive leadership, cultivating practices in crisis management, promoting inclusivity in the new normal and caring first for what is essential. The concept of servant leadership is needed now more than ever. In the study of Kumar (2020), there are four reasons why servant leadership is the most suited leadership philosophy for the post-COVID19 new normal: the 'New Normal' will transform the way leadership uses "power", it will demand excellence in leadership beyond the achievement of objectives, enforce values-based leadership, and disrupt the chasing of success and replace it with pursuit of significance. Harper (2020) further adds that a servant leader is not only sensitive but sensible and is grounded and has a reason for making certain decisions. Davis (2018) reiterates the practical application in the workplace for shaping thoughtful decisions. Servant-leadership offers a distinct perspective and set of values for leaders that acknowledge the worth of others with a focus on employee growth. McCann & Sparks (2018) emphasizes that if education applies the principles, values, and practices of servant leadership to teaching, this will dramatically impact learning and the learning experiences of students. Crippen (2017) adds that servant-leadership contributes to the scholarship of teaching and learning excellence.

The study delved on determining the relationship among the school heads' level of servant leadership, level of decision making and instructional leadership practices in elementary schools particularly in the City Schools Division of Cabuyao.

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Furthermore, the investigation addressed certain issues as research gaps that had been identified during the conduct of the study which may serve as first-hand evidence for the improvement of the quality of leadership in elementary schools and creation of an action plan as well. In core, the results of the investigation may certainly guide the elementary school heads to come up with sound decisions inspired by servant leadership that are geared towards quality instructional leadership practices.

From the above-mentioned premises, servant leadership emphasizes "increased service to others; a holistic approach to work; promoting a sense of community; and the sharing of power in decision making (Crimi, 2020). In the study of Istiqomah & Hartini (2020), which analyzed the role of the principal in implementing servant leadership in new normal situations at Islamic junior high school. The characteristics of servant leader are listening, empathy, healing, awareness, persuasion, conceptualization, foresight, stewardship, commitment to the growth of people, and building community.

On the other hand, servant leadership may also have negative connotation as the kind of leadership of school heads. The study of Bates (2022) had contrasting findings about servant leadership: It requires profound authenticity and alignment with personal values. This could be argued to be a strength of servant leadership, however it's certainly true that it requires profound authenticity, it's not possible for leaders to fake it. Gomez (2021) emphasizes that successful servant leaders have a genuine desire to serve employees in a democratic way. Harper (2020) further adds that a servant leader is not only sensitive but sensible and is grounded and has a reason for making certain decisions.

Remarkably, in the study made by Siebert, et.al (2021), it emphasizes decision training has a positive effect on individuals' decision-making proactivity. Meador (2020) reiterates that school leaders who regularly include their constituents in the decision-making process find it advantageous in many different ways. Ingersoll, et.al (2018) emphasizes that successful school leadership is to make the core activities of teaching and learning the primary focus of those making the decisions and managing schools. Torlak, et.al (2021) further suggests that the participative decision-making affected moral, knowledge and attitude that contributed to leadership performance.

Toth (2020) has this to say as to why instructional leadership development is vital during and after the COVID-19 crisis: School and district leaders already had a tough job – now it's even tougher. As leaders try to understand best practices for virtual learning and support their staff in learning how to navigate unfamiliar learning environments, they also face potentially long-term impacts from unprecedented student learning losses.

With this, it is suggested that an action plan that may develop or enhance servant leadership skills, decision making skill and instructional leadership practices must be implemented. It should also be considered that.

METHODS

The study used descriptive-correlational research design since it determined the level of the servant leadership skill, level of decision making skill and instructional leadership practices of the school heads at the City Schools Division of Cabuyao Academic Year 2021-2022. Likewise, it identified possible patterns of relationships that exist among variables and it measured the strength of such correlation. Data used in the investigation came from 301 elementary public school teachers who were employed in the City Schools Division of Cabuyao during the Academic Year 2021-2022. Out of 1038 elementary public school teachers, 29% of the population in each subgroup was employed arriving at 301 sample respondents who were randomly given research instrument via google form. Of which, 301 respondents were able to accomplish and return the completed survey questionnaires, representing 100 percent retrieval rate.

The researcher used three sets of survey questionnaire. The first set included statements about the school heads' level of servant leadership skill which was measured using the Likert -Type Scale (Strongly Agree/ Very Positive -4, Agree/ Positive -3, Disagree/Negative -2, Strongly Disagree/Very Negative -1). The second set of the survey questionnaire elicited the school heads' level of decision making skill which was also measured using the Likert -Type Scale (Strongly Agree/ Very Positive -4, Agree/ Positive -3, Disagree/Negative -2, Strongly Disagree/Very Negative -1). The third set of survey questionnaire which was composed of indicators that determined the school heads' instructional leadership practices. It was measured using the four-point Likert Type scale: (Strongly Agree -4, Agree -3, Disagree -2, Strongly Disagree-1).

Notably, the researcher personally wrote a letter addressed to City Schools Division Superintendent of Cabuyao for his approval for the conduct of the study. Prior and informed consent were accomplished by the respondents to ensure compliance to the ethical standards of conducting research. After gaining the permission, the researcher introduced himself to the respondents and then explained to them the very essence of the study and the procedures needed to follow in the conduct of the survey. After which, the researcher personally floated the survey questionnaires to the respondents via google forms. To

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make sure that the data gathered were precisely treated; weighted mean was used to determine the school heads' level of servant leadership skill, level of decision making skill and instructional leadership practices. Pearson Product Moment of Correlation or Pearson-r was used to ascertain if there is relationship between the school heads' level of servant leadership skill and their level of decision making skill and relationship between the school heads' level of servant leadership skill and instructional leadership practices, and the relationship between the school heads' level of decision making skill and instructional leadership practices.

RESULTS AND DISCUSSIONS

Discussion of the school heads; level of servant leadership skill, level of decision making skill and instructional leadership practices is presented in the succeeding tables and textual presentations:

Table 1. The School Heads' Level of Servant Leadership Skill

Indicators My school head...	Weighted Mean	Verbal Interpretation	Rank
1. is more concerned about doing what is right than looking good	3.47	Very High (Strongly Agree)	4
2. promotes tolerance, kindness, and honesty in the work place	3.52	Very High (Strongly Agree)	1
3. readily confess his/her limitations and weaknesses	3.28	Very High (Strongly Agree)	28
4. works behind the scene and let others take the credit	3.19	High (Agree)	29
5. finds enjoyment in serving others in whatever role or capacity	3.44	Very High (Strongly Agree)	7
6. willing to maintain a servant's heart, even though some people may take advantage of his/her leadership style	3.34	Very High (Strongly Agree)	26
7. has a heart to serve others	3.48	Very High (Strongly Agree)	3
8. focuses on finding better ways of serving others and making them successful.	3.50	Very High (Strongly Agree)	2
9. genuinely cares for the welfare of people working with him/her	3.42	Very High (Strongly Agree)	15
10. makes himself/herself available to all his/her teachers/colleagues	3.45	Very High (Strongly Agree)	5.5
11. consistently encourages others to take initiative	3.43	Very High (Strongly Agree)	10.5
12. grants all his/her teachers a fair amount of responsibility and latitude in carrying out their tasks	3.33	Very High (Strongly Agree)	27
13. always looks for hidden talents in his/her teachers	3.10	High (Agree)	30
14. contributes to his/her employees/colleague's personal growth	3.43	Very High (Strongly Agree)	10.5
15. his/her leadership is driven by values that transcend self-interests and material success	3.35	Very High (Strongly Agree)	24.5
16. able to inspire others with his/her enthusiasm and confidence for what can be accomplished	3.42	Very High (Strongly Agree)	15
17. sets clear and realistic goals	3.42	Very High (Strongly Agree)	15
18. demands a high level of productivity from himself/herself as well as from others	3.35	Very High (Strongly Agree)	24.5

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19. knows how to communicate his/her ideas to others effectively	3.40	Very High (Strongly Agree)	19
20. has the ability to move the group forward and get things done	3.40	Very High (Strongly Agree)	19
21. important part of his/her job is to inspire others to strive for excellence	3.43	Very High (Strongly Agree)	10.5
22. usually comes up with solutions accepted by others as helpful and effective	3.40	Very High (Strongly Agree)	19
23. has a good understanding of what is happening inside the organization/school	3.43	Very High (Strongly Agree)	10.5
24. leads by example	3.43	Very High (Strongly Agree)	10.5
25. shows the group how to facilitate the process of group success	3.45	Very High (Strongly Agree)	5.5
26. make it a priority to develop relations with those who model servant leadership	3.39	Very High (Strongly Agree)	22
27. does not play favorites, and try to treat everyone with dignity and respect	3.36	Very High (Strongly Agree)	23
28. encourages cooperation rather than competition through the group	3.43	Very High (Strongly Agree)	10.5
29. welcomes ideas and input from others, including critics and detractors	3.40	Very High (Strongly Agree)	19
30. places the greatest amount of decision-making in the hands of those most affected by the decision	3.40	Very High (Strongly Agree)	19
Average	3.39	Very High (Strongly Agree)	

Legend:(Strongly Agree/ Very High -4, Agree/ High -3, Disagree/ Low -2, Strongly Disagree/Very Low -1)

Table 1 presents the school heads’ level of servant leadership skill, as seen in the table, indicator 2 “The school head promotes tolerance, kindness, and honesty in the work place” got a weighted mean of 3.52 ,verbally interpreted as very high and was ranked 1, indicator 8 “The school head focuses on finding better ways of serving others and making them successful.” with an obtained weighted mean of 3.50 was verbally interpreted as very high and was ranked 2, indicator 7 “The school head has a heart to serve others” had a weighted mean of 3.48,verbally interpreted as very high was ranked 3, indicator 1”The school head is more concerned about doing what is right than looking good”, with an obtained weighted mean of 3.47 was verbally interpreted as very high and was ranked 4, indicator 10 “The school head makes himself/herself available to all his/her teachers/colleagues” with an obtained weighted mean of 3.45 was verbally interpreted as very high and was ranked 5, indicator 25 “The school head shows the group how to facilitate the process of group success” with an obtained weighted mean of 3.45 was verbally interpreted as very high and was ranked 5 respectively.

On the other hand, indicator 13 “The school head always looks for hidden talents in his/her teachers” with an obtained weighted mean of 3.10 was verbally interpreted as high was ranked 30, indicator 4 “The school head works behind the scene and let others take the credit” with an obtained mean of 3.14 was verbally interpreted as high was ranked 29, indicator 3 “The school head readily confesses his/her limitations and weaknesses with an obtained mean of 3.28 was verbally interpreted as very high was ranked 28, indicator 12 “The school head grants all his/her teachers a fair amount of responsibility and latitude in carrying out their tasks” with an obtained mean of 3.33 was verbally interpreted as very high was ranked 27, indicator 6 “The school head is willing to maintain a servant's heart, even though some people may take advantage of his/her leadership style” with an obtained mean of 3.34 was verbally interpreted as very high was ranked 26 respectively.

To sum up, an average weighted mean of 3.39 revealed that the school heads’ level of servant leadership was very high. The results imply that the school heads promote kindness, fairness and honesty in their schools. They capitalize on finding better ways of serving others and making them successful.

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The findings support the study of Regoli (2019) as this emphasizes the advantages of servant leadership: Decisions are based on the benefit of all. It encourages empathy. When leaders make decisions in this kind of environment, they do so by looking at the situation in the shoes of others. This allows leaders to refuse requests if it doesn't benefit everyone for some reason. Bates (2022) has this to say about the disadvantages of servant leadership: It requires profound authenticity and alignment with personal values. This could be argued to be a strength of servant leadership, however it's certainly true that it requires profound authenticity, it's not possible for leaders to fake it.

Further, Crippen (2017) defines a servant-leader as servant first. It begins with the natural feeling that one wants to serve. Then conscious choice brings one to aspire to lead. The difference manifests itself in the care taken by the servant- first, to make sure that other people 's highest priority needs are being served. Those served grow as persons; while being served, become healthier, wiser, freer, more autonomous, more likely themselves to become servants.

Table 2. The School Heads' Level of Decision-Making Skill

Indicators My school head.....	Weighted Mean	Verbal Interpretation	Rank
1. ensures that teachers have "bought into" the decision—they were included in the process, and they understand the incentives for them and for their students	3.39	Very High (Strongly Agree)	3
2. sees to it that teachers have the resources for successful implementation—they have the time, space, or technology needed	3.35	Very High (Strongly Agree)	9.5
3. ensures that teachers have the skills needed to implement the decision—they have been given the training and support to be successful	3.40	Very High (Strongly Agree)	1.5
4. makes sure that teachers have a clear understanding of the metrics used to inform decision-making and the pending course of action—they are being informed of the who, what, why, when, and where related to the decisions.	3.38	Very High (Strongly Agree)	4.5
5. ensures that teachers are motivated to carry out the decisions—they see the vision	3.38	Very High (Strongly Agree)	4.5
6. understands the difference between operational and professional decisions	3.40	Very High (Strongly Agree)	1.5
7. understands the concept of groupthink, and try to avoid this situation	3.33	Very High (Strongly Agree)	12
8. understands the difference between democratic, consensus, and unilateral decision making	3.32	Very High (Strongly Agree)	14
9. choices are influenced by the potential regret or rejoicing associated with decisions selected	3.28	Very High (Strongly Agree)	17
10. spends time researching and reflecting before making major decisions	3.33	Very High (Strongly Agree)	12
11. consciously considers all people involved and the ramifications of a decision	3.33	Very High (Strongly Agree)	12

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12. tends to gravitate toward decisions that are low risk in outcome	3.24	High (Agree)	18.5
13. personal bias on issues has little effect on decisions he/she makes by himself/herself or with others	3.16	High (Agree)	20
14. When making decisions, my school head feels that he/she can predict or estimate the outcome of his/her decision	3.24	High (Agree)	18.5
15. confident of the decisions made with his/her input	3.31	Very High (Strongly Agree)	15.5
16. knows when it is appropriate to make decisions by himself/herself, and with input from others	3.37	Very High (Strongly Agree)	6.5
17. has knowledge of several decision making models	3.37	Very High (Strongly Agree)	6.5
18. considers issues, problems, opportunities, and decisions systematically	3.36	Very High (Strongly Agree)	8
19. determines the change required to navigate multiple scenarios/decisions	3.35	Very High (Strongly Agree)	9.5
20. recognizes the limits of their faculty when making decisions	3.31	Very High (Strongly Agree)	15.5
Average	3.33	Very High (Strongly Agree)	

Legend:(Strongly Agree/ Very High -4, Agree/ High -3, Disagree/ Low -2, Strongly Disagree/Very Low -1)

It can be gleaned from table 2 the school heads’ level of decision making skill, as seen in the table, indicator 3 “The school head ensures that teachers have the skills needed to implement the decision—they have been given the training and support to be successful” got a weighted mean of 3.40 ,verbally interpreted as very high and was ranked 1, indicator 6 “The school head understands the difference between operational and professional decisions” with an obtained weighted mean of 3.40 was verbally interpreted as very high and was also ranked 1, indicator 1 “The school head ensures that teachers have “bought into” the decision—they were included in the process, and they understand the incentives for them and for their students” had a weighted mean of 3.39,verbally interpreted as very high was ranked 3, indicator 4 “The school head makes sure that teachers have a clear understanding of the metrics used to inform decision-making and the pending course of action—they are being informed of the who, what, why, when, and where related to the decisions”, with an obtained weighted mean of 3.38 was verbally interpreted as very high and was ranked 4, indicator 5 “The school head ensures that teachers are motivated to carry out the decisions—they see the vision” with an obtained weighted mean of 3.38 was verbally interpreted as very high and was also ranked 5, indicator 25 “The school head shows the group how to facilitate the process of group success” with an obtained weighted mean of 3.38 was verbally interpreted as very high and was ranked 5, indicator 16 “The school head knows when it is appropriate to make decisions by himself/herself, and with input from others” with an obtained mean of 3.37 was verbally interpreted as very high was ranked 6, indicator 17 “The school head has knowledge of several decision making models” with an obtained mean of 3.37 was verbally interpreted as very high was also ranked 6 respectively.

On the other hand, indicator 13 “The school head personal bias on issues has little effect on decisions he/she makes by himself/herself or with others” with an obtained weighted mean of 3.16 was verbally interpreted as high was ranked 20, indicator 12 “The school head tends to gravitate toward decisions that are low risk in outcome” with an obtained mean of 3.24 was verbally interpreted as high was ranked 18, indicator 14 “The school head, when making decisions, my school head feels that he/she can predict or estimate the outcome of his/her decision with an obtained mean of 3.24 was verbally interpreted as high was also

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ranked 18, indicator 9 “The school head choices are influenced by the potential regret or rejoicing associated with decisions selected” with an obtained mean of 3.28 was verbally interpreted as very high was ranked 17, indicator 15 “The school head confident of the decisions made with his/her input” with an obtained mean of 3.31 was verbally interpreted as very high, indicator 20 “The school head recognizes the limits of their faculty when making decisions” with an obtained mean of 3.31 was also ranked 15, indicator 9 “The school head choices are influenced by the potential regret or rejoicing associated with decisions selected” with an obtained mean of 3.28 was verbally interpreted as very high respectively.

To sum up, an average weighted mean of 3.33 revealed that the school heads’ level of decision making skill was very high. The results imply that the school heads ensure that teachers have the skills needed to implement the decision—they have been given the training and support to be successful. They also understand the difference between operational and professional decisions. The school heads also ensure that teachers have “bought into” the decision—they were included in the process, and they understand the incentives for them and for their students.

The findings support the study of Siebert, et.al (2021) which emphasizes decision training has a positive effect on individuals’ decision-making proactivity. The study also found out that the general courses on decision making—that is, as a means to improve individual decision-making skills—are now rarely included in school or university curricula.

Meador (2020) emphasizes that school leaders who regularly include their constituents in the decision-making process find it advantageous in many different ways. They understand that involving stakeholders in the decision-making process can ultimately transform a school. Progressive transformation is continuous and ongoing. It must become a mindset and regular way of making decisions to maximize effectiveness. People will trust a decision-making process that is inclusive, transparent, and holistic in nature. The study of Gemechu (2017) found out that teachers can take a larger role in the overall success of the school when committed to being active participants in the decision making process.

Table 3. The School Heads’ Instructional Leadership Practices

Indicators My school head...	Weighted Mean	Verbal Interpretation	Rank
1. develops a focused set of annual school-wide goals	3.39	Strongly Agree	5
2. uses needs assessment or other formal and informal methods to secure staff input or goal development	3.35	Strongly Agree	15
3. uses data on student performance when developing the school’s academic goals	3.41	Strongly Agree	3
4. discusses the school’s academic goals with teachers at faculty meetings	3.43	Strongly Agree	1
5. refers to the school’s academic goals when making curricular decisions with teachers	3.42	Strongly Agree	2
6. ensures that the school’s academic goals are reflected in highly visible displays in the school (e.g. posters or bulletin boards emphasizing academic progress)	3.36	Strongly Agree	11.5
7. points out specific strengths in teacher’s instructional practices in post-observation feedback (e.g. in conferences or written evaluations)	3.40	Strongly Agree	4
8. points out specific weaknesses in teacher instructional practices in post-observation feedback (e.g. in conferences or written evaluation)	3.36	Strongly Agree	11.5
9. points out specific strengths in teacher’s instructional practices in post-observation feedback (e.g. in conferences or written evaluations)	3.36	Strongly Agree	11.5
10. draws upon the results of school-wide testing when making curricular decisions	3.35	Strongly Agree	15
11. monitors the classroom curriculum to see that it covers the school’s curricular objectives	3.37	Strongly Agree	8.5

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12. participates actively in the review of curricular materials	3.38	Strongly Agree	6.5
13. meets individually with teachers to discuss student progress	3.33	Strongly Agree	19
14. discusses academic performance results with the faculty to identify curricular strengths and weaknesses	3.31	Strongly Agree	21.5
15. uses tests and other performance measure to assess progress toward school goals	3.37	Strongly Agree	8.5
16. limits interruptions of instructional time by public address announcements	3.28	Strongly Agree	26.5
17. ensures that students are not called to the office during instructional time	3.34	Strongly Agree	17.5
18. limits the intrusion of extra- and co-curricular activities on instructional time	3.29	Strongly Agree	24
19. takes time to talk informally with students and teachers during recess and breaks	3.22	Agree	19
20. visits classrooms to discuss school issues with teachers and students	3.29	Strongly Agree	24
21. covers classes for teachers until a late or substitute teacher arrives	3.13	Agree	30
22. reinforces superior performance by teachers in staff meetings, newsletters, and/or memos	3.31	Strongly Agree	21.5
23. rewards special efforts by teachers with opportunities for professional recognition	3.32	Strongly Agree	20
24. creates professional growth opportunities for teachers as a reward for special contributions to the school	3.35	Strongly Agree	15
25. ensures that in-service activities attended by staff are consistent with the school's goals	3.38	Strongly Agree	6.5
26. actively supports the use in the classroom of skills acquired during in-service training	3.36	Strongly Agree	11.5
27. sets aside time at faculty meetings for teachers to share ideas or information from in-service activities	3.34	Strongly Agree	17.5
28. recognizes students who do superior work with formal rewards such as an honor roll or mention in the principal's newsletter	3.29	Strongly Agree	24
29. Uses assemblies to honor students for academic accomplishments or for behavior or citizenship	3.26	Agree	28
30. Contacts parents to communicate improved or exemplary student performance or contribution	3.28	Strongly Agree	26.5
Average	3.33	Strongly Agree	

Legend:(Strongly Agree -4, Agree -3, Disagree -2, Strongly Disagree-1)

From the data shown in table 3, the school heads' instructional leadership practices, as seen in the table, indicator 4 "The school head discusses the school's academic goals with teachers at faculty meetings" got a weighted mean of 3.43, verbally interpreted as strongly agree and was ranked 1, indicator 5 "The school head refers to the school's academic goals when making curricular decisions with teachers" with an obtained weighted mean of 3.42 was verbally interpreted as strongly agree and was also ranked 2, indicator 3 "The school head uses data on student performance when developing the school's academic goals" had a weighted mean of 3.41, verbally interpreted as strongly agree was ranked 3, indicator 7 "The school head points out specific strengths in teacher's instructional practices in post-observation feedback (e.g. in conferences or written evaluations)", with an obtained weighted mean of 3.40 was verbally interpreted as strongly agree and was ranked 4, indicator 1 "The school head

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develops a focused set of annual school-wide goals” with an obtained weighted mean of 3.39 was verbally interpreted as strongly agree and was ranked 5, indicator 12 “The school head participates actively in the review of curricular materials with an obtained mean of 3.38 was verbally interpreted as strongly agree was ranked 6, indicator 25 “The school head ensures that in-service activities attended by staff are consistent with the school’s goals” with an obtained mean of 3.38 was verbally interpreted as strongly agree was also ranked 6 respectively.

On the other hand, indicator 13 “The school head covers classes for teachers until a late or substitute teacher arrives” with an obtained weighted mean of 3.13 was verbally interpreted as agree was ranked 30, indicator 29 “The school head uses assemblies to honor students for academic accomplishments or for behavior or citizenship” with an obtained mean of 3.26 was verbally interpreted as agree was ranked 28, indicator 16 “The school head limits interruptions of instructional time by public address announcements” with an obtained mean of 3.28 was verbally interpreted as strongly agree was ranked 26, indicator 30 “The school head contacts parents to communicate improved or exemplary student performance or contribution” with an obtained mean of 3.28 was verbally interpreted as strongly agree was also ranked 26, indicator 28 “The school head recognizes students who do superior work with formal rewards such as an honor roll or mention in the principal’s newsletter” with an obtained mean of 3.29 was verbally interpreted as strongly agree was ranked 24.

To sum up, an average weighted mean of 3.33 revealed that the respondents confirmed the school heads’ instructional leadership practices. The results imply that the school heads discuss the school’s academic goals with teachers at faculty meetings. They also refer to the school’s academic goals when making curricular decisions with teachers.

The findings support the study of Morse (2021) as it emphasizes that principals participate in the instructional process through their discussions with teachers about instructional issues, their observations of classroom instruction, and their interactions with teachers when examining student data. Spencer (2018) found out that given all the steps in the supervision cycle, the post-observation conference is the one step that must be handled effectively for teacher growth to occur. Since teacher growth ultimately is the goal of supervision, it seemed appropriate to investigate the post-observation conference and factors related to its success.

Brolund (2017) found out that despite evidence that practicing instructional leadership in schools has a positive effect on student achievement, many principals perceive roadblocks to becoming effective instructional leaders. Principals have reported that they have little time to focus on instructional tasks, they are uncomfortable visiting teachers’ classrooms, and they do not have the knowledge or capacity to guide teachers’ practice.

Lynch (2017) pointed out that in instructional leadership, the principal’s role is deeply involved with setting the school’s direction. The “mission” dimension focuses on the principal’s role in cooperating with staff, ensuring the school continuously runs on clear, measurable, and time-based goals that result in the academic progress of students. Principals are responsible for communicating goals, which should be widely known and supported throughout the school.

Table 4. Relationship between the School Heads’ Level of Servant Leadership Skill and Level of Decision-Making Skill

	Pearson r	p-value	interpretation
School Heads’ Level of Servant Leadership Skill and Level of Decision-Making Skill	0.912** High correlation	0.000	Significant
**Significant @ 0.01			

As observed from the data in the table there was a significant relationship between the school heads’ level of servant leadership skill and their level of decision-making skill. The Pearson r value of 0.912 indicates a high correlation with a probability value of 0.000 which was less than the 0.01 significance level. This means that the higher the level of servant leadership skill, the higher is their level of decision-making skill.

The findings support the study of Gomez (2021) which emphasizes that successful servant leaders have a genuine desire to serve employees in a democratic way. They’re also effective, charismatic decision-makers and clear when they set expectations.

Harper (2020) further adds that a servant leader is not only sensitive but sensible and is grounded and has a reason for making certain decisions. It doesn’t always have to be a popular decision, but it is the responsibility of the leader to make the practical, reasonable, and realistic decision that will require others to rise to certain expectations for the benefit of everyone.

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Davis (2018) reiterates the practical application in the workplace for shaping thoughtful decisions. Servant-leadership offers a distinct perspective and set of values for leaders that acknowledge the worth of others with a focus on employee growth. Making decisions can be conducted using a multitude of approaches such as heuristic and rational decision-making.

Table 5. Relationship between the School Heads’ Level of Servant Leadership Skill and Instructional Leadership Practices

	Pearson r	p-value	Interpretation
School Heads’ Level of Servant Leadership Skill and Instructional Leadership Practices	0.881** High correlation	0.000	Significant
**Significant @ 0.01			

As disclosed in table 5, there was a significant relationship between the school heads’ level of servant leadership skill and their instructional leadership practices. The Pearson r value of 0.881 indicates a high correlation with a probability value of 0.000 which was less than the 0.01 significance level. This means that the higher the level of servant leadership skill, the higher is their level of instructional leadership practices.

The findings support the study of McCann & Sparks (2018) which emphasizes that if education applies the principles, values, and practices of servant leadership to teaching, this will dramatically impact learning and the learning experiences of students.

Sahawneh & Benuto (2018) found out that servant leadership has the potential to improve student satisfaction with online learning. Bowman (2017) servant leaders as teachers must have an understanding of teaching styles and preferences and how they impact student learning. Crippen (2017) adds that servant-leadership contributes to the scholarship of teaching and learning excellence.

Table 6. Relationship between the School Heads’ Level of Decision-Making Skill and Instructional Leadership Practices

	Pearson r	p-value	Interpretation
School Heads’ Level of Decision-Making Skill and Instructional Leadership Practices	0.945** High correlation	0.000	Significant
**Significant @ 0.01			

Table 6 unveils that there was a significant relationship between the school heads’ level of decision making skill and their instructional leadership practices. The Pearson r value of 0.945 indicates a high correlation with a probability value of 0.000 which was less than the 0.01 significance level. This means that the higher the level of decision making skill, the better are their instructional leadership practices.

The findings support the study of Ingersoll, et.al (2018) which emphasizes that successful school leadership is to make the core activities of teaching and learning the primary focus of those making the decisions and managing schools. Instructional leadership has been the equivalent of the Holy Grail in the management and administration of elementary and secondary schools. In this view, effective schools almost invariably emphasize key elements of instructional leadership, such as developing a shared purpose and vision among faculty and administrators in schools; providing objective, consistent, and useful assessment of the quality of teachers; and teaching using evidence and data to make decisions about the instructional program.

According to Schneider & Mack (2022), under school-based decision-making, schools are encouraged to make decisions regarding the curriculum and supporting instructional strategies. Torlak, et.al (2021) further suggests that the participative decision-making affected moral, knowledge and attitude that contributed to leadership performance.

CONCLUSION

The school heads promote kindness, fairness and honesty in their schools. They capitalize on finding better ways of serving others and making them successful. The school heads ensure that teachers have the skills needed to implement the decision—they have

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been given the training and support to be successful. They also understand the difference between operational and professional decisions. The school heads also ensure that teachers have “bought into” the decision—they were included in the process, and they understand the incentives for them and for their students. The school heads discuss the academic goals with teachers at faculty meetings. They also refer to the school’s academic goals when making curricular decisions with teachers that they earned the highest mean grade.

Moreover, the higher the level of servant leadership skill of school heads, the higher is their level of decision-making skill. The higher the level of servant leadership skill of school heads, the more they confirm their instructional leadership practices. The higher the level of decision making skill of school heads, the more they confirm their instructional leadership practices.

FUTURE DIRECTIONS

The investigation, however, has some limitations particularly on the sample size which was used in the study since it was only limited to the public elementary teachers College of the City Schools Division of Cabuyao during the Academic Year 2021-2021. To have a better generalization of the study, it is recommended to future researchers to conduct similar study considering a larger number of respondents. For more comprehensive picture of the interplay of the variables, it is also important to include other variables such as transformational leadership, dedication and loyalty to the profession as school leaders. On a practical note, the outcomes of the study conducted yield significant implications to school heads’ leadership as a whole.

Congruently, an understanding of the relationship among the level of servant leadership, level of decision making and instructional leadership practices helps the training section in the division design professional development program to create positive changes and further improvement of administration in City Schools Division of Cabuyao. This is with the end view of increasing mindfulness and perceptions on how potential school heads can become active partakers in exemplifying sound servant leadership, decision making and instructional leadership practices.

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Impact of Perceived Benefits, Security, and Privacy on Interest in Using E-Wallet in Millennial Generation



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ABSTRACT: This study examines and analyze the effect of perceived usefulness, security, and privacy on interest in using EWallet. Benefits can be interpreted as the extent to which someone in using financial technology in transactions will improve performance. Perceived security and privacy reflect how users feel when their data is disclosed. A total of 116 millennial generations who live in Surabaya were used as samples. To analyze the data used variance-based SEM analysis technique, namely SEM-PLS. The findings of this study are that the perceived benefits, privacy and security have will increase interest in using ewallet. Interest in using e-wallet also contributes to e-wallet usage behavior. This study provides better evidence of the usefulness of e-wallet in electronic transactions.

KEYWORDS: Benefits, Interests, Behavior, Privacy and Security

1. INTRODUCTION

In 2021 the world will face an international disaster, namely the Covid 19 pandemic, and Indonesia is no exception. The impact of Covid 19 has hit all fields, transportation, tourism, investment, trade, and Fin-tech. The use of Fin-tech during this pandemic is increasing greatly, with the existence of Fin-tech it will make trading transactions easier. Advances in technology and information provide various services that people can use using digital. Payment transactions, which are usually used traditionally using cash, are urged to encourage people to use digital payments more. Good for buying clothes, food, and drinks, transportation. The Indonesian government in reducing the impact of Covid-19 transmission has determined several efforts to reduce the spread of the virus, one of which is 3M, using masks, washing hands, and maintaining distance. To facilitate transactions, one of the electronic devices that can be used by the public to facilitate online transactions is a digital wallet (E-Wallet). E-Wallet is an electronic wallet as a substitute for a wallet to replace money storage or is an online money storage service that can be accessed using an application and connected to the internet. Money or balance in a digital wallet can be obtained via transfer from a savings account, this e-wallet can be used for various transactions, from shopping for daily necessities to paying monthly bills.

The development of e-wallets in Indonesia has progressed, it is recorded that there are about 38 digital wallets, several e-wallets that are growing rapidly, namely GoPay, OVO, LinkAja, Dana, and SakuKu. Based on APP Annie's data in Q2 2019, the five digital wallet applications are ranked at the top of monthly active users. The growth of this digital wallet has also reached 50% in the last two years. This percentage is driven by access from the Financial Services Authority (OJK) to banks to integrate with these services. In fact, according to the Jakpat survey Platform and DailySocial studies, 74.6% of users of the application are aged 20-35 years (teknoiot.com). Communities in evaluating their financial technology services tend to evaluate the benefits and risks, convenience has a positive influence on sustainable intentions in using technology as well as the risks of its use (Sentanu et al, 2020). The convenience used refers to the speed of the system and speeds up the time and energy used (Park et.al, 2003). (Revathy and Balaji, 2020) using people in India, the results of the study show that perceptions of security, social influence, and performance expectations are variables that play a role in increasing the use of e-wallet. The use of e-wallets can avoid physical touch when exchanging money amid the Covid 19 pandemic, as well as create a positive attitude in the country's people towards the implementation of a cash economy.

In addition to the benefits expected by e-wallet users, the use of this technology also has several risks, in Nurdin's research (2020) the risk affects the interest in transacting using Fintech. While research (Sentanu et al, 2020) the perceived risk did not have a negative impact on the use of e-wallet services, because the risks experienced were not too large compared to the benefits

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received. Millennial generation respondents in research by Pertiwi et.al (2021), business expectations, financial literacy, and performance expectations as independent variables that can increase recurring interest in adopting fintech services

The Theory of Reasoned Action (TRA)

Ajzen and Fishbein (1980) develop the theory of TRA. This theory explains that behavior is carried out because individuals have an interest or desire to do so (behavioral intention). Interest will determine behavior. Interest is defined as the desire to perform the behavior. Interest is not always static interest can change over time. The theory of reasoned action explains the stages of human behavior (Jogiyanto, 2007). In the early stages, behavior is assumed to be determined by intention. In the next stage, interests can be explained in the form of an attitude toward the behavior and subjective norms. The third stage considers attitudes and subjective norms in the form of beliefs about the consequences of doing their behavior and about the normative expectations of the relevant referenced person.

Behavior (actual system use)

Behavior or actual system use refers to the behavior of using new technology. Internet technology is a relatively new technology and continues to grow and is important to be used. More importantly, if the internet is intended to be used by customers in transacting with organizations (Yogiyanto,2007). Sukaris, et al (2021) also explained that behavior is an action taken by someone. The use of information technology is always associated with a person's behavior in using technology in real terms. The behavior of using a technological system can be measured by the frequency with which a person uses the system, if they already have an interest in the technology system due to the convenience and benefits obtained, then someone will continue to use the system in their life or in their work, so that it will improve performance. In Kim and Kwahk's research in Rattanaburi and Vongurai (2020) it was also stated that actual use refers to the frequency and duration of technology use.

Benefits

The use of technology, such as the internet has risks in online shopping, such as the risk of losing funds, the risk of getting items that are not in line with their expectations. In addition to the risks that may be experienced. Online shopping also has many benefits, such as the convenience of shopping, they don't need to leave the house to get products, just by looking at the catalog of products consumers can directly shop, this certainly saves time, consumers are satisfied and comfortable.

Bhatti and Rehman (2019), examined on-line shopping behavior, that the benefits have a positive influence and the risks have a negative influence on consumer behavior in online shopping. According to Yani et al. (2018), perceived usefulness is the extent to which a person believes that using a technology will improve the performance of his work. Basically, perceived benefits describe users' cognitive expectations about the performance of information technology systems in on-line payments, therefore consumers usually believe that using e-wallet can fulfill financial and lifestyle desires and increase efficiency in conducting various transactions (Yang, et al, 2021). Barbuta, et al in Singha and Sinha (2021) confirm that perceived benefits will affect behavioral intentions on e-wallet. A higher usability level of a technology will also lead to a greater interest in using it. The perceived benefits of using e-wallet will increase along with the improvements made (Daragmeh., et al, 2021).

Security and Privacy

Security is a condition where a person feels free from danger, in the use of technology, of course there is a feeling whether the technology to be used is safe for his personal finances, whether the technology used in online payments does not harm him. So that users trust and are comfortable in using on-line payments. Security is also a consumer's feeling that his personal condition will not be seen, stored, and manipulated by other parties who are not authorized when conducting online transactions (Enck in Matemba and Li, 2017).

Privacy is defined as a person's ability to control the conditions under which their personal information is collected and used and will not be shared with others (Smith, et al in Watat and Jonathan, 2020). This is a very important thing that all users of online transactions want. Based on a study (Soodan., et al., 2020), one of the factors that influence the use of e-wallet is privacy and security which are found to be more supportive. Lack of security and privacy is one of the problems that keep customers from buying goods on-line unless the buyer feels protected by his privacy (Milberg, Smith & Bruke, 2000). If, payments via e-wallet without security features can cause access to personal information to be used by other parties who are not responsible or can be said to be a crime in cyberspace, which is not legal and becomes a lucrative opportunity for cybercriminals to take personal data (Kaur et al., 2018). According to Marimuthu and Roseline (2020) e-wallet is increasingly popular in its use because it can be used for easier transactions than conventionally, but the lack of knowledge and public awareness and fear of making transactions due to security issues are the main factors that must be considered. Privacy and security are very much needed by users of on-line transactions, information system providers must be aware of this, so that they do not refuse to make any transactions through electronic payments. Due to the rapid development of technology and security issues, it is a serious concern for online payment

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users who use transaction technology. Customers who are inexperienced in the use of technology may have security and privacy concerns, for example in the use of credit or debit cards.

Interest (Behavioral Intention to Use)

Interest is defined as a series of actions that individuals want to achieve (Zhao in Karim, et al, 2020). Behavioral interest stated by Chu and Chen in Abbad (2021) refers to an individual's willingness to do something. Kusumah in Rahayu, (2019) Defines that interest as one of the aspects of the human psyche that can encourage them to achieve goals. Someone will be interested in using it if the individual assesses something that is useful for him and brings satisfaction. Interest in the context of the technology acceptance model is defined as individuals who tend to use and embrace new technologies (Alswaigh and Aloud, 2021). Liao, et al (2018) stated, that behavioral intention to use is a behavioral tendency to continue to apply technology. Ajzen and Fishbein in Stocchi (2018) assert that interest in use underlies the adoption or absorption of technology. The development of interest into behavior will depend on one's beliefs. Interest will attract motivational factors that influence behavior. In addition, interest also shows the level of people's willingness to try or signal their plans to implement the effort to carry out the behavior (Matemba and Li, 2017). The interest to behave in using and implementing information systems or technology is also considered a performance expectation (Yeow and Loo in Dwivedi, 2017). Users who believe that technology is useful in everyday life will be more motivated to use and accept technology (Vankatesh in Lin, 2020).

Hypothesis:

H1. The perceived benefits have a significant positive effect on the interest in adopting e-wallet

H2. Security and privacy have a significant positive effect on the interest in adopting e-wallet H3.

The interest in adopting e-wallet have a significant positive effect on behavior

2. RESEARCH METHODS

Research variable

Using Behavior. Is a condition of the actual situation of a person in using an e-wallet for online shopping, which is measured by the frequency and duration of transactions. Indicators of user behavior are adopted from (Phan et.al, 2020): the use of e-wallet payments regularly, using an e-wallet is fun, using an e-wallet is positive

Behavioral interest in adopting an e-wallet, it is a person's desire or interest to use e-wallet continuously now and in the future. Indicators of behavioral interest in using e-wallet (Phan et.al 2020): continue to use an e-wallet, plan to use e-wallet in the future, have predictions of e-wallet use, hope to use e-wallet continuously in the future.

Perceived benefit, a condition where a person feels better results and performance in his work in the use of e-wallet. Indicators of perceived benefits (Razif et. Al 2020): payment transactions are difficult to do without an e-wallet payment system, believe using an e-wallet payment system increases the effectiveness of the payment process, believe using an e-wallet platform system saves my time, especially in processing transactions, feel that using an e-wallet makes it easy to buy products or services, using an ewallet is useful for paying bills, shopping, shopping online, and others.

Security and Privacy, Is a feeling of security and protection of personal data from the use of e-wallet as a payment system Indicators of security and privacy (Phan et.al, 2020): The e-wallet payment system ensures verification among the participating parties. believe that the e-wallet payment system is planned to be ready to face risks and there is the certainty of data security, the e-wallet payment system ensures that my information remains intact, believes that my personal information will not be used for other purposes, believes that my transactions through the e-wallet will be protected, believe that my personal information is protected through the e-wallet database

Variable Measurement

To measure the attitudes and opinions of respondents used a Likert scale (1-5) with statements strongly disagree to strongly agree

Population and Sample

The population used in this study is the millennial generation who were born between 1980 and 2000 (aged between 20 to 44 years). Determination of the sample as many as 116 respondents, based on the technique of determining the sample according to (Ghozali, 2011) namely the number of samples between 5-10 times the indicator

Analysis Techniques

Partial Least Square (PLS-SEM) is used to test the hypothesis, where the first test is the structural model testing or called the inner model to test the relationship between constructs, the second is measurement models or called the outer model, to test the relationship between the construct and indicator variables.

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3. RESEARCH RESULTS AND DISCUSSION

This study analyzes the millennial generation who use financial technology services using an e-wallet. To obtain data, questionnaires were distributed to determine and analyze behavior using e-wallets which were influenced by an interest in using, security and privacy, and perceived benefits.

By distributing questionnaires to respondents aged 20 to 44 years via google form from July to August 2021, 116 respondents were obtained who were eligible for analysis.

Table 1. Characteristics of Respondents

No	Characteristics of Respondents	Criteria	Frequency	Percentage
1	Sex	Male	42	63.8
		Female	74	36.2
2	Age	20-25	40	34.5
		26-30	34	29.3
		31-35	22	19
		36-40	11	9.5
		41-44	9	7.8
3	Profesion	Private	62	53.4
		Entrepreneur	21	18.1
		Government employees	15	12.9
		Professional	12	10.3
		Household	6	5.2

Measurement Model or Outer Model

For testing the outer model in this study, there are 2 exogenous variables (Security and privacy and Benefit) and 2 independent variables (interest and behavior), the total of all latent variable indicators is 18. Therefore, this indicator needs to be tested whether it reflects the construct, by testing level of validity and reliability.

The first step can be seen from the convergent validity of each construct. If the loading factor value is greater than 0.05 then an indicator has good validity. In this study, all construct indicators (perceived benefits, security and privacy, interest in using and behavior in using e-wallet) have values above 0.7 so it can be said that all indicators are valid. Outer model testing can also be seen from the AVE value, if the value is greater than 0.5, it indicates good validity. The results of the AVE test for the variables of security and privacy, benefits, interests, behavior are as follows table 2.

Table 2. Construct Reliability and Validity

	Cronbach's Alpha	Rho_A	Composite Reliability	Average Variance Extracted (AVE)
Security and Privacy	0.902	0.909	0.924	0.672
Benefit	0.869	0.884	0.905	0.657
Interest	0.902	0.910	0.932	0.773
Behavior	0.887	0.888	0.930	0.817

Source: processed data

From table 2. Cronbach's Alpha value of the variables security and privacy, benefit, interest, behavior as follows are all above 0.8, this indicates a very reliable construct, the composite reliability value of each construct is very good because the value is above 0.80. And the AVE value above 0.6 indicates good validity

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Table3. Discrimination Validity

	Security and Privacy	Benefit	Interest	Behavior
Security and Privacy	0.819			
Benefit	0.513	0.811		
Interest	0.646	0.680	0.879	
Behavior	0.617	0.681	0.811	0.904

In table 3, it is the discriminant validity value. According to the Fornell-Lacker criteria (Hair et al., 2014), if the PLS results show that the AVE root of each construct is higher than the correlation value between other constructs, then it is said to be valid, so all constructs in the estimated model meet the discriminant validity criteria.

Goodness-Fit Mode Test

Table 4. R Square

	R Square	R Square Adjusted
Interest	0.582	0.575
Behavior	0.657	0.654

Source: processed data

The R-Square value is the value of the influence of the independent variable to the dependent variable, the R-square value of interest in adopting e-wallet is 0.582 indicating that the model is "Strong Enough", the R-Square value is the contribution of benefits, security, and privacy to interest in using e-wallet. Or it can be said that the dependent variable is influenced by the independent variable by 58.2% while the remaining 41.8% is explained by other variables. As for the R-Square of behavior using e-wallet 0.657, this also shows the model is "strong enough" or can be interpreted as 65.7% of behavioral variables are influenced by interest in using e-wallet.

Structural Model Testing (Inner Model)

The inner model test in this study is seen from the P-value. The hypothesis that states the effect of security and privacy on interest is significant, the hypothesis that tests the effect of benefits on significant interest, and the hypothesis that tests interest in behavior is also significant with a p-value below 0.05 at α 5%.

Table 5. Path Coefficient

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T-Statistics (O/STDEV)	P-Values
Security and privacy -> interest	0.404	0.390	0.104	3,881	0.000
Benefits -> interest	0.473	0.499	0.085	5.533	0.000
Interest -> behavior	0.811	0.817	0.032	25,732	0.000

Source: Data processed Significant: α 5%

5. DISCUSSION

The effect of perceived benefits on interest in using an e-wallet.

The perceived benefits of interest in using e-wallet are significantly positive with a P-value of 0.000 at 5%, which means that the more respondents agree that there are perceived benefits in using e-wallet, the higher the interest in using e-wallet. . Seeing the conditions at the time of the study were pandemic conditions, activities involving many people were limited, leaving the house was limited, so the interest in using this e-wallet was very high, in buying a product, both goods, services, food, drinks and paying other bills it was very easy and useful for respondents, this is supported by the respondents' answers to the highest mean in the

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answers to using e-wallet useful for paying bills, shopping in stores, shopping on-line. The research which was also conducted by Syahril and Rikumahu (2019), has the same result that the benefits of technology will increase interest in using e-wallet.

Effect of Security and privacy on interest in using an e-wallet.

Based on structural model testing, there is a positive influence of security and privacy on interest in using e-wallets, with a Pvalue of 0.000 at 5%. This positive influence means that security and privacy, namely feelings of security and the delivery of respondent's personal data when using an e-wallet will increase interest in using an e-wallet. The e-wallet service will make it easier for the public to transact online. From the respondents' responses, the highest mean was when the respondents answered that the e-wallet payment system had been verified by the parties involved, so they considered it safe to transact using e-wallet. The results of this study are supported by other researchers Karim et al., (2020) to increase consumer interest, e-wallet service providers must provide a sense of security and privacy to their customers. With good privacy and security protection, customers will trust and be comfortable in using e-wallet payments (Wei et al., 2009).

The effect of interest in using an e-wallet on behavior using an e-wallet.

There is a positive and significant effect of interest in using behavior, with a coefficient value of 0.811 with a p-value of 0.000. This positive effect means that interest in using e-wallet will increase behavior using e-wallet. The higher the interest in using ewallets, the person's behavior will be reflected in the regular use of technology. The respondents' answers have the highest mean on the respondent's desire to use e-wallet in the future and interest in using it, in the end they perceive the new technology system as fun. This study supports the research of Karim et.al (2020), (Barry and Jan, 2018) that behavioral intention is a significant influence on actual e-wallet usage behavior.

6. CONCLUSION

From the results of research on the millennial generation during the covid pandemic, the benefits of using an e-wallet as a substitute for cash payments can increase interest in using an e-wallet. Respondents' responses to the security and privacy of using e-wallets will also increase interest in using an e-wallet. While the interest itself, if the interest in using an e-wallet is increasing, it will affect their actual behavior.

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Service Quality, Customer Satisfaction, Consumer Behavior and Business Performance of Health and Fitness Center in Kuwait, UAE



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ABSTRACT: This study investigated the quality of service of the health and fitness center as assessed by the clients in terms of reliability, responsiveness, assurance, empathy, and tangibles; the clients' level of customers satisfaction on the services of the health and fitness center; the clients' consumer behavior towards the services of the health and fitness center; and the business performance of the health and fitness center in terms of customer loyalty and customer retention rate. Further, it probed the relationship between the quality of service and clients' level of customer satisfaction on the health and fitness center's services; between the clients' level of customer satisfaction and consumer behavior towards the health and fitness center's services; and between the quality of service and business performance of the health and fitness center. It also ascertained whether service quality, level of customer satisfaction and level of consumer behavior could predict the business performance of the health and fitness center.

This study utilized the descriptive-correlational research design, which involved 300 randomly selected clients of the Oxygen Gym Health and Fitness Center, in Kuwait, UAE.

Findings revealed that the respondent-clients 'strongly agree' with an overall average of 3.48 to the quality of service of the health and fitness center, the Oxygen Gym, as to its services. The respondent-clients' level of satisfaction on the services of health and fitness center was 'very high' with an overall weighted mean of 3.51. The respondent-clients 'strongly agree' with an average weighted mean of 3.50 to all the indicators of customer behavior, such as psychological, personal, social and cultural factors, towards the services of the health and fitness center. Results also revealed that the degree of customer loyalty as a qualitative measure of the Oxygen Gym's business performance was very high. Results also shown that there was a significant relationship between level of customer satisfaction and consumer behavior towards the health and fitness center's services

KEYWORDS: Keywords: Service Quality, Customer Satisfaction, Consumer Behavior, Business Performance, Health and Fitness Center, Oxygen Gym, Qualitative Research

INTRODUCTION

The global gym industry is worth \$96.7 billion in 2020, with more than 184 million gym members in total. The year 2020 is a proof to the growing gym industry trends where the global gym industry is worth \$96.7 billion (Stasha, 2021). Way back in 2018, the wellness industry valued at more than \$4 trillion according to figures from the Global Wellness Institute (GWI). The consumers' shifting involvement with their healthcare could be the reason for the development of a vast international wellness market. People, more than ever, have become conscious of their health and well-being – putting premium on lifestyle, personally attending to their health and investing money on their well-being. According to the GWI, "the wellness industry now accounts for over 5% of global economic output, yet the wellness market is often written off as a collection of fads" (Nelson, 2019). Despite the pandemic, consumers still go to the gyms not only because of the professional setup in gyms but because of the social experiences at gyms. Community in gym workouts is the top motivator for consumers to go to gyms (Kestenbaum, 2019). Thus, it is business as usual with management and staff ever conscious of the factors that will ensure business performance or commercial effectiveness to achieve pre-determined goals.

Such as factors include service quality, customer satisfaction and consumer behavior, among others. Service quality as defined by Borgave and Koranne (2016) as cited by Aristayasa, et al. (2019) is the comparison of customer expectations with service performance. It can be achieved by addressing problems and defining measures for quality service and outcomes. Thus,

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good service quality leads into customer satisfaction and makes firms competitive in the market. Customer Satisfaction refers to an individual's perception towards the quality of service or product they received in relation to their personal expectation (Tahanisaz & Shokuhyar, 2020). Consumer behavior refers to the actions and the decision processes of people who purchase goods and services for personal consumption. It refers, further, to the study of customers and how they behave while deciding to buy a product that satisfies their needs (as cited by Raither, 2018).

Business Performance, which is closely tied to commercial effectiveness, is the ability of a company to implement optimal organization with the aim of offering a product or service that meets the expectations of consumers and customers. Aside from the financial indicators, it can be measured in terms of non-financial indicators such as customer loyalty which is the act of choosing one company's products and services consistently over their competitors. When a customer is loyal to one company, they are not easily swayed by price or availability (Taysan and Duran, 2021); and customer retention which is the company's ability to turn customers into repeat buyers and prevent them from switching to a competitor. It indicates whether a company's product and the quality of its service please existing customers (Al-Gharaibah, 2020).

Research has shown the interrelationships of service quality, customer satisfaction and consumer behavior and their impact on business performance as measured in terms of non-financial indicators. For instance, Farooq et al. (2018) assessed the impact of the SERVQUAL provided by Malaysian Airlines on their customer satisfaction. Consequently, they found out that all five dimensions of AIRQUAL i.e., airline tangibles, terminal tangibles, personnel service, empathy, and image have a positive impact on their customer satisfaction. Similarly, Omar Ali and Abd Hakim Amir (2020) examined the relationship between service quality and customer satisfaction in postal service.. Their study revealed that all four service quality elements were positively associated with customer satisfaction with responsiveness and reliability mostly influencing it. Liu et al. (2021) examined the effect of tourism resource uniqueness and service quality to their customer behaviors such as word-of-mouth recommendations and feedback. The result of their study suggested that both resource uniqueness and service quality directly affect their customers' behavior. This means that quality service makes consumer have positive word-of-mouth recommendations and feedbacks.

The study of Nair (2017) focused on the impact of service quality on business performance in the hospitality industry in Qatar. The findings have confirmed the significant interrelationship of tangibles, reliability and empathy with financial, non-financial, and operational performance of the hospitality industry. Responsiveness and assurance had significant interrelationship with non-financial performance and operational performance respectively.

Macon (2020) found out that service quality is correlated with customer loyalty. This means that customers will continue their membership in health and fitness club if they perceived that they're receiving quality service. Othman et al. (2020), who examined the relationship between service quality and customer retention for clothing store brands in China, found out that customer perception of the quality of a service product in all sizes has a beneficial effect on customer retention.

Alves (2014) as cited by Chandra et al. (2018) concluded in his study that customer satisfaction has significant impact on customer loyalty. Nurmaliki and Riyanto (2020) proved that consumer behavior significantly impacted small and medium enterprises (SME's) performance amidst the COVID-19 pandemic. In this regard, they suggested various options to remain having competitive advantage towards other SMEs. Elestwani (2015) as cited by Elestwani (2018) also revealed how a customer's trust-related behavior can influence their loyalty to a business firm. Furthermore, Maria et al. (2018), identified the direct relationship between consumer behavior and business performance. They identified shopping experience, awareness on diverse pricing, privacy concerns, purchasing strategies, fair price perceptions, reprisal intentions, and self-protection as influencers of a client's behavior.

Evidently, a number of research have investigated the operations of health and fitness gyms, but no study has been conducted yet on service quality, customer satisfaction and consumer behavior as predictors of the business performance of Oxygen Gym, a reputable and the biggest health and fitness center in Adailyah, Kuwait, United Arab Emirates.

Thus, this study investigated service quality, customer satisfaction and consumer behavior as predictors of business performance of a Health and Fitness Center in Kuwait, UAE. It will probe the relationship between quality of service and clients' level of customer satisfaction on the health and fitness center's services; between clients' level of customer satisfaction and consumer behavior towards the health and fitness center's services; and quality of service and business performance of the health and fitness center. Further, it will ascertain whether service quality, level of customer satisfaction and level of consumer behavior can predict the business performance of the health and fitness center.

Findings of the study would serve as feedback to the Oxygen Gym instructors on their clients' perception of service quality, satisfaction, and consumer behavior from which they could learn and mull over continuous quality improvement strategies to further improve their services. Likewise, the Oxygen Gym manager can would a basis for policy decision-making relative to strategic initiatives towards the sustenance of the business performance and organizational growth.

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METHODOLOGY

This study utilized the descriptive-correlational research design. The population of this study consisted of 3,000 clients of the Health and Fitness Center, the Oxygen Gym, in Kuwait, UAE. Only 10% or 300 of the total population were taken as the sample respondents of the study

A researcher-made questionnaire was constructed for the purpose of generating the needed primary data. Part I dealt on the perceived quality of service of the Health and Fitness Center (HFC); Part II will cover the level of customer satisfaction of the HFC clients; Part III dwelt on the HFC clients' customer behavior; and Part IV focused on the HFC business performance as assessed by the clients based on non-financial indicators such as customer loyalty and customer retention rate. The self-made questionnaire went through a validation by a panel of experts - a researcher, a statistician, and a business professor, who scrutinized it and suggested some modifications for its improvement.

The researcher wrote a formal letter requesting the Manager of the Health and fitness Center, then wrote a letter to the identified client-respondents. Next he administered his survey questionnaire through online using Google form or in person, retrieved them, data were coded and treated statistically and interpreted.

The weighted mean, Pearson Product Moment Correlation and regression analysis were the statistical tools used in the treatment of data.

RESULTS AND DISCUSSIONS

Tables 1 to 5 present the quality of service of the health and fitness center in terms of reliability, responsiveness, assurance, empathy, and tangibility.

Table 1. Quality of Service of the Health and Fitness Center as assessed by Clients: Reliability

Indicators	Weighted Mean	Verbal Interpretation	Rank
1. HFC counselors always stick to their words and serve you based on the special offers on the application date.	3.43	Strongly Agree	4
2. When you have a problem, HFC staffs show a sincere interest on solving it.	3.44	Strongly Agree	3
3. HFC staffs are reliable in providing service to member	3.47	Strongly Agree	2
4. HFC keeps members' record accurately.	3.53	Strongly Agree	1
Average	3.47	Strongly Agree	

As shown in Table 1, the respondents 'strongly agree' with an average weighted mean of 3.47 that the quality of service of the health and fitness center was 'very reliable'. Specifically, they 'strongly agree' with weighted means ranging from 3.43 to 3.53 that the center, Oxygen Gym, 'keeps the records of the members accurately' with a weighted mean of 3.53 (Rank 1), 'the staffs are liable in providing service to the members' with a weighted mean of 3.47 (Rank 2), 'when a member has a problem, the staffs show a sincere interest on solving them' with a weighted mean of 3.44 (Rank 3), and 'the center's counselors always stick to their words and serve them based on the special offers on the application date' with a weighted mean of 3.43 (Rank 4).

This means the Oxygen Gym possessed the ability to deliver service dependably and accurately. Reliability is the ability to perform the promised service dependably and accurately. Thus, the reliability of the health and fitness center involves on time performance, dependable service, understand members' need and keep accurate records of their members (Klokkenga, 2020; Bhasin, 2021; Kobiruzzaman, 2022).

Table 2. Quality of Service of the Health and Fitness Center as assessed by Clients: Responsiveness

Indicators	Weighted Mean	Verbal Interpretation	Rank
1. HFC employees handle your problems immediately.	3.50	Strongly Agree	1.5
2. HFC employees are eager to listen and solve problems.	3.43	Strongly Agree	4

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3. HFC employees pay attention to your concerns and understand your problems.	3.49	Strongly Agree	3
4. HFC employees have never been too busy to respond to your requests.	3.50	Strongly Agree	1.5
Average	3.48	Strongly Agree	

As indicated in Table 2, the respondents 'strongly agree' with an average weighted mean of 3.48 that the quality of service of the health and fitness center was 'very responsive'. In particular, they 'strongly agree' with weighted means ranging from 3.43 to 3.50 that the center's 'employees handle the clients' problems immediately' and 'have never been too busy to respond to their requests', each with a weighted mean of 3.50 (Rank 1.5), 'the employees pay attention to their concerns and understand their problems' with a weighted mean of 3.49 (Rank 3), and 'the employees are eager to listen and solve problems' with a weighted mean of 3.43 (Rank 4).

This means the Oxygen Gym's employees had the willingness to provide timely and efficient service for their clients. Responsiveness is the willingness to help customers and provide prompt service. Responsiveness, as a quality service indicator for a business such as a health and fitness center, is associated with the employees' ability and attitude toward solving requests, questions and complaints of clients promptly and attentively (Klokkenga, 2020; Bhasin, 2021; Kobiruzzaman, 2022).

Table 3. Quality of Service of the Health and Fitness Center as assessed by Clients: Assurance

Indicators	Weighted Mean	Verbal Interpretation	Rank
1. HFC staffs are consistently courteous.	3.51	Strongly Agree	2
2. HFC staffs have knowledge, capability, and skill in their job responsibilities.	3.39	Strongly Agree	4
3. HFC class instructors are always aware of members' safety while class exercises are being conducted.	3.55	Strongly Agree	1
4. You are safe while attending class exercises under class instructor's supervision.	3.50	Strongly Agree	3
Average	3.49	Strongly Agree	

As presented in Table 3, the respondents 'strongly agree' with an average weighted mean of 3.49 that they were 'highly assured' of the quality of service of the health and fitness. As indicated, they 'strongly agree' with weighted means ranging from 3.39 to 3.55 that the center's 'class instructors are always aware of members' safety while class exercises are being conducted' with a weighted mean of 3.55 (Rank 1), 'staffs are consistently courteous' with a weighted mean of 3.51 (Rank 2), 'they are safe while attending class exercises under class instructor's supervision' with a weighted mean of 3.50 (Rank 3), and 'staffs have knowledge, capability, and skill in their job responsibilities' with a weighted mean of 3.39 (Rank 4).

This means Oxygen Gym and its staffs demonstrated the ability to convey trust and confidence to its clients, such as the knowledge and competence to answer questions. Assurance is the knowledge and courtesy of employees and their ability to convey trust and confidence. As a dimension of quality, it means further that the gym's clients could perceive the courtesy and credibility of the staffs (Klokkenga, 2020; Bhasin, 2021; Kobiruzzaman, 2022).

Table 4. Quality of Service of the Health and Fitness Center as assessed by Clients: Empathy

Indicators	Weighted Mean	Verbal Interpretation	Rank
1. HFC gives you personalized attention while providing services.	3.55	Strongly Agree	1
2. HFC has operation hours convenient to all their customers	3.35	Strongly Agree	4
3. HFC has staffs who give members personal attention.	3.54	Strongly Agree	2
4. HFC staffs understand the specific needs of their customers.	3.52	Strongly Agree	3
Average	3.49	Strongly Agree	

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As reflected in Table 4, the respondents 'strongly agree' with an average weighted mean of 3.49 that they strongly felt the 'empathy' of the instructors and staffs the health and fitness center. Specifically, they 'strongly agree' with weighted means ranging from 3.35 to 3.55 that the center 'gives them personalized attention while providing services' with a weighted mean of 3.55 (Rank 1), the center 'has staffs who give members personal attention with a weighted mean of 3.54 (Rank 2), 'the staffs understand the specific needs of their customers' with a weighted mean of 3.52 (Rank 3), and 'the center has operation hours convenient to all their customers with a weighted mean of 3.35 (Rank 4).

This implies that the instructors and staffs of the Oxygen Gym were able to provide treatment that is individualized care and attention to center members, such as personalized attention; and staffs understand the needs of individual members. Empathy is the caring, individualized attention the firm provides its customers. As a dimension of service quality, it is regarded as a very important factor in the competitive market of fitness providers (Klokkenga, 2020; Bhasin, 2021; Kobiruzzaman, 2022).

Table 5. Quality of Service of the Health and Fitness Center as assessed by Clients: Tangibles

Indicators	Weighted Mean	Verbal Interpretation	Rank
1. HFC has modern equipment.	3.57	Strongly Agree	1
2. HFC provides a variety of class exercises.	3.36	Strongly Agree	4
3. The design of HFC facilities is striking	3.56	Strongly Agree	2
4. Employees of HFC are neat and appealing.	3.48	Strongly Agree	3
Average	3.49	Strongly Agree	

As gleaned from Table 5, the respondents 'strongly agree' with an average weighted mean of 3.49 to the 'tangibles' of the services, physical facilities and equipment of the health and fitness center. Specifically, they 'strongly agree' with weighted means ranging from 3.36 to 3.57 that the center 'has modern equipment' with a weighted mean of 3.57 (Rank 1), 'the design of the center facilities is striking with a weighted mean of 3.56 (Rank 2), 'the employees of center are neat and appealing' with a weighted mean of 3.48 (Rank 3), and 'the center 'provides a variety of class exercises' with a weighted mean of 3.36 (Rank 4).

This implies that the clients or customers of the Oxygen Gym were attracted and drawn to its modern equipment, well-designed club, neat and well-dressed staffs and a variety of class exercises. Tangibles as a dimension of service quality refer to physical facilities, equipment, appearance of the staff, communication materials in service process, etc. Attention to appearance can indicate that a company takes customer comfort seriously (Klokkenga, 2020; Bhasin, 2021; Kobiruzzaman, 2022).

Table 6. Composite Table for the Quality of Service of the Health and Fitness Center as assessed by Clients

Indicators	Weighted Mean	Verbal Interpretation	Rank
1. Reliability	3.47	Strongly Agree	5
2. Responsiveness	3.48	Strongly Agree	4
3. Assurance	3.49	Strongly Agree	2
4. Empathy	3.49	Strongly Agree	2
5. Tangibles	3.49	Strongly Agree	2
Overall Weighted Mean	3.48	Strongly Agree	

As shown in Table 6. the respondent-clients 'strongly agree' with an overall average of 3.48 to the quality of service of the health and fitness center, the Oxygen Gym, as to its services. From the five (5) indicators of service quality, "assurance", "empathy" and "tangibles", each with a weighted mean of 3.49 were equally ranked #2. Ranked # 4 was "responsiveness" with a weighted mean of 3.48; and ranked #5 was "reliability" with a weighted mean of 3.47. This means that the respondent-clients clearly put premium on the staff's courtesy and credibility, on the staff's individualized and personalized attention, staff's appearance and on the facilities and equipment.

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2. Level of Customer Satisfaction on the HFC Services

Table 7. Clients' Level of Customer Satisfaction on the Services of the Health and Fitness Center

	Indicators	Weighted Mean	Verbal Interpretation	Rank
Facilities & Equipment	1. Proper facilities	3.47	Very High	7
	2. Quality of equipment	3.50	Very High	3
	3. Hygiene and cleanliness	3.48	Very High	6
	4. Credibility	3.49	Very High	4.5
	5. Spacious changing rooms	3.49	Very High	4.5
	6. Coherent design	3.53	Very High	2
	7. Prestige	3.54	Very High	1
	Average	3.50	Very High	4
Innovation & Services	1. Economical prices	3.62	Very High	1
	2. Innovative services	3.38	Very High	7
	3. Capacity to solve problems	3.58	Very High	2
	4. Innovative equipment	3.54	Very High	3
	5. Parking services	3.48	Very High	6
	6. Offered additional entertainment	3.53	Very High	4
	7. Pleasant environment	3.52	Very High	5
	Average	3.52	Very High	2
Personnel	1. Politeness of instructors & staff	3.60	Very High	1
	2. Accuracy of information provided by the instructors	3.37	Very High	7
	3. Performance of instructors when facing problems & complaints	3.55	Very High	3
	4. Competence of instructors	3.47	Very High	5.5
	5. Number of instructors available	3.47	Very High	5.5
	6. Fitness Instructor Service/Helpfulness	3.53	Very High	4
	7. Reception Service/Helpfulness	3.56	Very High	2
	Average	3.51	Very High	3
Accessibility	1. Location of the gym	3.60	Very High	1
	2. Easy access to the gym	3.47	Very High	2
	Average	3.54	Very High	1
	Overall Weighted Mean	3.51	Very High	

As presented in Table 7, the respondent-customers' level of satisfaction on the services of health and fitness center was 'very high' with an overall weighted mean of 3.51. This means that the customers had very high degree of fulfillment. They were pleased and content with what has been experienced and received from the services of the health and fitness center along accessibility, innovation and services, personnel, and facilities and equipment of Oxygen Gym.

Specifically, they were 'very highly' satisfied with the HFC's 'accessibility' with an average weighted mean of 3.54 (Rank 1) due to the location of the gym (WM=3.60) and the easy access to the gym (WM=3.47). Likewise, they were 'very highly' satisfied with the HFC's 'innovation and services' with an average weighted mean of 3.52 (Rank 2) because of its economical prices

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(WM=3.62), capacity to solve problems (WM=3.58), innovative equipment (WM=3.54), offered additional entertainment (WM=3.53), pleasant environment (WM=3.52), parking services (WM=3.48), and innovative services (WM=3.38).

Further, they were 'very highly' satisfied with the HFC's 'personnel' with an average weighted mean of 3.51 (Rank 3) due to the politeness of instructors and staff (WM=3.60), reception service/helpfulness (WM=3.56), performance of instructors when facing problems and complaints (WM=3.55), fitness instructor service/helpfulness (WM=3.53), competence of instructors (WM=3.47), number of instructors available (WM=3.47), and accuracy of information provided by the instructors (WM=3.37).

Finally, they were 'very highly' satisfied with the HFC's 'facilities and equipment' with an average weighted mean of 3.50 (Rank 4) because of prestige (WM=3.54), coherent design (WM=3.53), quality of equipment (WM=3.50), credibility (WM=3.49), spacious changing rooms (WM=3.49), hygiene and cleanliness (WM=3.48), and proper facilities (WM=3.47).

The study's findings find support in the study of Uğurlu (2018), which determined the satisfaction levels of individuals who go to fitness centers. In the study, it was discovered that the participants determined the trainers' attitude to be the most positive perception while the hygiene was the most negative perception. In the analysis of the customer satisfaction in terms of the personal information, it was determined that females' trainer perception was lower compared to men and high school graduate individuals' atmosphere perception was lower compared to the other individuals.

Table 8. Clients' Consumer Behavior towards the Services of the Health and Fitness Center

Indicators	Weighted Mean	Verbal Interpretation	Rank
1. I consider affordability as a factor for fitness club choice.	3.49	Strongly Agree	11
2. I consider convenience as a factor for fitness club choice.	3.42	Strongly Agree	15
3. I consider facilities as a factor for fitness club choice.	3.49	Strongly Agree	11
4. I want to improve my health	3.48	Strongly Agree	13.5
5. I want to lose weight	3.53	Strongly Agree	4.5
6. I want to improve my body image	3.54	Strongly Agree	1.5
7. I decide to use a fitness club based on price.	3.52	Strongly Agree	7
8. I decide to use a fitness club based on convenience	3.49	Strongly Agree	11
9. I decide to use a fitness club based on facilities	3.50	Strongly Agree	8.5
10. Health and fitness helps me to relax and unwind	3.53	Strongly Agree	4.5
11. Health and fitness gives me time to socialize	3.48	Strongly Agree	13.5
12. Health and fitness with peer group helps me reduce anxiety	3.54	Strongly Agree	1.5
13. Health/appearance benefits can be derived from health and fitness	3.53	Strongly Agree	4.5
14. Proper time management enable me to integrate health and fitness with my lifestyle	3.50	Strongly Agree	8.5
15. Convenience enables me to integrate health and fitness in my daily/weekly routines	3.53	Strongly Agree	4.5
Average	3.50	Strongly Agree	

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As reflected in Table 8, the respondent-customers 'strongly agree' with an average weighted mean of 3.50 to all the indicators of customer behavior towards the services of the health and fitness center. This means that their behaviors were influenced by psychological, personal, social and cultural factors as consumers of the services of the center. Specifically, they 'strongly agree' with weighted means ranging from 3.42 to 3.54 to the indicators that 'I want to improve my body image' and 'health and fitness with peer group helps me reduce anxiety' (Rank 1.5), 'I want to lose weight', 'Health and fitness helps me to relax and unwind', 'Health/appearance benefits can be derived from health and fitness', and 'Convenience enables me to integrate health and fitness in my daily/weekly routines' (Rank 4.5). Further, they 'strongly agree' to the following indicators: 'I want to improve my health' and 'Health and fitness gives me time to socialize' (Rank 13.5), and I consider convenience as a factor for fitness club choice (Rank 15).

Table 9. Business Performance of the Health and Fitness Center: Customer Loyalty and Customer Retention

Indicators	Weighted Mean	Verbal Interpretation	Rank
1. Recommend Oxygen Gym's facilities and services to others – a family member or friend.	4.23	Very High	2
2. Visit Oxygen Gym again for follow-up exercise classes and other services	4.23	Very High	2
3. Choose Oxygen Gym for future health and fitness services	4.23	Very High	2
Average	4.23	Very High	

The degree of customer loyalty was used as a qualitative measure of Oxygen Gym's business performance. As shown in Table 9, the customers' degree of loyalty was 'very high' with an average weighted mean of 4.23. They intimated that they would 'recommend Oxygen Gym's facilities and services to others – a family member or friend', 'visit Oxygen Gym again for follow-up exercise classes and other services' and 'choose Oxygen Gym for future health and fitness services', each with a weighted mean of 4.23 (Rank 2).

Further, the customer retention rate was computed for calendars years 2018-2019, 2019-2020 and 2020-2021 resulting in a retention rate of 100%, 72% and 80% respectively (see appendix __). Thus, the business performance of Oxygen Gym, a 7-star health and fitness center, could be characterized as highly effective commercially.

The study finding finds support in the observation of Srivastava and Rai (2018) that a loyal relationship characterized by preference, patronage and premium is developed based on a high degree of customer satisfaction, coupled with the customer's emotional attachment, and forged by an enduring association between the company and its customers.

Table 10. Relationship between Quality of Service and Clients' Level of Customer Satisfaction on the Health and Fitness Center's Services

Quality of Service	Pearson r	p-value	Interpretation
Reliability	0.976** High Correlation	0.000	Significant
Responsiveness	0.971** High Correlation	0.000	Significant
Assurance	0.971** High Correlation	0.000	Significant
Empathy	0.978** High Correlation	0.000	Significant
Tangibles	0.981** High Correlation	0.000	Significant
** Significant @ 0.01			

As presented in Table 10, the health and fitness center's quality of service significantly correlated with the level of customer satisfaction on the services shown by the Pearson r values of 0.976 for reliability, 0.971 for responsiveness, 0.971 for assurance, 0.978 for empathy, and 0.981 for tangibles and their corresponding computed p-values of 0.000 which were all less

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than the 0.01 level of significance. This means that the more the customers or clients agree or attest to the quality of service of Oxygen Gym, the higher is their level of customer satisfaction on its various services.

The study's finding on the significant correlation between the health and fitness center's quality of service level of customer satisfaction on its services is affirmed by Pradeep et al. (2020), who analyzed the factors in customers' perception of service quality and its relation to customer satisfaction and retention. It was revealed in his study that although a high service quality index score and customer satisfaction indicated the drive for customer retention, the steady-state matrix apparent in the second year in a Markov analysis suggests that firms focus on improvising their marketing mix to increase customers' spending time in fitness centers and maximize customers' satisfaction with the main purpose of their visit, their own wellbeing and stress reduction.

Table 11. Relationship between Clients' Level of Customer Satisfaction and Consumer Behavior towards the Health and Fitness Center's Services

	Pearson r	p-value	Interpretation
Clients' Level of Customer Satisfaction and Consumer Behavior towards the Health and Fitness Center's Services	0.984** High Correlation	0.000	Significant
** Significant @ 0.01			

As indicated in Table 11, there was a significant relationship between level of customer satisfaction and consumer behavior towards the health and fitness center's services as indicated by the Pearson r of 0.984 and the computed p-value of 0.000 which was less than 0.01 level of significance. This means that customer behavior was dependent on their level of satisfaction on the center's services.

Table 12. Relationship between Quality of Service and Business Performance (Loyalty). of the Health and Fitness Center

Quality of Service	Pearson r	p-value	Interpretation
Reliability	0.961** High Correlation	0.000	Significant
Responsiveness	0.958** High Correlation	0.000	Significant
Assurance	0.958** High Correlation	0.000	Significant
Empathy	0.962** High Correlation	0.000	Significant
Tangibles	0.969** High Correlation	0.000	Significant
** Significant @ 0.01			

As reflected in Table 12, the quality of service of the health and fitness center significantly correlated with business performance particularly with its indicator customer loyalty as shown by the Pearson r values of 0.961 for reliability, 0.958 for responsiveness, 0.958 for assurance, 0.962 for empathy, and 0.969 for tangibles and their corresponding computed p-values of 0.000 which were all less than 0.01 level of significance. This implies that the more the customers agree or attest to the quality of service of Oxygen Gym by patronizing its services, the better is the business performance of the gym in terms of customer loyalty.

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Table 13. Stepwise Regression between Service Quality, Level of Customer Satisfaction, Consumer Behavior and Business Performance of the Health and Fitness Center

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	
	B	Std. Error	Beta			
1	(Constant)	.671	.273		2.460	.015
	Tangibles	1.019	.077	.652	13.259	.000
a. Dependent Variable: Loyalty						
r = 0.652 ^a						
F = 175.792; p = 0.000						

As gleaned from Table 13, the quality of service in terms of tangibles predicted the business performance in terms of loyalty. The probability value of 0.000 was less than the 0.01 significance level. In addition, there was a correlation between the two variables of the study. A value of 0.652 indicates a moderate level of prediction of customer loyalty as an indicator of business performance. Further, the F-value of 175.792 with probability value of 0.000 which is less than the 0.05 significance level shows that the independent variable quality of service in terms of tangibles statistically significantly predicted the dependent variable customer loyalty as an indicator of business performance. This means that the more the customers agree or attest to the quality of service rendered by Oxygen Gym along tangibles, the higher is the customers' degree of loyalty which could result in the gym's being commercially effective. Only the tangibles predicted HFC's business performance with customer loyalty as an indicator.

CONCLUSION AND RECOMMENDATION

In conclusion, (1) the Oxygen Gym has the ability to deliver service dependably and accurately. Its employees have the willingness to provide timely and efficient service for their clients and demonstrate the ability to convey trust and confidence to its clients, such as the knowledge and competence to answer questions. The instructors and staffs are able to provide treatment that is individualized care and attention to center members, such as personalized attention; and staffs understand the needs of individual members. The clients or customers are attracted and drawn to its modern equipment, well-designed club, neat and well-dressed staffs and a variety of class exercises, (2) the clients have very high degree of fulfillment and are very pleased and content with what has been experienced and received from the services of the health and fitness center along accessibility, innovation and services, personnel, and facilities and equipment of Oxygen Gym, (3) the clients' behavior is influenced by psychological, personal, social and cultural factors as consumers of the services of the center, (4) the business performance of Oxygen Gym, a 7-star health and fitness center, can be characterized as highly effective commercially based on the clients' very high degree of loyalty and on its customer retention rate for the past three (3) years, (5) the more the customers or clients agree or attest to the quality of service of Oxygen Gym, the higher is their level of customer satisfaction on its various services; the more they agree or attest to the quality of service of Oxygen Gym, the better is the business performance of the gym in terms of customer loyalty; and that customer behavior is dependent on their level of satisfaction on the center's services, and (6) the more the customers or clients agree or attest to the quality of service rendered by Oxygen Gym along tangibles, the higher is the customers' degree of loyalty which can result in the gym's being commercially effective. Thus, tangibles as a quality service indicator appear to be a predictor of business performance based on the degree of customer loyalty.

Based on the findings and conclusions of the study, the researcher recommends the following: (1) since the clients of Oxygen Gym clearly put premium on the staff's courtesy and credibility, on the staff's individualized and personalized attention, staff's appearance and on facilities and equipment, which all fall under the quality service indicators of assurance, empathy and tangibles, management should continually sustain its staff development program on personal development and customer relations; and maintain its state-of-the-art facilities and equipment to stay on top as a reputable and the biggest health and fitness club in Kuwait, (2) though the clients expressed a very high level of satisfaction on the services of Oxygen |Gym, management should include in its continuous quality improvement plan the maintenance of the gym's hygiene and cleanliness 24/7. Expansion of facilities like a bigger pool, spa and restaurant may be considered. Amid the pandemic, innovative services like online booking may be explored and adopted, (3) the marketing department of Oxygen Gym should consider the factors that inhibit or drive clients to avail of the gym's services such psychological, personal, social and cultural factors. Knowledge on these factors is important in the formulation of marketing strategies to attract more clients. For instance, improving one's body image and being with peers in the gym to reduce anxiety were found to be drivers or motivators to go to the gym, (4) customer loyalty and customer

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retention rate are two qualitative measures used in determining business performance. Such was the case for Oxygen Gym which was found to be a commercially effective. In the future, Oxygen Gym, if possible, may look into its financial statements to quantitatively measure business success. A combination of both qualitative and quantitative may ideally be considered, (5) since in the case of Oxygen Gym, customer satisfaction and business performance were very highly associated with the quality of services, the management and its personnel should revisit the indicators of quality services and the gym's services such facilities and equipment, innovation and services, personnel, and accessibility and identify areas for improvement like the expansion of facilities (ex. upgrading of diet center), offering innovative services (ex. downloadable online programs), and looking into the accuracy of information provided by instructors, etc., and (6) tangibles among other service quality indicators singly predicted HFC's business performance with customer loyalty as an indicator. Since the Oxygen Gym is a 7-star health and fitness center with rich Kuwaiti clients, they put more premium on the design of the gym, physical facilities, modern equipment, and a variety of class exercises. Thus, it behooves management to regularly maintain a state-of-the-art gym by continuously expanding and re-designing its facilities, acquiring new equipment and innovating its services tapping online platforms to be able to retain its customers, stay competitive, and discourage the entry of new competitors.

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Evaluation of Teaching Specialty in Head and Neck Surgery in the Curriculum of Medical Courses in Fortaleza, Ceará



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ABSTRACT:

Introduction: Head and neck cancer is highly prevalent, but most tumors are identified late, compromising treatment, prognosis and patient survival. That is why it is important to include the Head and Neck Surgery discipline in the curriculum of the medicine course, so that trained professionals are able and safe to diagnose these conditions early, thus improving teaching in this area. This study was to analyze the teaching of head and neck surgery in medical schools in the city of Fortaleza, Ceará.

Development: This is an observational cross-sectional study in which a structured questionnaire was adopted to the coordinators of each college, in which the institution, curriculum and internship were analyzed. It was observed that only one of the four institutions has a structured HNS service. Only 6% of the total number of interns who completed the medical course attended the HNS during the internship in 2019.

Conclusion: It can be observed that there are gaps in the teaching of the specialty of HNS, from the base of academic training, to the surgical services, showing little emphasis aimed at that specialty.

KEYWORDS: Head and neck surgery. Cancer. Medical education. Diagnosis.

1. INTRODUCTION

The specialty of head and neck surgeries treat oncologic and non – oncologic conditions that develop in the head , scalp, face , paranasal sinuses, nose, mouth, pharynx, thyroid, larynx, parathyroid and lateral structures of the neck and esophagus. Head and neck cancer, in general, is among the sixth most common type of cancer in the world, behind only breast, colorectal, lung, prostate and stomach cancers. In addition, in 2020, 931,931 new cases of the disease and 467,125 deaths were estimated worldwide. In Brazil, the scenario is also worrying. 41,000 new cases are registered per year, however, diagnosis and late treatment are still among the main obstacles to facing the neoplasm, which in 2019 affected more than 13,000 Brazilians. ¹

The largest volume of treatment by the head and neck surgeon is cancer in this region. However, most tumors are identified late, compromising the treatment, prognosis and survival of patients² . Delays are often due to the lack of knowledge about these conditions, both by patients and by health professionals - they should instruct patients to look for doctors in a preventive way - and by the barriers of the health system, leading to lack of speed for diagnosis and initiation of treatment^{3,9}. That is why it is important to include the Head and Neck Surgery discipline in the curriculum of the Medicine course, so that trained professionals are able and safe to diagnose head and neck disorders early, thus improving teaching in this area³. General practitioners need to have at least basic knowledge about diseases that affect this area, such as cervical nodules, parathyroid diseases, thyroid disorders, neoplasms of the mouth, larynx and oropharynx, as well as knowing how to proceed with clinical and endoscopic examinations, tracheostomies and handle emergencies in this area. This is so relevant and important, since head and neck cancer is highly prevalent, as an example, we can mention cancer of the oral cavity, which is the fifth most prevalent cancer in the Brazilian population. There are an estimated 11,180 new cases of the disease in men and 4,010 in women for each year of the triennium 2020-2022³. Another point to be highlighted is that neoplasms related to this area, such as mouth and oropharynx cancer, have high mortality and low survival rates, especially if discovered late, requiring early approaches in such situations. Another example to be mentioned is thyroid cancer, in which it is estimated that every three years 2020/2022, 13,870 new cases of the neoplasm are diagnosed, with an increase in mortality of 0.6% per year. Therefore, it is important that general practitioners leave with good training and knowledge about the area, in order to know how to diagnose these conditions early⁹.

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Thus, the study proposed to analyze the teaching of head and neck surgery in medical schools in the city of Fortaleza, Ceará.

2. METHODOLOGY

This is an observational, qualitative and analytical cross-sectional study using a structured questionnaire (Appendix A) to the coordinators of Medicine courses. The sample was selected from the census type, and all faculties of medicine located in the city of Fortaleza-Ce were approached, from April 2020 to October 2020. The four faculties in Fortaleza were approached: Centro Universitário Christus (Unichristus); University of Fortaleza (Unifor); Federal University of Ceará (UFC); Ceará State University (UECE). Data were collected as follows: the researchers went to each of the faculties, took the questionnaire, met with the coordinator responsible for the medical course, and the questionnaire was answered by the coordinator, according to with the specific curriculum of each university. The present study had as inclusion criteria the questionnaires duly answered by the coordinators and /or responsible for the curriculum of each institution, and faculties that refused to participate in the research were excluded. The curricula of each medical course were analyzed, seeking to know if there is an exclusive module for the head and neck specialty in the basic cycle, the workload, if there are theoretical classes and experience and if the professor responsible for the discipline is an expert in the field, invited or hired. If the subject offered is optional, the percentage of students taking it was analyzed. If there was not an exclusive specialty module, it was investigated in which modules the classes on oral cancer, thyroid and parathyroid cancer, skin cancer, cervical lymph node enlargement, salivary gland tumors and congenital diseases of the neck are included; as well as the qualification of the teachers who teach these classes. Data were also collected on the experience of the head and neck discipline at the boarding school. An analysis was made if the faculties offer the student the possibility of going through the head and neck, or if only when the student is interested in the specialty.

Specific data for each of the colleges, such as type, whether public or private, year of foundation of the medical course, year of foundation of the college, undergraduate and internship workload were collected and recorded in a spreadsheet (Microsoft, Seattle, USA). The sample of this study consisted of a structured questionnaire and characterized in absolute (n) and relative (%) terms. Statistical calculations were performed using the SPSS 20 program (SPSS INC., Chicago, IL, USA), and the significance level of 5% was adopted.

3 .RESULTS

3.1 - Profile of the institutions studied

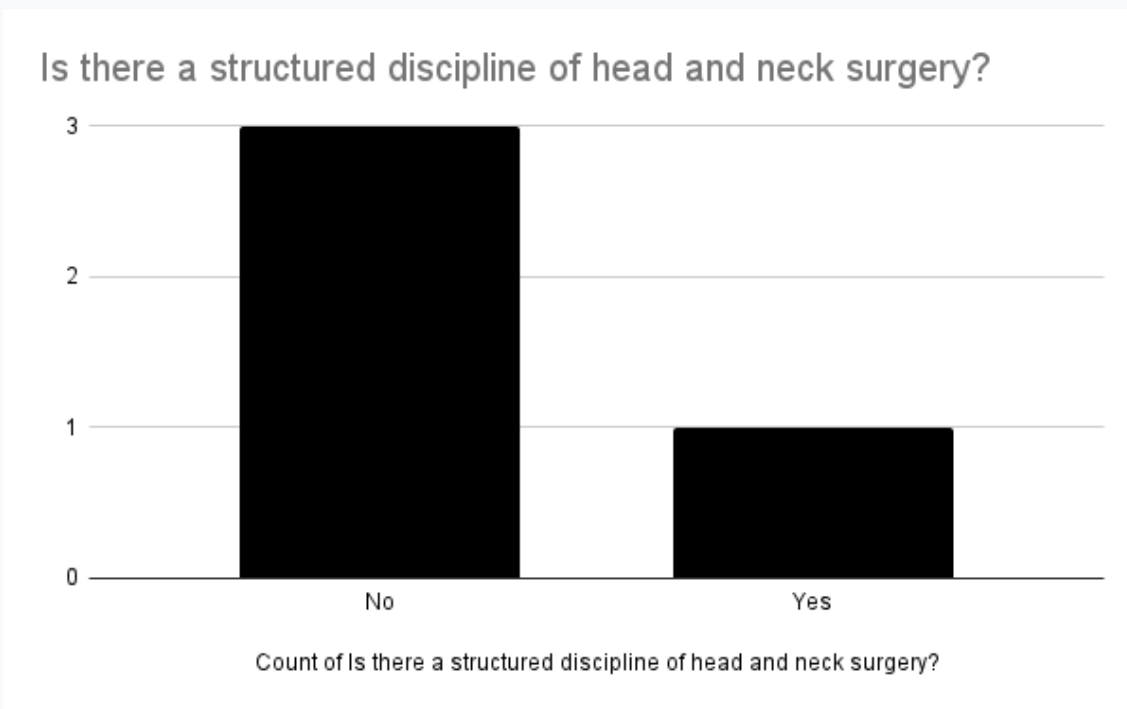
As a source of information, four medical teaching institutions, two public and two private, were analyzed. Both have similar undergraduate and internship hours. (Table 1)

Table 1. Characteristics of universities.

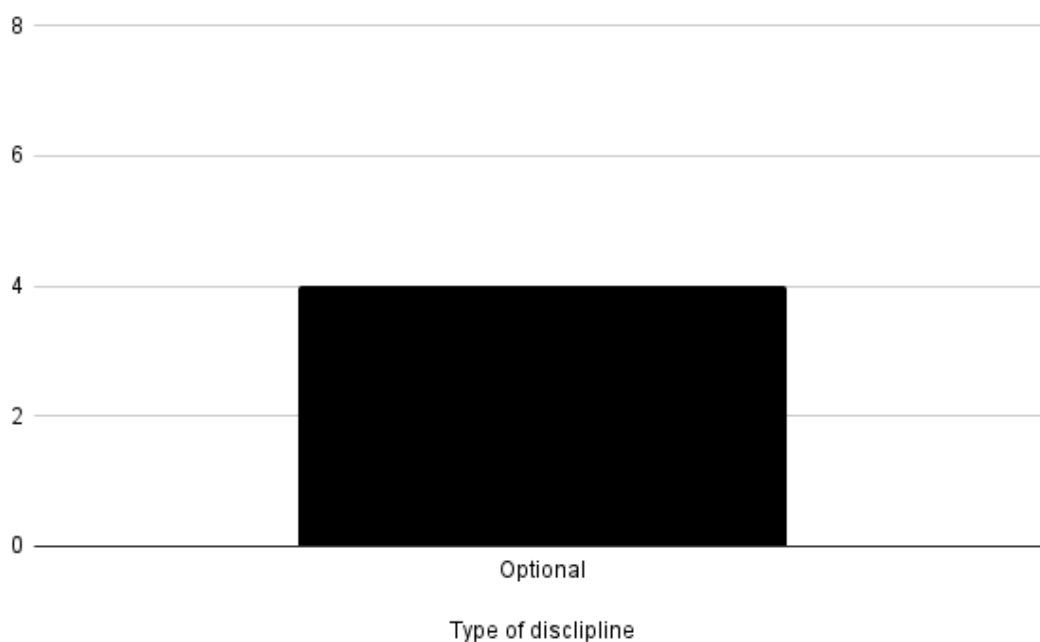
	Type	No. of Formed Classes	Founded in	Graduation workload	Boarding school hours
Institution A	Private	18	2006	8.532	3.960
Institution B	Private	17	2006	8.042	4.014
Institution C	Public	12	2002	8.428	3.840
Institution D	Public	115	1948	8.296	3.840

Regarding the specialty of Head and Neck Surgery, a survey was carried out about the existence of a structured service on this area in the preceptorship, the presence of a specialist, the option to offer the discipline during the internship period, in addition to observing if there is a mandatory module in the analyzed institutions, see (Graphs 1, 2 and 3).

Graphic 1:



Graphic 2:



3.2 - Analysis of the curriculum of educational institutions

In the institutions evaluated, only one university (25%) has a structured HNScourse, which is mandatory in the curriculum. Of the other three institutions that were evaluated, two present dialogic expositions on some topics, but are addressed in other disciplines such as endocrine, dermatology, surgery and oncology. And a university has the optional subject, not being mandatory for the curriculum. The topics covered in the area are head and neck neoplasms, surgical diseases of the parathyroids, skin cancer, laryngeal cancer, nodules, goiter and thyroid cancer. However, it was not found in any institution that addressed in a dialogic exhibition the topics of: cancer of the mouth, oropharynx, salivary glands and congenital diseases of the neck, thus showing how incomplete the medicine curriculum is in relation to such matters. . (Table 3).

Workload focused on the discipline structured in HNS at the recommended institution – 40 hours.

At the University that had the optional subject, only 15 total students chose to take the subject between 2018 and 2020.

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In none of the universities evaluated, there is no practical experience or internship focused on HNS, the practical part being seen in the internship, however, only for students who decide to run in this area.

Regarding professors, in two institutions these topics are given by HNS professionals, and in the other two, such topics are addressed by professionals from other areas such as endocrine, dermatologist and oncologist. And in none of the institutions is there a preceptor specialist in HNS in the internship.

Table 3 - Classes offered by related undergraduate institutions: with head and neck themes

Classes:	Number of institutions offering:
Head and neck tumors	75%
Surgical skin cancer parathyroid diseases	75%
Laryngeal cancer	50%
Nodules, goiter and thyroid cancer	100%
Cervical lymph node enlargement and differential diagnosis of cervical masses	25%
Cancer of the mouth, oropharynx, salivary gland tumors	0
Congenital neck diseases	0

3.3 - Analysis of the internship system

According to collected data, in 2019 the number of interns who attended the specialty of Head and Neck Surgery was a total of 27 students, corresponding to 6% of the total of interns who completed the medical course in that same year.

Table 1 - Internship in head and neck surgery	
Total Graduates in 2019	452
Total seats available for elective in CCP	56 (12,38%)
Interns who ran in CCP	27 (6%)

Table 2 - Annual number of interns by specialty in 2019 at a tertiary health philanthropic institution in Fortaleza - Ce

	Number of Interns at the Philanthropic Institution
Internal in the surgical clinic	207
Interns who have gone through the head and neck surgery	8
Internal in the medical clinic	245
	Total: 452

The curriculum of the medical faculties of Fortaleza still has gaps in the teaching of this specialty, many relevant topics, such as mouth and oropharynx cancer, congenital neoplasms of the neck and salivary gland cancer are not addressed in the institutions, generating a great lack of knowledge about pathologies that have high prevalence of learning, because through them, future

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professionals learn how to proceed with patients with such diseases, knowing how to perform a physical examination, diagnose and manage them, do not occur and are not part of the curriculum, thus culminating in a serious deficiency in the knowledge of future professionals. And in relation to the internship, few students are interested in working in the specialty, precisely because of this lack of knowledge, and mortality. In relation to experiences, practices and internships, which are important ways, then, many professionals leave college, really without having the general knowledge of the specialty, causing harm to the health area, since many patients cannot even have the correct diagnosis. of the pathology, and consequently, there is an increase in mortality due to these conditions. Therefore, cases are increasing along with morbidity and mortality.

4. DISCUSSION

A large portion of the population is unaware of the specialty of head and neck surgery. Furthermore, several doctors share this lack of knowledge. These, in addition to knowing little about these highly prevalent diseases such as thyroid nodules, mouth and pharyngeal cancer, also do not know which specialist to refer the patient afflicted by these conditions⁴. This is due to the limited offer of the subject of head and neck surgery at graduation, which can stigmatize and make the specialty less attractive for the vast majority of students. to search for it on their own⁵.

In addition, in many medical institutions, despite the existence of a specialty group, and some dialogued presentations that are held within the curriculum, the contents are taught in a divided and separate way, taking place in disciplines such as general surgery, otolaryngology, oncology, dermatology, endocrinology, among others, with, in most cases, not having a specific module focused on this specialty, or even that these classes are taught by the professional in the area⁶.

According to BONFANTE et al¹, the discipline of head and neck surgery is a medical specialty with little emphasis on graduation, in most university education institutions, with only a structured service for the discipline of Head Surgery. and Neck in only one of the studied institutions, in addition to not having a specialist tutor in this area in three of the analyzed institutions, thus emphasizing the existing gap in the base of the medical student's academic education.

This is due to the fact that this area covers pathologies that are also linked to other areas such as oncology, dermatology, endocrinology, otolaryngology, general surgery, so these subjects end up being addressed in these disciplines, which means that there is no exclusive discipline for this area in the medical curriculum. Another reason would be the low number of professionals in this area, precisely because of this lack of knowledge, since other professionals such as a general surgeon can perform the same procedures as a head and neck surgeon. In addition, when patients are diagnosed with such pathologies, they usually end up being referred to other specialists in the medical field, mainly oncology and general surgeons¹⁰.

The two medical specialties most closely related to HNS are oncology and general surgery. Many general practitioners, when faced with pathologies that involve such areas, usually refer them to one of these two areas, precisely because in the curriculum, these areas had a specific discipline, with experiences, which makes these professionals have, at least, general knowledge about these specialties. In addition, within the medical residency program, residents of these areas are trained to perform the surgeries and procedures that should be performed by head and neck surgeons, thus reducing the demand for their own specialty.^{9,10}

It can be observed that of the four institutions analyzed in our study regarding the content of the curriculum, none of them specifically addresses, in dialogued exposure, classes on mouth cancer, oropharyngeal cancer, salivary gland cancer and congenital neck diseases, being pathologies of high prevalence and mortality. As an example, we can mention mouth cancer, which is closely related to alcoholism, smoking, poor oral hygiene, malnutrition and HPV, which has contributed to the increase in its incidence and severity, and due to the fact that it is not addressed properly during the course. in college, many general practitioners do not usually examine the mouth of their patients, who sometimes may already have a small lesion that goes unnoticed at the time of the consultation. When the severity of the injury increases, where it begins to affect other areas of this region, that is when the patient seeks the doctor, and it is precisely during this period that the diagnosis and treatment may or may not be done correctly. But the stage of the neoplasm is already advanced, and the chances of cure decrease, so the mortality from this disease is still so high, due to this late approach.^{9,10}

Thus, many medical schools lack a specific module in this area. Thus, it is important that specialists in the field linked to Universities make their colleagues recognize the importance of a course with head and neck surgery during graduation⁷. Even with a restricted workload, not breaking down the specialty contents into other disciplines should promote better fixation by the students and enable better future management of these suffering patients. The proportion of services restricted to cancer hospitals, without a university link, with an emphasis on graduate *Latu Sensu*, that is, medical residency, is not negligible⁸.

And yet, after graduation, only those who undergo general surgery will be required to intern in head and neck surgery. A large part of this problem stems from a mistaken interpretation of the Curriculum Guidelines of the Undergraduate Course in Medicine, which recommends generalist training. The physician must have a good general education during his graduation, but this does not

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mean that he should only know general contents. During graduation, they must have contact with several specialties and learn from specialists the most prevalent conditions in that area. Second, SBCCP6, no one aims to train graduate specialists, but teaching the contents of head and neck surgery will certainly contribute to meeting the requirements of the Guidelines.

A relevant issue in our study is that 100% of the faculties that were analyzed in this work, none of them present a subject in this area as mandatory, only one has as an optional activity, that is, several important topics are not properly covered in the curriculum, such as cancer mouth, oropharynx and salivary glands, which further corroborates the precarious medical education in relation to this specialty.

Regarding the analysis carried out, specifically, in a tertiary health philanthropic institution in Fortaleza, Ceará, which receives students in the internship of a private educational institution among the four analyzed, our study observed that, in 2019, 207 students from the internships took place in the surgical clinic/general surgery, only eight of these were in HNS, which is equivalent to that only 4% of the trainees took part in this area in the internship, specifically, in that institution. According to the information collected, the students were awarded the rotation in the HNS specialty through drawings.

In addition, in 2019, the number of interns who studied in the specialty of Head and Neck Surgery was a total of 27 students, corresponding to 6% of the total interns who completed the medical course in that same year, thus showing, the low percentage of rotation in this specialty. The total number of places made available in Fortaleza by health institutions that receive students in the internship corresponded to the number of 56 places and the calculated probability of the intern running in head and neck surgery, according to the places made available in 2019, was 12.32%.

In other countries, such as the USA, it is possible to learn about all medical areas, including HNS, since there are specific modules for each area, experiences and practices, thus, a complete education, in which general practitioners know all areas of medicine, knowing how to act and proceed in each of them. Therefore, the prevalence of these conditions related to this area is low.¹⁰

Finally, it is necessary for the faculties of medicine to review the medical curriculum, and try to include this area of HNS as a form of compulsory subject, with experiences, internships and practices, addressing all relevant topics in this area, in addition, teaching also to future professionals to know how to do an anamnesis and physical examination directed to this topic in order to, in the future, know how to handle and proceed in the face of situations involving this area. And in relation to the internship, it would be interesting to put preceptors in this area to encourage students to rotate and experience this specialty better in practice.

5. CONCLUSION

With this study, it is possible to observe the existence of gaps in the teaching of the specialty of Head and Neck Surgery, from the base of academic training, to the surgery services, which, for the most part, do not have a structured service for this area, evidencing the little emphasis given to this specialty.

In addition, the low percentage of HNS vacancies offered by the surgical services was observed, as well as the low adherence of students to the HNS rotation, which corresponded to 6% of the interns graduated in the same period, which can make the specialty more unknown and less attractive for the vast majority of students, which directly reflects the lack of training of general practitioners in knowing how to diagnose and refer cases of head and neck cancer, a highly prevalent condition. Thus, we suggest new studies that address the internship population more specifically, in addition to expanding the study to other medical institutions in the state of Ceará and even across the country.

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Role of NITI Aayog in Relation to Indian Public Policies: A Study



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ABSTRACT: “NITI Aayog” (National Institution for Transforming India Aayog) was introduced on the 1st January 2015, as the replacement for ‘*Planning Commission*’. NITI Aayog oversees the monitoring and adoption of ‘*Sustainable Development Goals*’ (SDGs) and promote competitive and cooperative federalism among the States and Government undertakings. This is a Government of India policy ‘*think tank*’ that aims ‘*to foster involvement and participation in the economic policy making process by the State Governments of India*’. The Prime Minister serves as the Ex-officio Chairman of NITI Aayog. The NITI Aayog may provide a critical directional and strategic input in regard to developmental processes of India. Indeed, it focuses on the cooperative federalism of country. The centre-to-state one-way flow of policy, the hallmark of the Planning Commission era, has been replaced by a genuine and continuing partnership with and among the Indian States. “Public Policy” is a primarily an instrument to guide social actions in accordance with certain predetermined goals. Thus, the public policy is a ‘*directional means seeking to fulfil ideology driven aims which are usually conceived out of a dialectical interaction between the governments and governed*’. In view of this, the present research was carried out to study the ‘Role of NITI Aayog with regard to Public Policies of India.

KEYWORDS: India, NITI Aayog, Public Policies, and Role and Functions.

INTRODUCTION

Public policy is also ethics driven. “Public Policy” is a ‘*device employed to meaningfully address societal problems*’. The nature of public policy is contingent on the prevalent socio-economic and political circumstances and policy priorities are determined, to a significant extent, by what is ideologically preferred at a particular historical juncture. Policy making is also a collaborative venture in which both the government and stakeholders are dialectically interconnected while seeking to devise socially relevant, politically meaningful and economically cost-efficient public policy (Dye, 2017; Chakrabarty and Chand, 2016).

NITI Aayog seeks to facilitate and empower the critical requirement of good governance, which is people-centric, participative, collaborative, transparent and policy-driven. It provides critical directional and strategic input to the development process, focusing on the deliverables and outcomes. This is an incubator and disseminator of fresh thought and ideas for the development. The NITI Aayog is looking to engage the services of a consultant in the governance and public service delivery vertical that will be responsible for the designing, management and implementation of a portfolio of policy initiatives, innovative projects and partnerships related to the thematic area of governance and public service delivery. The responsibilities assigned include, but not be limited to, the public administration reforms and enhancing administrative efficiency of the government programmes, facilitating centre-state and inter-ministerial coordination in the area of governance and creation of a repository of best practices with an aim to accelerate the developmental agenda in line with the principles of ‘*Minimum Government and Maximum Governance*’. Thus, the NITI Aayog may generate the knowledge and innovation through a collaborative community of experts, practitioners and other partners in order to become a catalyst and convener for the governance practices aimed at enhancing the citizen centric public service delivery (NITI Aayog, 2017 & 2018; Wikipedia, 2022d; www.nitiayog.com, 2022).

In NITI Aayog, the State Governments have an equal role in the process of national development, and thus the NITI Aayog fulfils the principle of cooperative federalism of India. Repeatedly, it is a ‘*think tank institution*’ that stands not only as a hub for knowledge but also for good governance. Therefore, the NITI Aayog is a big platform to monitor and implement all government policies by bringing together various ministries of the Central and State Governments of India. In this, the priorities include upliftment and empowerment of the poor, marginalised and downtrodden while simultaneously redressing identity-based inequalities of all kinds, such as the gender, region, religion, caste and class of the people of India. At present, the NITI Aayog

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recommends various policies and their implementation is constantly being done by all the Governments for the welfare of people and the country, as a whole (NITI Aayog, 2017 & 2018; Wikipedia, 2022d; www.nitiayog.com, 2022).

PUBLIC POLICY

“Public Policy” is a *‘device employed to meaningfully address societal problems’*. This is primarily an instrument to guide social actions in accordance with certain predetermined goals. Hence, the public policy is a *‘directional means seeking to fulfil ideology driven aims which are usually conceived out of a dialectical interaction between the governments and governed’*. In making of public policy, there are two types of actors: on one hand, there is Government which has definite ideological goals to attain while devising the public policy. Political leadership holding State power is an important factor in so far as policy-making is concerned; it however, functions in an ideological milieu in which the role of stakeholders, or in a more generic term, *‘governed’*, is equally important. In its making, public policy is also value dependent (Dye, 2017; Chakrabarty and Chand, 2016; Wikipedia, 2022 a, b & c).

While formulating the public policies for the democratic India, the policy-makers require to be sensitive to concerns for public interests, right, justice, equality and efficiency. These are obligatory criteria that the decision makers cannot afford to ignore because they uphold fundamental values of a democratic political order. Thus, it is argued that the public policy acquires its *‘inner logic from the political ideology which the machinery of government is expected to translate into social reality’*. The idea which is dominant here is the conceptual principle that the decision makers regardless of location cannot be indifferent to the values that inform specific political orders. The grounded in social norms and constitutional provisions, these values are important determinants of the *‘policy making’* (Dye, 2017; Chakrabarty and Chand, 2016; Wikipedia, 2022 a, b & c).

NITI AAYOG AND ITS COMPOSITION

In accordance with an announcement made by India’s Prime Minister Hon’ble Shri Narendra Modi on Independence Day 2014, the Union Government of India has established the “NITI Aayog” (National Institution for Transforming India Aayog), as replacement for *‘Planning Commission’*. This has been made after extensive consultation across the spectrum of stakeholders, including State Governments, relevant institutions and domain experts. NITI Aayog oversees the monitoring and adoption of *‘Sustainable Development Goals’* (SDGs) and promote competitive and cooperative federalism among the States and Government undertakings. NITI Aayog has to realise the goals and targets. The *‘Ministry of Statistics and Programme Implementation’* (MoSPI) has undertaken a parallel exercise of interaction with ministries to evolve indicators reflecting targets and SDGs. Further, the centrally sponsored schemes, including *‘core of the core’*, *‘core’* and *‘optional’* schemes implemented by the States, and some of recent initiatives undertaken by the Central Government have been mapped. Moreover, the ministries and States are implementing Central sector schemes and State schemes, respectively that have been aligned with one or more SDGs (www.insightsonindia.com, 2017; www.nitiayog.com, 2022; Wikipedia, 2022d).

The monograms of NITI Aayog are depicted in Figures 1 to 2; while the introduction, composition and portfolio of Aayog have been presented in Tables 1 to 3.

ROLE AND FUNCTIONS OF NITI AAYOG

The NITI Aayog plays an integrative role with the active involvement of States, civil society and other think tanks in the development of a shared vision of national priorities and strategies in critical areas of human and economic development. One of the main objectives of NITI Aayog is, *‘to design strategic and long-term policy and programme frameworks and initiatives, and monitor their progress and their efficacy.’* The NITI is taking the lead in setting up sectoral targets, and fostering an environment of innovation and cooperation. The target is to bring innovation, technology, enterprise and efficient management together at the core of policy formulation and implementation (NITI Aayog Annual Report, 2020).

Rao (2015) has discussed thirteen tasks of NITI Aayog under four major functional groups:

- A. Cooperative Federalism: Platform for Interface between Centre and States;
- B. Strategic Planning
- C. Knowledge and Innovation Hub
- D. Coordination



Figure 1

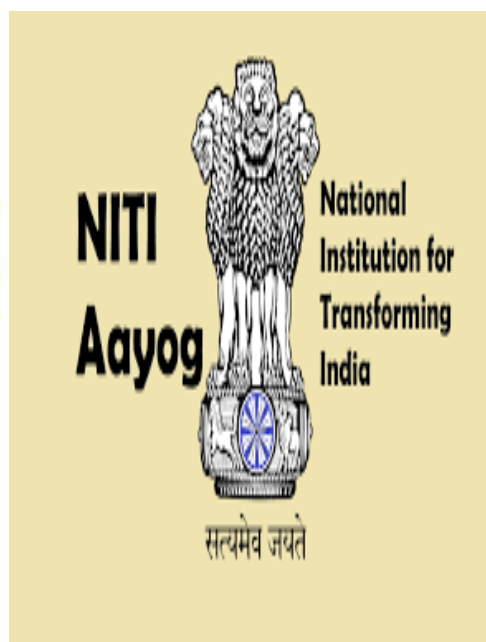


Figure 2

Figures 1 - 2: Different Monograms of “NITI Aayog” (Source: www.nitiayog.com).

Table 1: Introducing the “NITI Aayog”

<u>NITI AAYOG</u>
<ul style="list-style-type: none"> • “Niti Aayog” is a policy committee of the Indian Government. • The term “NITI” denotes to ‘<i>National Institution for Transforming India</i>’. • The Organisation was formed on January 1, 2015, in the capital city, New Delhi. • The Organisation is replacement and transformation of the 65 years old ‘<i>Planning Commission / Yojana Aayog</i>’. • The organization has its own Website which provides the citizens with all informations related to the commission.

Table 2: Composition (Structure) of “NITI Aayog”

<u>NITI AAYOG CONSISTS OF:</u>
CHAIRMAN (CHAIRPERSON)- PRIME MINISTER (PM)
↓
<ul style="list-style-type: none"> ➤ Vice-Chairman (Vice-Chairperson): Appointed by PM ➤ Ex-Officio Members: Maximum 4, nominated by PM ➤ Social Invitees: Experts, Specialists, Practitioners with common knowledge ➤ Governing Council: Chief Ministers (States) & Lt. Governors (Union Territories) ➤ Full-Time Members: from universities, research or relevant institutions ➤ Part-Time Members: Maximum 2, rotational, from relevant institutions ➤ Chief Executive Officer (CEO): Appointed by PM for fixed tenure ➤ Regional Councils: on need basis, incorporates CMs & Lt. Governors of the region ➤ Secretariat: If necessary

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Table 3: Portfolio of “NITI Aayog”

Portfolio	Name of Person
Chairman	Hon’ble Shri Narendra Modi (Prime Minister)
Vice-Chairman	Dr. Suman Bery
Full-Time Members	Shri V.K. Saraswat, Prof. Ramesh Chand, Dr. V.K. Paul
Ex-Officio Members	Shri Amit Shah, Shri Rajnath Singh, Mrs. Nirmala Sitaraman, Shri Narendra Singh Tomar
Special Invitees	Shri Nitin Gadkari, Shri Piyush Goyal, Shri Virendra Kumar, Shri Ashwini Vaishvaw, Rao Inderjit Singh
Chief Executive Officer	Shri Amitabh Kant
Governing Council	All Chief Ministers of States (and Delhi and Puducherry), Lieutenant Governor of Andaman & Nicobar Islands, Special Invites

- A. Cooperative Federalism:** This is a platform for interface between the Centre and States, meaning that the NITI Aayog fosters cooperative federalism by giving structured support to the States on a continuous basis. The Seventh Schedule of the Constitution of India lays down the legislative domains and functional responsibilities of the Union (Centre) and States. But there is an overlap in the functions that needs coordination between the Union and States, and among the States as well. So to carry out stable and sustainable developmental agenda, fostering the spirit of cooperation and cementing the federal structure are required. Recent years have shown the need for cooperation in areas like energy and environment, education and poverty alleviation where the need for coordinated action and speedy decisions are critical for pursuing the developmental agenda. The Union Government may have some public services in the State also, which for reasons of nationwide externalities or for redistribution require coordinated action to ensure minimum standards throughout the country. Such public services include poverty alleviation, healthcare and urban development, etc. In these cases, the State Governments are the partners to achieve a common goal. In case of Union Government also, the States may be involved in implementation as agencies. Apart from these, NITI Aayog may facilitate the exchange of information and experiences, and promote healthy inter-governmental competition through monitoring and regulation. Most important issue which the NITI Aayog has to deal with is the rationalisation of ‘Centrally Sponsored Schemes’ (CSS) as there is considerable resentment by the States on them. When schemes are discontinued, they leave large liabilities on States, so there is certainly specific purpose to have minimum standards of services which are considered to be of national importance. Given the collaborative nature of such schemes, they should be designed and implemented in spirit of cooperative federalism. Schemes should be holistic with scope for flexibility in implementation depending on the local conditions and they should be limited in number (not more than ten). New institution could provide a platform for designing the schemes, implementation systems, monitoring and evaluating them in a collaborative framework. Thus, to enable the NITI Aayog to play a constructive role in fostering cooperation, it is essential to have ‘Interstate Council’, properly empowered under Article 263 of Constitution, in the Aayog. Further, NITI Aayog should be nodal agency for discussion, negotiation, bargaining and resolution of all major matters, and should have required expertise on inter governmental relations, constitutional law and fiscal federalism.
- B. Strategic Planning:** NITI Aayog can formulate the strategic vision and long-term policies, and programme framework both for macro-economy and for various sectors. The perspective planning helps to make projections on the macro variables and keep the policy perspective. Strategy and policies are needed to improve living standard of projected population and improve human development to empower people to engage them in economic activities. These should be constantly revisited to ensure their relevance. Planning should be built right from village, block and district levels, and these should be harmonised with planning at the State level. Likewise, the national planning should be the consolidation of State-level plans along with the planning infrastructure and service requirements. NITI Aayog can provide a framework for making plans to the States and the latter, in turn, to lower levels of Government. It should also have a unit to guide, if any State is in need of such assistance.
- C. Innovation and Knowledge Hub:** The Knowledge and Innovation hub, and research inputs are closely aligned to strategic planning and role of NITI Aayog, which as a think tank facilitates partnership between stake holders. Formulation of strategic vision and policies, and programmes aligned to it as well as initiating and monitoring them requires state of art research, technology upgradation and capacity building. As a major think tank of Government working on various developmental policies, NITI Aayog should not only have basic research capabilities but also should access and outsource

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research on relevant subjects. It should have a strong data bank, consolidating data and information on economic, demographic, geographic and social variables relevant for research and policy. Among other functions, NITI Aayog also provides a platform for experience sharing among States.

D. Coordination: This is the fourth important task of NITI Aayog. This institution is committed to providing a platform for inter-departmental and intergovernmental coordination. The disastrous consequences of lack of coordination between infrastructures including environmental and ministries on economic growth have been clearly evident before the establishment of NITI Aayog.

The NITI Aayog plays its role and functions through the ‘Seven Pillars of Effective Governance’ as described in Figure 3; and the important role and functions of the NITI Aayog in relation to public policies have been mentioned in Table 4 (NITI Aayog Annual Report, 2020; www.insightsonindia.com, 2017; www.nitiayog.com, 2022).



Figure 3: Seven Pillars of Effective Governance via “NITI Aayog” (Source: www.pib.nic.in).

Table 4: Important Role and Functions of NITI Aayog

S. No.	Role and Functions of NITI Aayog
1	To provide a ‘think tank’ which provides Governments at the Central and State levels with relevant strategic and technical advice across the key elements of policy.
2	To overview monitoring and adoption of ‘Sustainable Development Goals’ (SDGs) and promote competitive and cooperative federalism among States and Govt. undertakings.
3	To provide advice and encourage partnerships between key stakeholders, and national and international like-minded ‘think tanks’, and educational and policy research institutions.

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4	To create knowledge, innovation and entrepreneurial support system via collaborative community of national and international experts, practitioners and other partners.
5	To evolve a shared vision of national development priorities sectors and strategies with the active involvement of States.
6	To foster cooperative federalism through structured support initiatives and mechanisms with the States continuously, recognizing that strong States make a strong nation.
7	To provide a critical directional and strategic input into development process.
8	To replace Centre-to-State one-way flow of policy (that was the hallmark of Planning Commission era) by a genuine and continuing partnership of the States of India.
9	To end the slow and tardy implementation of policy, by fostering better inter-Ministry coordination and better Centre-State coordination.
10	To develop mechanisms to formulate credible plans at the village level and aggregate these progressively at higher levels of Government.
11	To provide a framework for preparing plans to the States and the latter, in turn, to the lower levels of Government.
12	To ensure that the interests of national security are incorporated in economic strategy and policy on the specifically concerned areas.
13	To pay special attention to those sections of society that may be at risk of not benefiting adequately from economic progress.
14	To design strategic and long term policy and programme frameworks and initiatives, and monitor their progress and their efficacy.
15	To monitor and evaluate implementation of programmes, initiatives and identification of needed resources, so as to strengthen probability of success and scope of delivery.
16	To focus on technology upgradation and capacity building for implementation of programmes and initiatives.
17	To offer a platform for resolution of inter-sectoral and inter-departmental issues in order to accelerate the implementation of development agenda.
18	To maintain 'State-of-the-art Resource Centre', be a research repository on good governance and practices in development, and to help their dissemination to stake-holders.
19	To have an administration paradigm in which the Government is an 'enabler' rather than a 'provider of first and last resort'.
20	To progress from 'food security' to a mix of agricultural production, as well as actual returns that farmers get from their produce.
21	To facilitate the exchange of information and experiences, and promote healthy inter-governmental competition through monitoring and regulation.
22	To deal with the rationalisation of 'Centrally Sponsored Schemes' (CSS) as there is considerable resentment by the States on them.
23	To undertake other activities as may be necessary in order to further the execution of the national development agenda, and the objectives of NITI Aayog.

CONCLUSIONS

NITI Aayog is a new specialized field of Social Sciences, including Political Science and Economics. This has been recently introduced in 2015 by Union Government of India, as a replacement of Planning Commission for welfare of people and the country, as a whole. NITI Aayog promotes competitive and cooperative federalism among the States and Government undertakings. This is a Government of India policy 'think tank' that aims 'to foster involvement and participation in the economic policy making process by the State Governments of India'. It provides a critical directional and strategic input in regard to developmental processes. The NITI Aayog facilitates and empowers critical requirement of good governance, which is people-centric, participative, collaborative, transparent and policy-driven. It provides critical directional and strategic input to development process, focusing on deliverables and outcomes. This is an incubator and disseminator of fresh thought and ideas for development in relation to Indian public policies.

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Indigenism, Hinduism and Christianity - A Glimpse of Religious Transformation of the North East Indian Tribes of Tripura



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ABSTRACT: The article is a brief report of transformation of the indigenous religion of the autochthonous tribal people of the North East Indian State of Tripura who were inhabited in the state since the primitive age. In course of time thousands of non tribe people from the neighboring districts of the then East Pakistan or today's Bangladesh migrated and settle in Tripura. As a result, this migration made a bold effort on the religious life of the tribes of Tripura and the process of religious transformation had taken part seriously. Within a century that is 20th century the tribes of Tripura religiously converted from indigenous practice to Hinduism or Christianity as a whole. It is unfortunate that scholar's attention has not been focused on this aspect. The present study aims at bring about the real fact by examining authentic sources and materials.

The North East Indian State Tripura is a land of tradition, culture and heritage. Once an imperial or monarchical state, Tripura has undergone and witnessed many significant historical events. Passing through these events it has boldly faced many blows and accepted the reality of destruction and reconstruction. A large population of the state is constituted of Hindu Bengalis, where as the tribes are the autochthonous people of the state. They inhabited Tripura since the primitive age. For a long span of time tribes of Tripura were confined among themselves, so their traditional history remained undiscovered. Meanwhile, during the 19th century when the whole world was being enlightened by various scientific inventions & discoveries, the hill tribes of this state was far away from the modernization and remained confined limited within their dark and traditional ancient civilization.

In course of time for fostering education, trade and commerce in the state the Royal family of the then Tripura invited administrative personals of various sort and expert farmers from Bengal of Indian Sub-Continent. On the other hand incidents like partition of the country, communal disturbances and the Indo-Pak war of 1971 forced thousands of non tribe people from the neighboring districts of the then East Pakistan or today's Bangladesh to migrate and settle in Tripura. As a result of very close contact between the Hindu Bengalis and the different tribes of Tripura a new dimension in the society of Tripura incepted. Especially this migration made a bold effort on the religious life of the tribes of Tripura and the process of religious transformation had taken part seriously on the socio-religious life of the indigenous tribes of Tripura.

It is unfortunate that scholar's attention has not been focused on this aspect. Since very few academic discussions are available about the fact under discussion, there is a paucity of literature to deal with this aspect. Gayatri Bhattacharjee has discussed extensively on the "Refugee Rehabilitation and its Impact on the Economy of Tripura" during the post-independence era. She is of the view that the influx of Bengali migration helped greatly in boosting the state's economy which is largely true. But she does not discuss the historical dimension of the religious impact of Bengali migration starting from mid-19th century. J. Gon Choudhuri (1979), H.K., Sur (1986), R.M., Sharma (1987) have dealt in the political history of Tripura. We don't find any elaborate description of migration processes and its effects on the religious transformation on the tribes of Tripura in their works. We get some related information's in the works of W.W.Hunter (1876), Vol-VI, K.D.Menon edited District Gazetteers of Tripura (1975) and *Census Biharani-1931* by Thakur Somendra Chandra have also mentioned several aspects on migration and its impact in the societies of Tripura. There is a scope for exploring the archival sources, newspaper and journals in vernacular languages to illustrate the fact under discussion. The present study aims at bring about the real nature of migration processes and its effect on the traditional religious life of the tribal people of Tripura by examining authentic sources and materials.

Let us cast a glance on the indigenous religious practices of the tribes of Tripura. W. W. Hunter has shown in his report that in the nineteenth century all the sects of the tribes of the hills of Tripura followed almost the same sorts of religious practises¹. However the characteristics of the religious practices followed by the tribal at that time is described below-

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- i) Worshipping of natural elements as Gods and Goddesses similar with the religious beliefs of the primitive men these tribes also worshipped water, river, sea, hills and mountains and Gods and Goddesses of different types². In other words these tribes followed religious practices of the people of pre-Vedic age.
- ii) The Gods and Goddesses were divided into two categories – benevolent gods and malevolent deities i.e. Gods who do good to people and those who do harm to people. That is why whenever they fell sick they worshiped different evil Gods³.
- iii) There was belief in some evil souls and spirit, they had the feeling that these evil souls and spirits resided in old trees, road crossing old ponds etc. so they worshipped these souls and spirits in places as ponds, tri-junctions or junctions of four roads⁰⁴.
- iv) There was no existence of temples for worshipping their indigenous Gods and Goddesses. They followed these worshipping under the open sky by the side of the rivers or canals, on the junction of three or four roads, in the jungles, under trees, in the play grounds etc⁵.
- v) They worshipped formless Gods and Goddesses. They did not worship any idols made of earth, metal or cloth⁶. Hunter's report in the last part of the nineteenth century mentions that the tribes worshiped piece of bamboo imagining it to be a representative of a particular deity⁷.
- vi) There were no performances of any 'oblation' in the religious activities of the indigenous tribes of Tripura⁸.
- vii) Sacrificing was a popular element. The tribal's sacrificed goat, buffalos, pigeon, pig etc. Sacrifice of one or the other animals was a must during a worship⁹.
- viii) Religious performances were conducted by the tribal priests. They strictly followed all the rules prescribed for performances. These priests were called 'Ojhai' or 'Uchai'. Their position was analogous to the lord Bishop of the state. The priest subordinate to the chantai was known as galim. However, the tribal priest did not undergo any investor ceremony sacred thread. The post of priest was not hereditary. Any young man could become a priest if he learned the mantras¹⁰.
- ix) There was a belief of one chief god among their gods and this chief was called as Matai katar. Matai means God, and katar means chief or the best¹¹.
- x) The Gods and Goddesses who were worshipped and revered by the tribes of the hills of Tripura were not made characters of any literature. This was unlike the case with Hindu Gods and Goddesses where a very rich store of literature has been built with the Gods and Goddesses as characters. Mythological stories, the Ramayana, the Mahabharata, and numerous stories relating to different gods and goddesses Vaishnava poems are example of such literature.
- xi) The Tribes of Tripura had not worshipped animals. In these matters the religious beliefs of the Tribes of the hills of the state was different from those of ancient Indian civilization¹².

Indigenous Gods and Goddesses of the tribes of Tripura¹³

Name of the God and Goddesses	Purpose of the God/warship
1. Matai katar.	1. Mighty God.
2. Matai Katarma.	2. Wife of the Mighty God.
3. Akhtra, Bikhatra.	3. Son of the Mighty God.
4. Tuima.	4. God of Water.
5. Sangrama.	5. God of Hill.
6. Mailooma.	6. God of Paddy and Rice.
7. Khusma.	7. God of Cotton.
8. Thomnairok & Baniroc.	8. God of death.
9. Achu Sibray & others.	9. God of Jhum.
10. Boracha .	10. God of diseases & Jhum.
11. Burirok (Seven Sisters).	11. God of Magic.
12. Garaia, Kalaia.	12. God of Agriculture.
13. Lampra.	13. God of commence.
14. Saklakmatai	14. God of homestead.
15. Bichukma	15. God of Forest.
16. Sirijamdu	16. God of evil sprit.

Indigenism, Hinduism and Christianity - A Glimpse of Religious Transformation of the North East Indian Tribes of Tripura

There was a chequer religious environment in the Indian hilly state of Tripura throughout the ages. The religious environment of that state stood on mutual understanding tolerance and cooperation among the different sections of the people of the state¹⁴. There were no differences and conflict between Hinduism and the religious beliefs of the indigenous practice of religion by the tribes of Tripura¹⁵. The census reports of the last part of the nineteenth century show the co-existence of the Hindus, Muslims and the Buddhists in Tripura. Practice of Christianity was new in this state. Christianity entered into Tripura after the coming of the Europeans in India¹⁶. During the reign of Amar Manikya (1577-86) a few Portuguese introduced Christianity in Tripura. . After that these Portuguese and the British who came to this state as government employees had constituted the Christian population of this state. Christian missionaries came to Tripura not earlier than 1910¹⁷.

Table- 01. Religious Picture of Tripura For the year 1874 to1901.

Religion	1874-75		1891		1901	
	Person	%	Person	%	Person	%
Tribal	42345	57.03	-----	-----	-----	-----
Hindu	14224	19.15	14047	10.22	119192	68.76
Muslim	11384	15.32	38731	28.18	45323	26.14
Animist	-----	-----	84499	61.48	2673	1.54
Buddhist	-----	-----	-----	-----	5999	3.46
Other	6285	8.46	165	0.12	138	0.10

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The census reports of 1874-75 shows that the tribes of Tripura constituted the majority of the population in Tripura. However it was known from different sources that Tribal had their indigenous religion which included worshipping of nature, evil spirits etc¹⁸. As a result it is seen in the census report of 1891 that the number of Hindus in Tripura was 10.28% while 61.48 were animists. But in the 1901 census, the percentage of Hindus has been shown to be 68.13%. There is mention of a few animists in Tripura in this report. This means that during this period the tribes of Tripura had embraced on Hinduism although they held on to their traditional beliefs and practice regarding religion. In this phase Islam, Hinduism, and the indigenous religious practice and belief were the main religions of this state. Buddhism was not very much in practice. Mugs and Chakma people who were followers of Buddhism came to this state much during the last part of the 19th century¹⁹.

In the topic under discussion we find that the tribal people of Tripura have been drawn in to the main stream of Hindu way of life along with their pantheon of Gods and Goddesses. The sacred scriptures, the epics, the puranas and the socio-religious system of Bengali speaking Hindus were highly accepted by the tribes of Tripura. Not only that they also converted some of their Gods and Goddesses into Hindu gods and Goddesses who were fairly honoured and adored by the Hindu Bengalis. Moreover the tribes of Tripura have contributed in building up Hinduism. On the other hand some of them received Hindu Vaishnava religion and within the first half of the twentieth century lion part of the tribal population of Tripura accustomed with Hinduism²⁰.

It is significant that accepting Hindu faith the tribes of Tripura engaged the Brahmin priests also during their main event of birth, marriage, death etc, instead of their traditional priest named 'Ochai'. The tribal people living in accessible regions of forests, hills and hill slopes had their own Ochais only and the warships as well as all religious ceremonies were performed by them following the traditional tribal belief and practices. Nevertheless it is observed in our survey that with the acceptance of Hindu faith, the tribes of Tripura used to drink all the evil conservatisms of Hindu Brahminical aspects. They were exploited in their every socio-religious programmes like marriage, birth, death rituals etc by the Brahmins of Hindus²¹. Moreover some of the hypocritical devotees also cheated the tribes of Tripura by taking advantage of their simplicity²². As a result the tribes of Tripura faced a new type of religion instead of their traditional religion. Finally some of the tribes of Tripura gave up Hindu religion and moved to the Christian religion²³.

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Table: 02. Christianity among the original tribes of Tripura 1961-1981

SL. No.	Name of the Tribes	Censes	Total population	Christians	Percentage
1.	Halam	1961	16298	253	1.55
		1981	28970	3017	10.41
2.	Jamatia	1961	24359	Nil	Nil
		1981	44501	501	1.12
3.	Kuki	1961	5531	2345	42.39
		1981	5501	4442	80.74
4.	Tripuri	1961	189799	54	0.02
		1981	3,30,872	1012	0.30
5.	Reang	1961	56597	1705	3.01
		1981	84003	4974	5.92

Source: -

1. Censes of India, 1961, Vol.-xxvi, Tripura part lx, pp. 671-77.
2. Censes of India – 1981, series 21, Tripura, part lx, pp. 671-77.

The above statement clearly indicates that the number of the conversions from Hindu to Christianity has increased among the tribes of Tripura. Side by side another statement regarding religion- wise percentage increase during 1971 to 1981 in population in Tripura more effectively shows the conversion of the tribes of Tripura in Christianity.

Table- 03. Statement of religion-wise % increased in Tripura- 1971 to 1981

Hindu	Muslim	Christian	Buddhist
31.61	33.25	58.29	29.61

Source: Directorate of census operations Tripura, *A portrait of population*, Agartala, 1988, pp.73, 74.

The statement shows that the increases in Hindus were 31.61%, Muslims 33.25% during 1971 to 1981. But the percentage increase was very much high in Christian population i.e. 58.29 % rather than others. As a result Christianity opened doors in Tripura and it was among the tribes of Tripura. During 1951 there were hardly 5000 Christians in Tripura but, in the 2001 census it showed a population 102489 and 159882 during the census of 2011.

It has been found from another statement that the percentage of Christians among the tribes of North East India is much more than in Tripura. As a result it can be said that the tribal people of Tripura were influenced by the Hindu Bengali religion. A few of them were converted from Hindu to Christian. The following statement clearly indicates the fact.

Table: 04. State wise Christians in North East India in 2011 census

State	Total Population	Total Christians	%
Arunachal Pradesh	1383727	418732	30.26
Assam	31205576	1165867	3.74
Manipur	2855794	1179043	41.29
Meghalaya	2966889	2213027	74.59
Mizoram	1097206	956331	87.16
Nagaland	1978502	1739651	87.93
Tripura	3673917	159882	4.35

Source: Census of India 2011.

The above statement clearly indicates that Christianity in North East India had rapidly scattered among the tribal states. Not only that, it has found from another statement that the first four Christian populated states of India is represented from the tribal populated states of North East India and they are Nagaland (1st 87.93%), Mizoram (2nd 87.16%), Meghalaya (3rd 74.59%), Manipur (4th 41.29%) as per Christian population of their states. But Tripura has a Christian population of 4.35% only.

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Meanwhile, the practice of indigenous religion by the tribes of Tripura had been ruined in course of time under discussion. The religious picture of Tripura for the census year of 2011 clearly indicates that fact.

Table: 5. Religious picture of Tripura 2011

Sl.No	Religion	Persons	Percentage
1.	Hindu	3063903	83.40
2.	Muslim	316042	8.60
3.	Christian	159882	4.35
4.	Buddhist	125385	3.41
5.	Sikh	1070	0.03
6.	Jain	860	0.02
7.	Others	1514	0.04
8.	Not stated	5262	0.14

The above statement of religious representation of the population of Tripura clearly indicating that autochthonous people of Tripura has transformed themselves from their traditional indigenous religion to Hinduism or Christianity as because there is nobody shown in the statement owing to practice so-called traditional indigenous religion. From our various survey it has been found that the tribes of Tripura nowadays practicing either Hindu or Christian religion. Muslims of Tripura are Bengalis and they had migrated here from British Bengal or today's Bangladesh. Sikh and Jain also migrated from other states of India for their livelihood. The Arakan originated Mog and Chakma tribes of Tripura represent Buddhism. Number of people representing others and not stated is negligible. Henceforth, it has been found that during 2011 census the tribal people of Tripura constituted 31.78%, that is 11, 66,813 out of total population 36, 71,032 of Tripura. So, its means the tribes of Tripura converted their indigenous religion either in Hinduism or Christianity. Thus the practice of indigenous religion by the tribal people became past. Although a few religious practice and festivals like Gariya puja, Ker puja are till performing as residual magnetism.

It may be concluded that, a man is a religious being by nature. Religion forms an inseparable feature of every society. The right to freedom of religion as provided in the group of Articles 25 to 28 is one of the Fundamental Rights guaranteed by the Constitution of India. Moreover Article 9 of Human Rights Act 1998 gives all individuals freedom of religion. Although as theory of evolution in course of time the tribes of Tripura forgot their practice of indigenous religion. Within a century that is twentieth century the indigenous tribes of Tripura had lapsed their traditional indigenous practice of religion. Many times in history, progress has been hurdled in the name of religion and sometimes it has degenerated in dogmatism, exploitation, violence and war like Jehads and religious crusades. Thank God, the Indian state of Tripura had never experiences such evidences at all.

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Development of Student Worksheets (LKPD) Based on Learning Models Guided Inquiry to Improve Students Critical Thinking Ability in Materials Cells and Plant Tissue Class XI SMA/MA



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ABSTRACT: This study aims to design, design and develop a learning intervention. The product developed is LKPD based on learning models *guided inquiry* to improve the critical thinking skills of students of SMAN 1 IX Koto Sungai Lasi that are valid, practical, and effective. The instrument used was a validity questionnaire and a practicality questionnaire as well as a matter of effectiveness. The validity and practicality data analysis technique uses a Likert scale scoring and the effectiveness uses a t-test using SPSS 2.2. Based on the development and trial of LKPD based on learning models *Guided Inquiry* on the material of plant cells and tissues to improve the thinking skills of class XI students of SMAN 1 IX Koto Sungai Lasi, it was concluded that the results of the validity and practicality tests met the very valid criteria. The results of the effectiveness test have effective criteria.

KEYWORDS: Guided inquiry, development, critical thinking.

I. INTRODUCTION

Learning is aspect (LKS). important in the implementation of education. Students are expected to be able to understand the concepts and principles of the material in the learning process. Teachers must be able to provide motivation and foster student interest in learning, and need to create a learning atmosphere that can help students understand concepts and learning materials. This can be done by using media, models and various approaches to facilitate students in the learning process (Suryono and Hariyanto, 2011: 18).

Media that can be help learning is teaching material. Teaching materials are an important part in the implementation of learning. Teachers who use teaching materials will find it easier to carry out learning and students will find it easier to understand learning materials. One of the teaching materials that can be used to assist teachers in carrying out learning process activities is LKPD. The teaching materials used by the teacher are in the form of textbooks, modules, and Student Worksheets (LKPD). The Student Worksheet was originally known as the student worksheet Student worksheets are sheets that contain assignments that must be done by students. LKPD is usually in the form of instructions, steps to complete a task, which will be achieved (Depdiknas, 2008: 18).

LKPD is one of the teaching materials that contains the main learning materials, as well as instructions for working on assignments that refer to the competencies that must be achieved by students. Presentation of important concepts in LKPD will be simpler for students (Prastowo, 2010: 204). This is in accordance with Trianto's statement (2009: 222), that LKPD is a student guide used to carry out investigations and problem solving activities. In addition, LKPD makes it easier for teachers to explain learning materials. This is in accordance with Prastowo's statement (2010: 24) that the function of teaching materials for teachers is to save time in teaching.

The results of the researcher's observations on the activity sheet contained in the student book found that the teacher had indeed used teaching materials in the form of LKPD, but the LKPD used was the LKPD designed by the teacher himself. LKPD These are only in the form of materials, questions and other sources as used. The LKPD contained in the reference book is only a description of the material and questions to strengthen certain concepts so that the LKPD has not been able to facilitate

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students in obtaining meaningful learning. The LKPD used is less attractive to students because it is not equipped with pictures. This causes students to be less interested in working on and reading LKPD.

The biology learning process at SMAN 1 IX Koto Sungai Lasi has not all produced good grades in the sense that there are still many students who do not meet the standards. in class XI which was set at SMAN 1 IX Koto Sungai Lasi, namely 79. The lack of use of learning models and teaching materials that did not facilitate students in critical thinking and solving problems resulted in the low learning outcomes of students.

Based on the results of the researcher's interview with the biology subject teacher (Appendix 3) who teaches at SMAN 1 IX Koto Sungai Lasi on October 11, 2020, it is known that when learning biology, the teacher uses the LKPD analysis made by the teacher at every meeting, however, it does not include activities and activities. clear directions. LKPD components used by teachers include titles, competencies, teaching materials and student activities. The LKPD used has several shortcomings, namely: first, LKPD is not yet model-based guided inquiry. Which second, is used to direct students to carry out practical activities and investigations without being preceded by directing students to a problem, LKPD does not provide a column for the results of the investigation and a column for concluding observations ,third LKPD has not directed students to think critically.

However, in reality, students' test results get unsatisfactory results as shown in Table 1.

Table 1. Number of Students and Average Grade XI MIPA I Test Semester 1 Academic Year 2020/2021 on Cell and Tissue Material.

Class	Mark flat ₂	Amount participant educate	Participant Educate complete (%)	Participant Educate no complete (%)
XI MIPA	67.00	23	60%	40%

Source: Biology Subject Teacher at SMAN 1 XI Koto Sungai Lasi.

Based on Table 1, it can be seen that students who complete have a percentage of 60% while those who do not complete 40%. The low learning outcomes are due to the presence of students who have not mastered the subject matter, students are also less directly involved in the learning process and students tend to be less daring in asking material that they do not understand, the skills of students in solving every problem in the classroom are still not satisfactory.

This is reinforced based on the results of researchers' observations during the online learning process, namely every time the teacher asks students a question on average only two or three students answer questions from the rest of the 23 students who just stay silent and take notes on the explanation given by the teacher. This condition can also be caused by the monotonous and unattractive learning style of a teacher at the time of teaching.

The implementation of learning which is still dominated by the teacher with the lecture method tends to be limited to the memorization aspect so that it does not involve the activities of students which causes students to have difficulty in mastering biological concepts and has an impact on low learning outcomes. To overcome these problems, teachers need to change the conventional learning model with new teaching methods that allow students to be actively involved directly in learning and further assist students in mastering biological concepts so as to achieve maximum learning outcomes..

One of the learning models that can be applied is guided inquiry (guided inquiry). Guided inquiry learning enable students to gain opportunities to expand knowledge and help develop conceptual understanding (Pandey et al, 2011: 3 and Wenning, 2011: 2). In guided inquiry learning, the teacher does not release students to carry out investigation activities, but the teacher actively provides direction and guidance (Kuhlthau et al, 2007: 3). With teacher guidance, students are expected to be able to concentrate on building new knowledge and benefit from each stage of the investigation process they do.

Problem whichfound in learning needs a solution so that students get good learning outcomes. Several possibilities that can be done by the teacher by applying a learning device made to focus and activate students in the learning process. Learning like this is a form of learning that trains and develops the ability of students to analyze a problem and make their own conclusions. Learning should be designed to follow the flow of the students' minds themselves who find the concepts contained in the material being taught.

The thinking process itself is usually carried out through questions and answers between teachers and students or vice versa. Starting from these questions, this is a form of learning guided inquiry carried out. This learning strategy is often also called a learning strategy heuristic. Which comes from the Greek, namely heuriskein which means I find. According to the benchmark of critical thinking ability, it must meet the indicators used.According to Fisher (2011), there are nine indicators of critical thinking

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including: (1) state truth statement or questions;(2) analyze statement or question; (3) logical thinking; (4) sorting for example cause and effect; (5) classify; (6) decide for example the evidence; (7) predict; (8) theorize; and (9) understand others and themselves. This is in accordance with what was stated by Marjono, et al (2012: 21).

that learning with the guided inquiry model makes students learn as thinkers, not just passive recipients of knowledge. The introduction and provision of problems that are relevant to everyday life for students, analytical to find and find answers to a problem by themselves, make students as scientific concept builders.

Learning that demands optimal involvement in the learning process can improve Latifa's critical thinking skills (2017: 66). This is in line with Synder & Snyder (2008: 94) which states that a learning environment that involves being active in investigating information and applying their knowledge improves critical thinking skills. It can be concluded that by using the learning model, guided inquiry can further improve students' critical thinking skills.

By using LKPD based on learning models guided inquiry All thoughts and skills of students can be directed to prove the concept of learning through a series of learning activities. This is in line with the results of Melsi's research (2018) which shows that learning activities with the learning model guided inquiry encourage students to be more active in the learning process and can improve understanding of material concepts by inquiry involving students in investigations (investigations), helping students identify conceptual or methodological problems in the investigation area, and asking students to design ways to solve problems (Kemendikbud, 2014) . Inquiry learning expects students to learn a scientist in exploring knowledge.

Based on this background, the researcher proposed the title "Development of Student Worksheets (LKPD) Based on Learning Models".Guided Inquiry to Improve Students' Critical Thinking Ability in Materials Cells and Plant Tissue Class XI SMA/MA”.

II. RESEARCH METHODS

This type of research is development research. The product developed is model- based LKPD guided inquiry to improve the critical thinking skills of students of SMAN 1 IX Koto Sungai Lasi that are valid, practical, and effective. The development model used in this study is the Plomp model, consisting of three stages, namely the initial investigation stage, the development stage or prototyping, and the assessment stage. The subject of the experiment was carried out on 23 students of class XI MIPA I and 1 biology teacher SMAN 1 IX Koto Sungai Lasi. The types of data in this study are qualitative and quantitative data. The instruments used in data collection were observation/ interview sheets, self-evaluation instruments, LKPD validity instruments, LKPD practical instruments, and LKPD effectiveness instruments. The validity and practicality data analysis technique uses a Likert scale scoring and the effectiveness uses a t-test using SPSS 2.2.

III. RESULTS AND DISCUSSION

Table 2. Results of Data Analysis of the Validity of Three Validators.

No	Aspec	Value %	Criteria
1.	Didactic	93.33	Very valid
2.	Construct	82.75	Very valid
3.	Technical	90.28	Very valid
Total		269.85	Very valid
Average		89.78	Very valid

Table 3. Small Group Evaluation Results.

No	Aspec	Value %	Criteria
1.	Convenience	88.89	Very Practical
2.	Efficiency	85.42	Very Practical
3.	Attractiveness	81.25	Very Practical
4.	Easy interpreted	86.11	Very Practical
5.	Own equivalence	89.58	Very Practical
Average Value Practical		86.50	Very Pracktical

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Table 4. Practicality Assessment by Teachers.

No	Aspec	Value %	Criteria
1.	Convenience	95.83	Very Practical
2.	Efficiency	100	Very Practical
3.	Attractiveness	91.67	Very Practical
4.	Easy interpreted	87.50	Very Practical
5.	Own equivalence	87.50	Very Practical
Average Value Practical		92.50	Very Pracktical

Table 5. Results of Practical Data Analysis by Students

No	Aspec	Value %	Criteria
1.	Convenience	86.41	Very Practical
2.	Efficiency	82.61	Very Practical
3.	Attractiveness	81.52	Very Practical
4.	Easy interpreted	81.52	Very Practical
5.	Own equivalence	86.41	Very Practical
Average Value Practical		83.70	Very Pracktical

Table 6. Critical Thinking Ability Assessment Results.

Class	N	Xmin	Xmax	Mean	Standar Deviation
Experimen	25	52	96	74.43	11.984
Control	25	48	84	61.91	10.435

Table 7. Prerequisite Test Results for Normality and Homogeneity of Critical Thinking Ability

No	Parameter	Significance	Information
1	Normality	0.200	Normal
2	Homogenity	0.576	Homogeneous

Table 8. Calculation Results of Critical Thinking Ability t-test.

Class	Significance	Information
Control	0.000	Ho ditolak
Eksperimen		

Test the validity of the LKPD based on the learning model Guided Inquiry aims to check the suitability of KI, KD, achievement indicators, learning objectives, suitability of image display with descriptions, and grammar in LKPD. Sugiyono (2013: 137-363) states that validation is the degree of accuracy between data that occurs in the object of research with actual data. Based on the LKPD validation test based on the learning model Guided Inquiry validated by three experts or experts. The developed LKPD validation is assessed by experts or experts from 3 aspects, namely didactic aspects, construction aspects and technical aspects. has been established. The description of the material presented has supported the achievement of indicators of competency achievement and learning objectives, and has supported the understanding of students' concepts. This is in accordance with the opinion of the Ministry of National Education (2008) that the preparation of materials in LKPD is very dependent on the KD to be achieved.

In addition, this LKPD also contains steps guided inquiry that is, learning activities in LKPD consist of stages of orienting students who are asked to listen explanation with displays a topic of learning material delivered by the teacher regarding activities and what students will do.

Ease of using LKPD based on learning models guided inquiry has very practical criteria. This is because this LKPD is very useful for adding insight to students, because through this LKPD it is simpler than printed books. According to Sukardi (2012), practicality can be seen from the implementation time which should be short, fast and precise. Then, the attractiveness aspect with very practical criteria LKPD has an attractive appearance so that the use of LKPD helps teachers and motivates students in learning because the problems given are related to everyday life related to the topic of plant cells and tissues.

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The effectiveness of LKPD is seen from the students' critical thinking skills obtained after students use the LKPD in the learning process. The results of the effectiveness assessment show that the developed worksheets are effectively used as teaching materials in the learning process, students' critical thinking skills are assessed through daily tests of cell and tissue material.

The instrument used is in the form of questions essay as many as 5 items, Testing the effectiveness of the LKPD was carried out using the t-test, because the data were normally distributed and homogeneous. Based on the t- test, the results obtained that the hypothesis is accepted. Therefore, it can be concluded that the use of LKPD based on the learning model *Guided Inquiry* on plant cell and tissue material that can effectively be used for learning On *Guided Inquiry* The teacher only presents the problems and materials needed while the students design their own steps to solve the problem. At the beginning of the inquiry, students design their own problems to be investigated. In learning biology related to scientific work, the teacher is very appropriate if he chooses and applies the method inquiry. The teacher uses this technique with the aim that students can be stimulated by the task, and actively seek and research problem solving themselves. Types of learning models *Guided Inquiry* this is very suitable for use.

At this stage, namely orientation, students are asked to listen to an explanation by presenting a topic of learning material presented by the teacher regarding the activities that will be carried out by students. the material presented in the LKPD is sourced from books and journals related to cell and tissue material.

In the next stage of formulating it she problem, at this stage, students are asked to formulate problems from the discourse that has been provided, it is hoped that later students can formulate problems properly and correctly. The problems presented raise the curiosity of students in learning. Students must be able to identify problems and make problem formulations from the discourse that has been given. This will stimulate the ability to think critically, logically, and systematically. The activity of formulating problems is also an important basis in the stages of *guided inquiry*. Based on the validity test, the three validators stated that the LKPD was based on the learning model *Guided Inquiry* which has been designed is included in the very valid category with a validity value of 89.78%.

LKPD based on learning model *Guided Inquiry* declared very valid because it has fulfilled four didactic, construct, technical, and language aspects, in terms of didactic aspects, LKPD based on learning models *Guided Inquiry* has been declared very valid by the validator with a value of 93.33%. This LKPD is in accordance with the applicable 2013 curriculum and can be used in the learning process. This LKPD has also been.

The results at the time of the study found differences in critical thinking skills in the treatment of the experimental class using LKPD based on the learning model *Guided Inquiry*. While in the control class using LKPD which is commonly used by teachers in learning. This is because the LKPD developed by the researcher has a learning model stage *Guided Inquiry* which can improve students' critical thinking skills. This is in line with Synder & Snyder (2008: 94) which states that a learning environment that involves being active in investigating information and applying knowledge they Upgrade critical thinking skills.

According to National Research Council disclose inquiry is a multiphase activity that involves making observations; asking question; check books and other sources of information to see what is already known; investigative planning; review what is already known in the light of experimental evidence; collect data, analyze, and interpret data; propose answers, explanations, and predictions; and communicate the results. Inquiry requires identification of assumptions, use of critical and logical thinking, and judgment alternative explanation.

According to Yamin (2012), critical thinking is a problem-solving ability that requires students to connect ideas that were previously studied for problem solving. At this stage students work (not just sit, listen and write) to find answers to the problems raised by the teacher under the incentive guidance of the teacher, then they are guided to find the best way to solve the problem.

The next stage is to propose a hypothesis at this stage students are asked to submit a hypothesis (answer temporary) from the formulation of the problem under study. Then students are asked to provide correct and accountable temporary answers.

Then the next stage is the stage of collecting data at this stage students are asked to conduct a reference study to examine the hypothesis that has been put forward. At this stage, students can see internet media or material topics that have been provided.

The next activity is the stage of testing the hypothesis at this stage students are asked to carry out experimental activities to prove the hypothesis that has been proposed. The most important thing in testing the hypothesis is to find the level of confidence students on the answers to the hypotheses they have formulated. This means that the truth of the answers given is not only based on arguments, but must be supported by data found and can be accounted for.

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Furthermore, the activities of the last stage of Guided Inquiry is to formulate Conclusions after carrying out experimental activities at the stage of testing the hypothesis, students are asked to make conclusions based on the observations that have been made. Ask students to present in front of the class and be able to take responsibility for what has been done.

IV. CONCLUSION

Based on the development and trial of LKPD based on learning models Guided Inquiry on the material of plant cells and tissues to improve the thinking skills of class XI students of SMAN 1 IX Koto Sungai Lasi, it was concluded that the results of the validity and practicality tests met the very valid criteria. The results of the effectiveness test have effective criteria.

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Teachers' Use Of Higher-Order Cognitive Skills, Instructional Skills in Online Science Teaching and Students' Achievement in Elementary Science



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ABSTRACT: This descriptive-correlational study investigated the relationship between the teachers' use of higher-order cognitive skills, instructional skills in online science teaching and academic achievement of students in elementary science. The respondents of the study were 91 elementary science teachers who were randomly sampled from the 117 Grade 3-6 elementary science teachers of DepEd Division of the City of Sta. Rosa. The research instrument was validated by experts in the field and its internal consistency reliability was ascertained using Cronbach Alpha.

The findings revealed that the teachers always used higher order cognitive skills in online science teaching (WM=3.28). They had very high level of instructional skills in online science teaching (WM=3.42.). Sixty-five (65) or 71.43 percent of the elementary science teachers reported an aggregated GPA of 85 to 89 for their classes; 18 or 19.78 percent had 80 to 84; and 8 or 8.79 percent got 90 to 94. There were no significant relationships between the respondents' frequency of use of higher-order cognitive skills in online science teaching and the students' academic achievement in elementary science ($p>0.05$); and between the respondents' level of instructional skills in online science teaching and the students' academic achievement in elementary science ($p>0.05$). It was concluded in the study that the teachers' use of higher order teaching skills in online science teaching and their instructional skills have no bearing on the academic achievement of the students. A study on the correlation between higher-order skills of students and their academic achievement in elementary science may be conducted to verify this study's findings and confirm the other studies' findings.

KEYWORDS: Higher-Order Cognitive Skills, Instructional Skill, Online, Science Teaching, Students achievement

INTRODUCTION

The Science Framework for Philippine Basic Education (2011) emphasizes the importance of science as a link between technology and industry which are areas of high priority for national development. Science enables one to view the world systematically. It can develop students' scientific inquiry skills, values and attitudes which are essential for his own personal and professional development, and life in general. Thus, science education is important in all schools.

Research have shown the interrelationship of the use of higher order thinking skills, and instructional skills and their impact on the academic achievement of students in science. For instance, Astutik et al. (2018) found out that students who struggle in analyzing, solving, and writing investigative reports have low academic performance and needs to be exposed to higher order thinking skills. Afifah and Retnawati (2019) proved that even educators struggle in teaching higher order cognitive processes due to lack of knowledge in constructing higher order thinking skills (HOTS) problems and lack of experience in utilizing suitable learning media.

While several studies provided a room for science teachers to enhance their quality of learning and nurturing higher order thinking skills to students, little research has been done to thoroughly determine ways in improving it. In particular, in the DepEd City Division of Sta. Rosa no study has been conducted evaluating the use of higher-order cognitive skills or higher-order thinking skills (HOTS) in science teaching, instructional skills and academic achievement in science of elementary students.

Thus, this study attempted to investigate the teachers' use of higher-order cognitive skills or the HOTS, instructional skills in online science teaching and academic achievement of students in elementary science. It probed relationship between the teachers' frequency of use of higher-order cognitive skills in online science teaching and students' academic achievement in elementary

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science; and between teachers' instructional skills in online science teaching and students' academic achievement in elementary science.

METHODOLOGY

This study on teachers' frequency of use of higher-order cognitive skills, instructional skills in online elementary science teaching and academic achievement of students in elementary science employed the descriptive-correlational research design

Correlational research design measures a relationship between two variables without the researcher controlling either of them. The study engaged the participation of the elementary science teachers of DepEd Division of the City of Sta. Rosa, who comprised the sample respondents in this study, as the primary sources of data. Secondary sources of data for the GPA were the teachers' electronic class records.

The population of this study consisted of 117 elementary science teachers who taught online during this pandemic in seventeen (17) elementary schools in the DepEd Division of the City of Sta. Rosa. Using the Slovin's formula, a sample size of 91 was considered in this study. Actual selection of the respondents was done using stratified random sampling. This descriptive-correlational study had 88 respondents who were randomly sampled from the Grade 3-6 elementary science teachers of DepEd Division of the City of Sta. Rosa.

A researcher-made questionnaire was constructed for the purpose of generating the needed primary data. Part I covered the frequency of use of higher-order cognitive skills in online science teaching; Part II dealt on the teachers' instructional skills in online science teaching; and Part III focused on the students' academic achievement in elementary science.

RESULTS AND DISCUSSIONS

Based on the data gathered, analyzed and interpreted, the salient findings of the study are the following:

1. The respondents 'always' used higher order cognitive skills in online science teaching with an overall weighted mean of 3.31 along analyzing, evaluating and creating. They 'always' asked their students to do the process of *evaluating* with an average weighted mean of 3.40 (Rank 1); to do the method of *analyzing* with an average weighted mean of 3.36 (Rank 2); and to do the task of *creating* with an average weighted mean of 3.16 (Rank 3).
2. The teacher-respondents' level of instructional skills in online science teaching was 'very high' with an average weighted mean of 3.42.
3. Sixty-five (65) or 71.43 percent of the elementary science teachers reported an aggregated GPA of 85 to 89 for their classes; 18 or 19.78 percent had 80 to 84; and 8 or 8.79 percent got 90 to 94.
4. There was no significant relationship between the respondents' frequency of use of higher-order cognitive skills in online science teaching and the students' academic achievement in elementary science as shown by the Pearson r values of -0.066, -0.060 and 0.119 for analyzing, evaluating and creating, respectively and the computed p -values which were higher than 0.05 level of significance for analyzing ($p=0.531 > 0.05$), evaluating ($p=0.574 > 0.05$) and creating ($p=0.260 > 0.05$).
5. No significant relationship was noted between the respondents' level of instructional skills in online science teaching and the students' academic achievement in elementary science as shown by the Pearson r value of 0.014 (negligible correlation) and the computed p -value of 0.894 which was higher than 0.05 level of significance.

The conclusions drawn from the findings of the study:

1. The teacher-respondents continually promote to the students the use higher order cognitive skills in science learning to help them solve problems efficiently by anticipating connections between different ideas. They recognize the fact that for high-ability students, there is always more to learn.
2. The elementary science teachers are highly proficient and technically adept in techno-pedagogy, which consists of content, pedagogy and technology within the context of online teaching amid the pandemic.
3. The academic achievement of the students in elementary science is above-average.
4. The academic performance of the students in elementary science is not directly dependent on the teachers' frequency of use of higher-order cognitive skills in online science teaching. The teachers' use of higher-order cognitive skills in science teaching could lead to the development of the higher-order thinking skills of the students, which in turn, can influence student academic performance.
5. The students' academic achievement is not dependent on the very high level of instructional skills of the teachers in online science teaching.

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6. An action plan is deemed important to address the issues and concerns regarding the use of HOTS in teaching science and the development of HOTS in students.

RECOMMENDATIONS

Based on the findings and conclusions of the study, the following recommendations are hereby made:

1. The teachers may determine whether the use of higher-order thinking skills in teaching elementary science is effective in developing higher-order thinking skills among the students by empirically ascertaining the students' level of higher order thinking skills.
2. A study on the lower thinking skills may be conducted to determine the status and growth of the cognitive skills of the students before promoting higher level of thinking skills.
3. The techno-pedagogical skills of the elementary science teachers, post-pandemic, may be revisited and re-calibrated through an in-service training in preparation for the new normal.
4. A study on the correlation between higher-order skills of students this time and their academic achievement in elementary science may be conducted to verify this study's findings and confirm the other studies' findings.
5. The proposed action plan be submitted for review and subsequent implementation when deemed feasible.
6. A comparative study be conducted on limited face to face and online teaching-learning modalities is suggested.

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Biology Practicum Guides Problem Based Learning-Based to Improve Critical Thinking Skills for Class XI Students of SMA



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ABSTRACT: This study aims to design, design and develop a learning intervention.-based Practicum Guide *problem-based learning* to improve the critical thinking skills of class XI SMA students that are valid, practical, and effective. The instrument used was a validity questionnaire and a practicality questionnaire as well as a matter of effectiveness. The validity and practicality data analysis technique uses a Likert scale scoring and the effectiveness uses a t-test using SPSS 2.2. Based on the development and trial of *problem-based learning* to improve the thinking skills of students in class XI SMA, it was concluded that the results of the validity and practicality tests met the very valid criteria. The results of the effectiveness test have effective criteria.

KEYWORDS: problem based learning, practical guide, development, critical thinking.

I. INTRODUCTION

Education intends to develop the potential of students into quality human resources. The quality resources in question are human beings who believe and are devoted to God Almighty, have noble character, are healthy, knowledgeable, capable, creative, independent, able to compete and become democratic and responsible citizens. In order to achieve this goal, the government has attempted through the establishment of various regulations to ensure that every citizen gets a quality education (Hermawati, 2012). According to Salamah (2019) that the quality of education can be seen from the quality of education that produces quality, productive, and competitive human resources (HR). One of the efforts to improve the quality of education is to make various innovations in the curriculum. One of the innovations currently being carried out is to include life skills education, namely life skills, soft skills and character education (Setyawati, 2013). The three educations are required to be able to develop higher-order thinking skills, one of which is critical thinking skills. According to Sudarma (2013), basically humans are creatures who can create creativity and are able to think critically in producing something innovative. These abilities must be supported by characters who are able to create innovations themselves so that critical thinking skills are very important to be raised in every individual, especially students. According to Liliyasi (2011), "The ability to think which is the basis of other thinking skills is the ability to think critically". Critical thinking skills affect the formation of students' scientific work.

Scientific work is an activity that emphasizes the scientific approach or method (Razi, 2013). According to Colburn (2000), scientific work-based learning is learning where students are involved in open problems, are student centered and involve hands-on. According to Subagyo, et al (2009), the learning process using scientific work can familiarize scientific behavior like scientists in finding concepts. In biology learning, scientific work can be integrated into learning tools, one of which is a practicum guide.

According to Killinct (2007), a practicum guide is a practicum facility that helps practitioners in carrying out practicum activity. Biology practicum activities have been formulated in the basic competencies of the 2013 curriculum in accordance with the Ministry of National Education No. 69 of 2013 concerning the basic framework and structure of the SMA/MA curriculum, so that teachers are required to carry out practical activities in order to achieve the expected learning objectives. Through practicum, students can be actively involved in observing, observing, hypothesizing, analyzing and drawing conclusions, so that students can correlate the theory and the results they get.

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Based on the results of critical thinking questions to students on the circulation system material at SMA Pertiwi 1 Padang, in October 2021 by giving essay by researchers to students, students' critical thinking skills were obtained with an average value of 55.8%. This figure, according to Maulana (2017), shows that the critical thinking skills of students at SMA Pertiwi 1 Padang are categorized as less critical.

Based on the results of interviews with the biology teacher of SMA Pertiwi 1 Padang, namely Mrs. Widya Aziz, S.Pd, M.Sc. in November 2021, it was discovered that practicum activities in schools were still using practicum instructions obtained from biology textbooks and LKPD (student worksheets) which are commonly used in the classroom learning process. The teacher usually duplicates the LKPD personally which is then distributed to students. The practical instructions listed in the package book and LKPD only contain a brief explanation, namely indicators, brief material and discussion columns. In the practical instructions there are no tools and materials and work procedures that should be in the components of the practicum guide, tools and materials and work procedures are only demonstrated in front of the class by the teacher. The practicum instructions used have not applied the approach or learning model and have not been able to develop the ability to think systematically, critically, logically, and analytically. In the practicum instructions there are only ordinary concept understanding questions, so that students only get the ability to memorize and remember levels.

Based on the results of the researcher's analysis of the questionnaire on the problems of biology practicum activities at Pertiwi 1 Padang High School which was filled out by 30 students, several problems were found regarding the implementation of practical activities which can be explained as follows. First, in the implementation of practicum, students tend to be passive and not fully involved. The results of the questionnaire show that only 26% of students are active in practicum activities. Second, the practicum guide emphasizes more on the results than on the process. This is due to the practicum guide used in the form of LKPD which does not meet the components of a practicum guide. The practical instructions listed on the LKPD only contain a brief explanation, namely indicators, brief material and discussion columns. In the practicum manual, there are no tools and materials and work procedures that should be included in the practicum guide component. According to Arifin (1995), the practicum components include 1) practicum title, 2) practicum objectives, 3) theoretical basis, (4) tools and materials, (5) working methods, (6) questions. The LKPD does not yet have an approach and has not facilitated students in working scientifically so that during practicum activities students cannot solve a problem in practicum activities and only focus on results. The results of the questionnaire show that 72% of students have not been able to solve a problem in practical activities. Third, students are less interested in the appearance of the practicum guide. The results of the questionnaire showed that 73% of students stated that the practicum guide did not have an attractive color combination and 77% of the students stated that the practicum guide did not have pictures that supported the material being practiced.

Based on this, it is necessary to have a practical guide that can facilitate students in gaining understanding and scientific work skills and able to improve the ability of students to solve a problem in learning. Efforts that can be made to improve students' critical thinking skills are through practicum activities supported by a practicum guide with a problem-based learning model. learning model is one of the learning models used to improve students' higher-order thinking in real-world situations (Rusman, 2012). Arends (2008) states that the essence of the problem-based learning model is to present a variety of authentic and meaningful problem situations to students, which can serve as a springboard for investigations and investigations, meaning that problem-based learning teaches students to start learning activities with a specific problem. must be solved so as to produce new knowledge. Problem-based learning models are suitable for use in biology learning, because problem-based learning models can increase students' understanding of what they are learning so that it is hoped that they can apply it in real conditions in everyday life and can improve students' critical thinking skills in solving problems. which is more complex.

According to the Ministry of Education and Culture (2016) that in the 21st century students must be able to develop Higher Order Thinking Skills (HOTS). Students' critical thinking skills must be developed to analyze, evaluate and draw conclusions in solving a problem. The results of the PISA (The Program For International Student Assessment) analysis from year to year show that the critical thinking skills of Indonesian students have not increased significantly. This can be proven, especially science material in 2012 which was ranked 65 out of 69 countries with a score of 382, while in 2015 it was ranked 62 out of 69 countries with a score of 403 from the international average score of 500 (Organization for Economic Cooperation and Development), 2015). The results of the PISA analysis are also in line with the learning outcomes of students at school.

Research conducted by Salmeri (2018) entitled, “Development of a Problem Based Learning to improve critical thinking skills of Bengkulu City Senior High School students. The results obtained from this study indicate that the Biology practicum guide based on Problem Based Learning has been said to be valid, practical and effective.-based Biology Practicum Guide Problem Based Learning that was developed has an effect on increasing students' critical thinking skills. based practicum guide is The Problem-Based Learning- expected to stimulate students to think critically to understand biological material and solve the

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problems contained in it so that learning can be student-centered. The current generation is very sensitive to technology, meaning that they have the advantage of being able to use technology to develop knowledge. This great potential should be utilized optimally by teachers so that learning can be carried out in a directed and effective manner, such as by presenting teaching materials in the form of Problem-Based Learning- order to achieve the objectives of the learning itself.

The practicum guide developed contains three basic competencies, namely the material on the motion system is KD 3.5, namely Analyzing the relationship between the structure of the organ making up the organ network in the motion system and linking it to the bioprocess so that it can explain the mechanism of motion and functional disorders that may occur in the human movement system through literature studies, Observations, experiments, and simulations, the material about the circulatory system is KD 3.6 Analyzing the relationship between the structure of the tissues making up organs in the circulatory system in relation to bioprocesses and functional disorders that can occur in the human circulatory system and material about the digestive system is KD 3.7 Analyzing the relationship between the structure tissues that make up organs in the digestive system in relation to nutrition, bioprocesses and functional disturbances that can occur in the human digestive system.

Based on this background, the researchers conducted research on the development of a practicum guide with the title "Development of Problem Based Learning to Improve Critical Thinking Skills for Class XI High School Students".

II. RESEARCH METHODS

Type of research is development research. The product developed is problem-based learning to improve the critical thinking skills of class XI high school students that are valid, practical, and effective. The development model used in this study is the Plomp model, consisting of three stages, namely the initial investigation stage, the development stage or prototyping, and the assessment stage. The subjects of the experiment were 30 students of class XI MIPA 2 and 1 biology teacher at SMA Pertiwi 1 Padang. The types of data in this study are qualitative and quantitative data. The instruments used in data collection were observation/interview sheets, self-evaluation instruments, the validity instruments of the Practicum Guide, the practicality instruments of the Practicum Guide, and the effectiveness of the Practicum Guide instruments. The validity and practicality data analysis technique uses a Likert scale scoring and the effectiveness uses a t-test using SPSS 2.2.

III. RESULTS AND DISCUSSION

Table 1. Results of Data Analysis Validation of Three Validators

No	Aspect	Value (%)	Criteria
1.	Didactic	91.67%	Very Valid
2.	Construct	88.09%	Very Valid
3.	Technical	88.09%	Very Valid
Average - Average		89.28%	Very Valid

Table 2. Small Group Evaluation Results.

No	Aspect	Value (%)	Criteria
1.	Ease of Use	95.83%	Very practical
2.	Efficiency of use	91.67%	Very practical
3.	Attractiveness	93.75%	Very practical
4.	Easy to interpret	87.5%	Very practical
5.	Has equivalent	85.41%	Very practical
Average Practicality		89.28%	Very practical

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Table 3. Practicality Assessment by Teachers.

No	Aspect	Value (%)	Criteria
1.	Ease of Use	95.83%	Very practical
2.	Efficiency of use	100%	Very practical
3.	Attractiveness	91.67%	Very practical
4.	Easy to interpret	87.5%	Very practical
5.	Has equivalent	87.5%	Very practical
Average Practicality Value		92.5%	Very practical

Table 4. Results of Practical Data Analysis by Students.

No	Aspect	Value (%)	Criteria
1.	Ease of Use	89.58%	Very practical
2.	Efficiency of Use	87.5%	Very practical
3.	Attractiveness	86.67%	Very practical
4.	Easy to interpret	88.8%	Very practical
5.	Has equivalent	87.5%	Verypractical
Average Practicality		88.02%	Very practical

Table 5. Critical Thinking Ability Assessment Results.

Class	N	Xmin	Xmax	Mean	Standard deviation
of Experiment	30	60	90	78.00	7.086
Control	30	48	78	61.60	7.509

Table 6. Prerequisite Test Results for Normality and Homogeneity of Critical Thinking Ability.

No.	Parameter	Significance	Description
1.	Normality	0.200	Normal
2.	Homogeneity	0.791	Homogeneous

Table 7. Calculation Results of Critical Thinking Ability t-test.

Class	Significance	Conclusion
Control	0.000	H0 rejected
Experiment The		

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Practical guide before being used is validated first to be validated by experts. This is in accordance with Yusuf (2007)'s statement that validation is carried out with the help of experts in accordance with competence in their fields. The validator carefully rereads the contents of the practicum guide, checking whether the description of the practicum guide is in accordance with the rules for compiling the practicum guide. The higher the validity of a product, the better the conclusions drawn and the better the level of meaning and usefulness. This is supported by research conducted by Afriadi et al., (2013), a product that is very valid shows the suitability, significance, and usability of the product.

The validity of the practicum guide was assessed by three validators. Analysis of the data from the validity assessment sheet of the practicum guide that was developed in terms of didactic aspects, construct aspects, and technical aspects. If the data generated from a product is valid, it can be said that the product developed has provided an overview of the development goals correctly and in accordance with the reality and actual conditions (Arikunto, 2013). The results of the validation data analysis of the practicum guide show that the developed practicum guide has a validity value of 89.28% with very valid criteria.

Based practicum guide problem-based learning on the material of the motion system, circulation system and digestive system is related to the ease of practicum guidance by teachers and students in learning.-based practicum guide problem-based learning on the material of the motion system, circulation system and digestive system is carried out in stages. The first assessment is carried out on a small group or small group. Students are selected based on high, medium and low ability levels. Each level of ability consists of two students, so the total number of students in the small group test is six people. based practicum guide problem-based learning starts from the assessment of 6 students in the small group getting an average score of 90.83% with the criteria of "very practical". Furthermore, the assessment of the practicality of problem-based learning on the field test test by 30 students got an average score of 88.02% with the criteria "very practical" and the assessment from the biology teacher got an average score of 92.5% in the "very practical" category. The practicum guide that has been developed provides convenience in terms of use, both in presenting material using language that is easy to understand and also in clear font sizes.

The effectiveness of the practicum guide can be seen from the students' critical thinking skills obtained after students use the practicum guide in the learning process. The results of the assessment of the effectiveness of the developed practicum guide are effectively used as teaching materials in the learning process. Students' critical thinking skills are assessed through daily tests of the movement system, circulation system and digestive system. The instrument used in the form of essay as many as 10 items. Testing the effectiveness of the practicum guide was carried out using the t-test, because the data were normally distributed and homogeneous. Based on the t-test, the results obtained that the hypothesis is accepted. Therefore, it can be concluded that the use of problem-based learning on the material of the motion system, circulation system and digestive system is effectively used for learning.

Teachers participate in building students' understanding.

Teacher participation, for example, presents problems from the material studied in a problem-based learning. According to Strobel and Barneveld (2009) Problem Based Learning is student-centered learning, where students get solutions to the problems they face and build their own knowledge.

Learning model Problem Based Learning improves students' critical thinking skills about a given problem. According to Yulianti, et al., (2018) Problem Based Learning can develop students' critical thinking skills to become people who are able to make their own decisions to make decisions and solve problems. According to Nasution (2008) thinking skills are a means to achieve educational goals so that students are able to solve problems at a higher level.

At the stage of problem orientation, students can analyze the information presented. The problems presented in the practicum guide in the form of discourse are sourced from news and journals related to the material of the motion system, circulation system and digestive system. The problems given in the practicum guide aim to arouse the curiosity of students by connecting theory with everyday life. Students are required to determine problem identification and formulate problems at the problem orientation stage.

The next stage is to develop and implement a plan. This stage is carried out so that students conduct a literature study to answer the formulation of the problem that has been made. Students think in groups to relate the problem to the practicum guide by conducting a literature study so that the problem can be solved optimally.

Then the stage of determining the solution, students present the results of the discussion by presenting in front of the class. At this stage, group discussions are carried out. At this stage, students are also trained to be responsible for answering problems in the practicum guide during the discussion. The courage possessed by students to express opinions requires students to make presentations in front of the class.

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The last stage is evaluation, students assess the strengths and weaknesses of other groups and then make conclusions. The presenter group looks for answers

from the responses that have been given by other groups. Then the teacher evaluates the results of the discussion and together concludes the learning materials contained in the practicum guide.

IV. CONCLUSION

Based on the development and testing of Problem Based Learning to improve critical thinking skills of students in class XI SMA, it was concluded that the results of the validity and practicality tests met the very valid criteria. The results of the effectiveness test have effective criteria.

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Viability, Prospects and Challenges of Ecotourism in Lobo, Batangas



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ABSTRACT: This descriptive correlational study aimed at determining the viability, prospects and challenges of ecotourism in Lobo, Batangas. It engaged 120 members of the people's organizations involved in ecotourism. Majority of the respondents aged 56 to 59, male, a high school graduate, had been involved in ecotourism business for either 1 to 4 years or 5 to 8 years, and had attended 1 to 2 trainings. The level of viability of ecotourism in Lobo, Batangas was 'very high' with a weighted mean of 3.43. The respondents strongly agreed with a weighted mean of 3.38 to the prospects of growth and development of ecotourism in Lobo, Batangas. Likewise, they agreed with a weighted mean of 3.03 to the myriad of challenges encountered in their involvement in ecotourism. There was a significant difference in their understanding of the viability of ecotourism along marketing aspect, when grouped according to the number of years of involvement in ecotourism and number of trainings attended in ecotourism. The respondents with 5 or more trainings had higher appreciation of the level of viability of ecotourism in the locality than those with 1 to 2 trainings and those with 3 to 4 trainings. Members of the people's organizations recognize the business prospects and abundant opportunities for growth and development for the community and its residents in the ecotourism sites despite the myriad of problems that beset them. Thus, the proposed action plan should be considered by stakeholders in the ecotourism business in Lobo, Batangas.

KEYWORDS: viability, prospects, challenges, ecotourism

INTRODUCTION

The International Union for Conservation of nature defines "ecotourism as the "environmentally responsible travel and visitation to relatively undisturbed natural areas, in order to enjoy and appreciate nature (and any accompanying cultural features—both past and present) that promotes conservation, has low visitor impact, and provides for beneficially active socio-economic involvement of local populations" (IUCN, 2018). This means that those who implement and participate in ecotourism activities should follow the following principles: minimize impact, build environmental and cultural awareness and respect, provide positive experiences for both visitors and hosts, provide direct financial benefits for conservation, provide financial benefits and empowerment for local people, and raise sensitivity to host countries' political, environmental, and social climate (TIES, 2019).

A sustainable plan of ecotourism requires a deeper understanding of a locale's viability, prospect and met challenges. This was verified by Yu (2020) who examined Philippines' destinations, its viability and faced challenges before exploring how sustainable ecotourism strategies benefit the Philippines. He then connoted ecotourism as a viable solution to both environmental and economic issues that have plagued the country; but highlighted the need to implement strategies for conservation and further development. Meanwhile, Armando (2017) found out that marineprotected areas in Iloilo have a high level of viability of ecotourism due to being established, developed, and regularly maintained. Hence, its management is required to focus on improving its Information, Education Communication (IEC) activities, monitoring, and evaluation.

In contrast, Brillo (2021) revealed th at Philippines despite being blessed with abundant natural-cultural attractions with excellent prospects for ecotourism development, continue to be left behind in ecotourism development. This is rooted from the fact that its natural resources remain untapped, underdeveloped, arbitrarily governed, and ecologically threatened. This proved the findings of study of Anastacio and Brillo (2020) which claimed that Philippines' ecotourism is exacerbated by absence of sustainability plans and scarcity of scholarly works.

Although, several research emphasized the need for action plans on ecotourism sustainability, current studies are only concerned on the negative impacts of activities on sites and to the local communities of the sites and only limited works have

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been done to develop sustainable ecotourism indicators (Ebisa et al., 2018). The United Nations World Tourism Organization (UNWTO) then worked with a study on the Sustainable Tourism for Development that will enhance a common understanding and commitment on Sustainable Tourism and will demonstrate how it will serve as a vehicle to foster economic and social growth through achievement of development imperatives and action steps on the negative social, cultural, and environmental impacts. Set criteria can also be used for education and awareness-raising, policy making for businesses and government and non-government agencies, and a measurement and evaluation tool.

Thus, this study endeavored to investigate the level of viability, prospects and challenges met of ecotourism sites in Lobo, Batangas, Accordingly, results of this study could be referred to in framing a sustainable plan on ecotourism. Likewise, it could distinguish research areas and points to ponder for further investigation.

METHODS

The researcher notified the municipal mayor, the Sangguniang Bayan and municipal tourism officer of Lobo, Batangas about her study. Then she secured the permission of the officers and members of the people's organizations that were registered with the Sangguniang Bayan and the Department of Labor. After a brief explanation of her study, she personally administered the questionnaire and retrieved the same. A 100% retrieval of the accomplished questionnaires was realized. Thereafter, the data generated were coded and encoded in Excel format and sent to the statistician for statistical treatment and initial analysis.

The statistical tools used in the treatment of data were frequency count, percentage, weighted mean and ANOVA.

RESULTS AND DISCUSSION

1. The Respondents' Profile

Table 1. Profile of the Respondents

Profile		Frequency	Percentage
Age	Below 30	36	30.00
	40-49	22	18.30
	50-59	39	32.50
	59 and above	23	19.20
Gender	Male	63	52.50
	Female	57	47.50
Educational attainment	Elementary undergraduate	9	7.50
	Elementary graduate	23	19.20
	HS undergraduate	20	17.00
	HS graduate	40	33.00
	College undergraduate	10	8.30
Number of years of involvement in ecotourism	1-4	60	50.00
	5-8	60	50.00
Number of trainings attended in ecotourism	1-2	45	37.50
	3-4	44	36.70
	5 and above	31	25.80
Number of respondents = 120			

Shown in Table 1 is the profile of the 120 respondents in the study. *Age*: 39 or 32.50 percent were 56 to 59 years old; 36 or 30.00 percent were below 30 years of age; 23 or 19.20 percent were 59 years old and above; and 22 or 18.30 percent were between 40 and 49 years old. *Gender*: 63 or 52.50 percent were male and 57 or 47.50 percent were female. *Educational attainment*: 40 or 33.00 percent finished their high school education; 23 or 19.20 percent were elementary graduates; 20 or 17.00 percent were high school undergraduates; 18 or 15.00 percent were college graduates; 10 or 8.30 percent college undergraduates; and 9 or

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7.70 percent did not finish elementary education. *Number of years of involvement in ecotourism:* 60 of 50.00 percent of the respondents had been involved in ecotourism for 1 to 4 years, while the other 60 respondents or 50 percent for 5 to 8 years. *Number of trainings attended in ecotourism:* 45 or 37.50 percent had attended 1 to 2 trainings in ecotourism; 44 or 36.70 percent had 3 to 4 trainings; and 31 or 25.80 percent had 5 or more trainings in ecotourism.

A typical respondent in this study is aged 56 to 59, male, a high school graduate, has been involved in the business of ecotourism for either 1 to 4 years or 5 to 8 years, and has attended 1 to 2 trainings in ecotourism as of this study.

2. Viability of Ecotourism in Lobo, Batangas

Table 2. Level of Viability of Ecotourism in Lobo, Batangas as perceived by the Respondents

Indicators	Weighted Mean	Verbal Interpretation	Rank
Market			
1. The ecotourism sites attract a high number of tourists.	3.75	Very High	1
2. Stakeholders promote the conservation of natural resources.	3.63	Very High	2
3. The community ensures the preservation of the endemic culture in the locality.	3.44	Very High	4
4. A number of ecotourism establishments have increased.	3.47	Very High	3
Average	3.57	Very High	1
Economic			
1. A clear improvement in life and livelihood of the community is felt.	3.38	Very High	3
2. Ecotourism has brought benefits to the community.	3.53	Very High	1
3. Governmental support to ecotourism in the locality is visible.	3.47	Very High	2
4. Quality ecotourism products have emerged in the local market.	3.20	High	4
Average	3.39	Very High	2
Financial			
1. Investors in ecotourism-related activities have realized returns in their investment.	3.10	High	2
2. Local bookings for nature tours were high prior to the pandemic.	3.53	Very High	1
Average	3.31	Very High	3
Overall Weighted Mean	3.43	Very High	

As presented in Table 2, the level of viability of ecotourism in Lobo, Batangas is 'very high' with an overall weighted mean of 3.43 along marketing, economic and financial aspects. This means the ecotourism business in Lobo, Batangas has the potentials to survive, grow and continue to be successful with all the stakeholders in it responsibly contributing its share to ensure its sustainability.

Market Viability

As indicated, the market viability is 'very high' with an average weighted mean of 3.57. The respondents rated all its indicators very high with weighted means ranging of 3.44 to 3.75 as the ecotourism sites attract a high number of tourists (Rank 1), stakeholders promote the conservation of natural resources (Rank 2), a number of ecotourism establishments have increased (Rank 3), and the community ensures the preservation of the endemic culture in the locality (Rank 4).

This finding finds support in the study of Hassan (2019) at the World Heritage Site (WHS) of Morten village, Melaka, Malaysia from the beginning of September 2016 to the end of January 2017. It was noted that the respondents realized the impacts that community-based-tourism (CBT) had produced in respect of the destination. Concerning the economic impacts, with the

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exception of the tourists, all of the respondents confirmed the positive role played by CBT in producing economic benefits for the village and local area. However, it was suggested that in order for CBT to be sustainable, the concerns of every stakeholder need to be considered, especially with regard to the cultural and authenticity impacts. The stakeholders should be encouraged to not only enjoy participating in sharing the economic benefits of tourism but also to have the opportunity to preserve the culture and heritage. Magio, Arguelles and Guillen (2017) found that ecotourism can generate significant economic benefits to the local communities and encourage their participation in conservation initiatives avoiding environmentally harmful practices. It was also found that direct economic incentives are not the only factors that influence attitudes and practices towards conservation. It is recommended to consider ecotourism as only one of the strategies within a broader plan that seeks to integrate conservation and socioeconomic development.

Murungi, Mbugua and Gitonga (2020) determined the factors influencing sustainability of community-based ecotourism development projects in Kenya, specifically Northern Rangeland Trust Conservancy in Meru County. The study findings revealed that community participation influences the sustainability of community-based ecotourism projects in Meru County very greatly; that networking with tourism expertise and facilitating links to market influence sustainability of community-based ecotourism projects in Meru County to a great extent; and that transparent management of financial resources affect sustainability of communitybased ecotourism projects in Meru County to a very great extent. It was concluded that community participation had the greatest influence on sustainability of community-based ecotourism development projects in Meru County, followed by financial viability, then stakeholders' collaborations. According to DLA Piper (2018), the Global Challenge of Delivering Community Benefits from Ecotourism, Case Studies from Ecuador 1 found that many of the community-based tourism enterprise (CBTE) projects started by donors and run by NGOs in Ecuador did not have a proper demand-driven approach to development and were not integrated into the existing, local tourism supply chain. This rendered many small communities without the capability to enlist a market and make their projects viable. However, the study showed that with proper efforts to plan community-based tourism (CBT) projects like micro or small businesses and with efforts to link them to the local tourism industry, it was highly likely that more would succeed. CBTEs are of interest to the sustainable development community, because they are small, medium and micro-enterprises that can generate a variety of positive social and economic development impacts in highly rural, biodiverse areas.

Economic Viability

In terms of the economic viability, it is 'very high' with an average weighted mean of 3.39. Specifically, the respondents rated 'very high' indicator #2 – Ecotourism has brought benefits to the community with a weighted mean of 3.53 (Rank 1), indicator #3 – Governmental support to ecotourism in the locality is visible with a weighted mean of 3.47 (Rank 2), and indicator #1 – A clear improvement in life and livelihood of the community is felt with a weighted mean of 3.38 (Rank 3). However, indicator #4 – Quality ecotourism products have emerged in the local market was rated 'high' with a weighted mean of 3.20 (Rank 4).

This finding confirms the study of Anup (2017), who stated that ecotourism had more beneficial impacts compared to adverse impacts on the environment, society and culture. It emphasizes the protection of natural resources, biological diversity and sustainability of resource. It increases mobility of people, social stability and harmony; strengthen traditional culture, hospitality and folkway; and decreases political conflicts. Economic benefits from ecotourism include direct employment in hotels, lodges, tourist restaurants, and tourist chauffeuring. It is an integral part of the master development strategy of a developing nation. In the early stage of ecotourism development, it is difficult to have adequate private agencies and local people involved in delivering lodging, foods, tour management and tourism activities during peak visitation season. Hence, there is need of training on nature guiding, cooking, sustainable use of tourism resources, proper handling of tourism demands, expertise in park management and finance management. Magio and Valdez (2019) found in their study on ecotourism as a strategy for conservation and sustainable development in Biosphere Reserves that ecotourism has potential for generating significant economic benefits to the local communities and for encouraging their participation in conservation initiatives. However, they also observed that direct economic incentives are not sufficient to change residents' attitudes and practices in favor of conservation. Karmini (2020), in a study on ecotourism management based on local wisdom in Tenganan Village, Karangasem Bali, found that the local wisdom owned by indigenous people in Tenganan Village was in the written customary law, namely awig-awig which is used to preserve local tourism forests by not damaging the potential of flora and fauna at forest, and utilizing forest products in an adaptive manner. The implementation of awig-awig in the tourism forests management had positive implications for the diversity of spatial planning and the Tenganan forest preservation. Second, ecotourism management accompanied by efforts to preserve local village forests was able to support the sustainable tourism, namely development that ensured economic sustainability, ecological sustainability, and the socio-cultural viability of the local community.

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Financial Viability

Finally, financial viability is 'very high' with an average weighted mean of 3.31. The respondents rated indicator #2 - Local bookings for nature tours were high prior to the pandemic 'very high' with a weighted mean of 3.53 (Rank 1) and indicator #1 - Investors in ecotourism-related activities have realized returns in their investment 'high' with a weighted mean of 3.10 (Rank 2).

The study's finding on the investors' high ROI is related to the study of Salera et al. (2019) on the economic viability of the community-based homestay service as a livelihood project of the Dumagats who are native residents of Daraitan. The main service of the project is to provide accommodation and campsite for tourists who usually go for trekking at Mt. Daraitan. The results showed that the financial assessment of the homestay service yielded an average of 27.25% return on sales; 85.4% gross profit ratio, and 79.37% return on capital. A portion of the profit will be appropriated for charitable purposes.

Financial viability is crucial for public nature-based attractions, especially in the context where many are seeking to transform their business model and goals in order to survive because of the heavy hit by COVID-19 and pressure from Chinese central government policies to lower entrance fees in state-owned attractions. A case study of Shanghai Sheshan National Forest Park (SNFP) tested the framework "resource–function–transformation–cost" and revealed that (a) transformation happened because of the recombination of resources, followed by the change of functions, leading to capital expenditure being more prominent during the early stages and management costs more so in the latter stage. It was concluded that the elasticity of the cost structure, which measures the responsiveness of total cost to changes in output is low; (b) the structure of functions tended to be stable over the years; and (c) the cost structure of the management, production and business, and tourism and leisure functions did not change much, while that of ecological protection functions changed significantly from capital expenditure to management costs (Liu, Li, Sigley, and Quan, 2021).

Moving on, Müllera, Hucka and Markovab (2020) stated that the oftenmissing financial sustainability in community-based tourism (CBT) in Cambodia frequently happens due to a lack of management skills and a lack of knowledge of pricing in the communities. Their paper contributed to the discussion by examining the willingness to pay of different target groups (i.e., locals, expatriates, and international tourists), and presents two arguments in support of a stronger emphasis of the local and, especially, the expatriate market, expatriates display significantly higher willingness to pay than international tourists, and, secondly, expatriate support allows CBT sites to build an understanding of potential customers' needs, thereby supporting a more organic and sustainable growth.

3. Prospects of Ecotourism in Lobo, Batangas

Table 3. Prospects of Ecotourism in Lobo, Batangas as assessed by the Respondents

Indicators	Weighted Mean	Verbal Interpretation	Rank
The ecotourism in Lobo, Batangas			
1. opens opportunities for local business in the community (i.e., local products, delicacies, souvenirs).	3.26	Strongly Agree	9.5
2. provides alternative source of livelihood for the community people.	3.31	Strongly Agree	7
3. nurtures the entrepreneurial culture among community residents (pasalubong store, establishment of cooperatives).	3.33	Strongly Agree	6
4. promotes women employment or livelihood	3.28	Strongly Agree	8
5. develops/improves transport sector	3.26	Strongly Agree	9.5
6. promotes eco-friendly initiatives such as use of biodegradable products.	3.40	Strongly Agree	5
7. encourages public-private partnership for sustainable nature tourism	3.42	Strongly Agree	4
8. creates employment opportunities	3.48	Strongly Agree	2
9. promotes conservation of wildlife	3.56	Strongly Agree	1

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tributes to the economic development of the locality.	3.47	Strongly Agree	3
Average	3.38	Strongly Agree	

As indicated in Table 3, the respondents 'strongly agree' with an average weighted mean of 3.38 to the development prospects of ecotourism in Lobo, Batangas. This means that the members of the people's organizations in the locality, who are involved in ecotourism, realized the abundant opportunities for growth and development for the community and its residents in the ecotourism sites.

Emphatically, they 'strongly agree' with weighted means ranging from 3.26 to 3.56 that promotes conservation of wildlife (Rank 1), creates employment opportunities (Rank 2), contributes to the economic development of the locality (Rank 3), engenders public-private partnership for sustainable nature tourism (Rank 4), and promotes eco-friendly initiatives such as use of biodegradable products (Rank 5). Notably, conservation of wildlife was paramount in their minds for sustainable tourism or ecotourism.

Further, the respondents 'strongly agree' that ecotourism in Lobo, Batangas nurtures the entrepreneurial culture among community residents (pasalubong store, establishment of cooperatives) (Rank 6), provides alternative source of livelihood for the community people (Rank 7), supplements women employment or livelihood (Rank 8), and opens opportunities for local business in the community (i.e., local products, delicacies, souvenirs) and develops/improves transport sector (Rank 9.5).

This finding is buttressed by the following studies: The Philippines is rich in natural-cultural attractions with excellent prospects for ecotourism development. Brillo's study (2021) explored the prospects of establishing ecotourism at the municipal level by investigating the experiences of two sites: Pandin Lake of San Pablo City and Tayak Hill of Rizal Municipality, both in Laguna province of the Philippines. In Pandin Lake, the ecotourism development is a locally driven and nongovernmental organization-inspired initiative, and in Tayak Hill, it is a top-down driven endeavor where the initiatives are primarily personal actions of the local executives. According to Brillo, in Pandin Lake, the initiating conditions in the development of Pandin Lake were: the awareness brought about by the save Sampaloc Lake movement; the constraint to aquaculture expansion; the scenic natural beauty of the small lake; and the lack of development-oriented actions by its administrative agencies. Whereas, in Tayak Hill the triggering situations consisted of: the urgent need for instituting a promotional identity for the town and a catalyst for the local socioeconomic development; the advent of a new local government administration that is open to novel development strategies; and the discovery of Tayak Hill as a historical landmark.

Various destinations in Batangas have showed prospects on ecotourism. As an eco-friendly destination, it evidently has admirable seascape, inland water, and majestic Taal Volcano. Moreover, it is rich in culture, heritage, and historical evidence. It also has pleasantly built environment, friendly local people, various local transport type, and personal safety and security. Apritado and Borbon (2021) recommended that the management should focus on developing new facilities, improving existing tourist activities, and investing on providing new trends in tourists activities.

Serebryakova, Dorohova, and Isaenko (2021) discussed the potential for the development of eco-tourism in Russia, which has many natural objects of interest to tourists. But a number of factors hinder the development of this type of tourism such as insignificant information support and promotion of Russia as a place suitable for tourist recreation, including nature-oriented, in foreign markets; unfavorable visa regime for tourists, which makes it much more difficult for foreign citizens to visit Russia; undeveloped tourist infrastructure; low level of service, mismatch of prices for offered tourist goods and services to their quality; low level of development of transport infrastructure, high degree of deterioration of the transport base and lack of comfortable tourist vehicles.

In spite of picturesque landscapes, natural beauties and authentic traditional lifestyles to be seen in East Kazakhstan, tourism is far from being developed. The study of Chlachula et al. (2020) presents a roster of geo-tourism and ecotourism loci for the broader Altai area within a framework of sustainable development. Prospects for travel to these places are enhanced by the presence of numerous prehistoric archaeological sites and historical monuments, which document the rich, multi-ethnic background of Kazakhstan and the ancient Silk Road that traverses it. These geological, environmental and cultural resources, and the regional geo-heritage and environmental conservation concepts have been figured into strategies for economic growth of rural Kazakhstan.

Ramaano (2021) evaluated the prospects of using ecotourism industry to advance community livelihoods in Musina Municipality, Limpopo, South Africa. The findings confirmed substantial ecotourism potential of the Musina Municipality and that this potential is manifest irrespective of geographic and demographic factors. However, it was revealed that there was a low current ecotourism impact in the Musina Municipality with consequential minimal benefits accruing to the enhancement of the

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standard of living in the local community. This situation was attributed to the lack of a well-articulated tourism strategy linked to the sustainable economic development of the communities involved.

Das (2021) observed that ecotourism has a significant role in community development in the host areas through alternative but sustainable livelihood. In Darjeeling and Kalimpong districts of West Bengal, ecotourism is still a community-based activity which involves local people and their culture. Most of the ecotourism sites in this part of West Bengal are within forest and hilly tract. Here growth of ecotourism has been phenomenal during the last decades with the influx of tourists that boosted the local economy. Sillery Gaon, a small village, in 'Silk Route Circuit' of West Bengal, is a new addition to it and a perfect example of this scenario. It is situated in Kashyone, gram panchayat of Kalimpong District. This pictorial village is surrounded with the dense forest of Pankhasari range and blessed with the panoramic view of Tista River and Kanchenjunga. In the last ten years, the villagers have developed ecotourism facilities and activities which transformed their traditional agrarian economy to tourism-based livelihood.

4. Challenges met by Respondents in the Involvement in Ecotourism

Table 4. Challenges Met by the Respondents in their Involvement in Ecotourism in Lobo, Batangas

Indicators	Weighted Mean	Verbal Interpretation	Rank
of eco-friendly infrastructure and facilities	3.03	Agree	5
of capacity building of organizational members towards sustainable development	3.09	Agree	2
tors' lack of knowledge on environmental protection and conservation	3.01	Agree	6.5
4. Poor promotional marketing/strategies	3.04	Agree	4
aintenance fund for infrastructure and facilities is insufficient	3.14	Agree	1
6. Lack of ecotourism plan and strategy	2.96	Agree	10
efficient training on business management	2.98	Agree	9
ds for other business opportunities are not available	3.08	Agree	3
erly trained personnel/staff are scarce.	3.01	Agree	6.5
urist guides' lack of information on sites and history.	2.99	Agree	8
Average	3.03	Agree	

As seen in Table 4, the respondents confirmed by 'agreeing' with an average weighted mean of 3.03 to the challenges encountered in their involvement in ecotourism in Lobo, Batangas. This implies that that the members of the people's organizations were beset by a myriad of problems involving physical, human and financial infrastructures, etc. that could hinder growth and development in ecotourism if left unsolved or disregarded. Specifically, they 'agreed' with weighted means ranging from 2.96 to 3.14 to the following challenges: maintenance fund for infrastructure and facilities is insufficient (Rank 1); lack of capacity building of organizational members towards sustainable development (Rank 2); funds for other business opportunities are not available (Rank 3); poor promotional marketing/strategies (Rank 4); lack of eco-friendly infrastructure and facilities (Rank 5); visitors' lack of knowledge on environmental protection and conservation and properly trained personnel/staff are scarce (Rank 6.5); tourist guides' of lack information on sites and history (Rank 8); insufficient training on business management (Rank 9); and lack of ecotourism plan and strategy (Rank 10).

The findings on the challenges encountered by the respondents in their involvement in ecotourism in Lobo, Batangas were more or less similar to the challenges expounded in the succeeding studies: Mnini and Ramoroka (2020) investigated the challenges of ecotourism towards poverty alleviation. Ecotourism is believed to be associated with various challenges which are environmental deterioration, inability to contribute to local economy as, well as cultural exploitation and deterioration. Regardless

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of the challenges ecotourism has, the paper concluded that ecotourism positively contributes towards poverty alleviation in South Africa.

The study of Kunjuraman (2021) on local community participation challenges in community-based ecotourism development in Sabah, Malaysian Borneo discovered that local communities' challenges in ecotourism development are manifold, thematically categorized into internal and external challenges. The study advised that ecotourism development in Sabah, Malaysia will be in danger, if it fails to emphasize the local community participation and their aspirations, thus weakening the sustainability. The study proposes that stakeholder approach be taken as a remedy to overcome the challenges faced by the local communities in ecotourism in the study site.

Petros and Firew (2020) determined the opportunities and challenges for ecotourism development in the Dilla University Botanical and Ecotourism Garden. The results revealed that low level community benefit, inadequate community participation, absence of ecotourism plan and unsustainable use of resources were the major challenges of ecotourism development in the garden. It also identified absence of sufficient accommodation and lack of local guides as first and second facility problems in the garden. To address the different problems and implement an integrated ecotourism development approach, involving communities and enhancing their role has been recommended as the key component of ecotourism development in the area.

Wondirad's study (2020) systematically determined the challenges and opportunities of ecotourism development in Wondo Genet and its vicinity, Southern Ethiopia. The research findings unfolded several constraints, i.e., budget and human resource, etc., that deter successful ecotourism development along with opportunities that can be used in future development in Wondo Genet and its vicinity, as the area is known for its natural and cultural resources. The findings offer substantive insights to policymakers, private investors and local communities about the existing challenges and opportunities of ecotourism development in the context of emerging destinations.

Ezequias (2020) presented the challenges of ecotourism in Angola in the face of the new trend of sustainable development, taking into account endogenous and exogenous conditions. The qualitative study allowed the identification of natural, mineral and cultural potential favorable to the sector, but also challenges such as the lack of economic and social infrastructure, training, high prices and credits, the overcoming of which will foster ecotourism in the country.

A case study was conducted by Mondino and Beery (2019) to understand the many challenges ecotourism faces despite its role in sustainable development in the Monviso Transboundary Biosphere Reserve, Italy. Study results showed that ecotourism had some positive effects, such as the creation of a network for collaboration between various stakeholders. However, negative perceptions still play an inhibiting role such as the lack of proper environmental education.

5. Difference in the Respondents' Perception of Viability of Ecotourism

Table 5. Difference in the Level of Viability of Ecotourism in Lobo, Batangas as Perceived by the Respondents when grouped according to Profile Variables

Profile		Marketing	Economic	Financial	Overall
Age	Below 30	(F-test) F = 1.588 p= 0.196	F = 0.702 p= 0.553	F = 0.035 p= 0.991	F = 0.415 p= 0.743
	40-49				
	50-59				
	59 and above				
Gender	Male	(t-test) t = 0.537 p = 0.593	t = 0.397 p = 0.692	t = 0.992 p = 0.323	t = 0.838 p = 0.404
	Female				
Educational attainment	Elementary undergraduate	(Kruskal-Wallis test) x ² = 5.188 p = 0.393	x ² = 5.897 p = 0.316	x ² = 3.043 p = 0.693	x ² = 5.446 p = 0.364
	Elementary graduate				
	HS undergraduate				
	HS graduate				
	College undergraduate				
	College graduate				
	1-4	(t-test)		t = -1.805	t = -0.140

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Number of years of involvement in ecotourism	5-8	$x_{1-4} = 3.65$ $x_{5-8} = 3.50$ $t = 2.184$ $p = 0.031^*$	$t = 0.214$ $p = 0.831$	$p = 0.074$	$p = 0.889$
Number of trainings attended in ecotourism	1-2	(F-test)	$F = 0.740$ $p = 0.479$	$F = 0.289$ $p = 0.750$	$F = 1.391$ $p = 0.253$
	3-4	$x_{1-2} = 3.63$ $x_{3-4} = 3.46$			
	5 and above	$x_{5\text{-above}} = 3.65$ $F = 3.331$ $p = 0.039^*$			
*Significant @ 0.05					

As reflected in Table 5, there was no significant difference in the respondents' perception of the level of viability of ecotourism along marketing economic and financial aspects in Lobo, Batangas, when grouped according to age ($F = 0.415$; $p = 0.743 > 0.05$); gender ($t = 0.838$; $p = 0.404 > 0.05$); and educational attainment ($\chi^2 = 5.446$; $p = 0.364 > 0.05$). This means that the level of viability of ecotourism based on their own understanding of the phenomenon was not dependent on whether he or she was younger or older, whether he or she was a male or female, and whether he or she was an elementary, high school or college graduate.

However, a significant difference was noted in the respondents' perception of the level of viability of ecotourism along marketing aspect in Lobo, Batangas, when grouped according to the number of years of involvement in ecotourism ($t = 2.184$; $p = 0.031 < 0.05$) and number of trainings attended in ecotourism ($F = 3.331$; $p = 0.039 < 0.05$). This implies that the respondents with 1 to 4 years of involvement in ecotourism ($x_{1-4} = 3.65$) had higher appreciation of the level of viability of ecotourism in Lobo, Batangas than those with 5 to 8 years of involvement ($x_{5-8} = 3.50$). This could further mean that those who were relatively new in ecotourism business were either earning profitably or simply recognized the opportunities to earn and succeed. Further, the respondents with 5 or more trainings attended in ecotourism ($x_{5\text{-above}} = 3.65$) had higher appreciation of the level of viability of ecotourism in the locality than those with 1 to 2 trainings ($x_{1-2} = 3.63$) and those with 3 to 4 trainings ($x_{3-4} = 3.46$). This could mean that the more trainings they attended, the more opportunities given them to widen their business horizons while interacting with various resource persons and benchmarking with their fellow trainees or attendees.

Generally, the respondents' perception of the viability of ecotourism in Lobo, Batangas was similar. Such finding is corroborated by Hassan's (2019) critical analysis of stakeholders' perceptions of community-based tourism (CBT) impacts in World Heritage Sites (WHS) which analyzed, among others, the stakeholders' perceptions concerning the economic, environmental and socio-cultural impacts of CBT. It was revealed that the respondents were found to clearly realize the impacts that CBT had produced in respect of the destination. Concerning the economic impacts, with the exception of the tourists, all of the respondents confirmed the positive role played by CBT in producing economic benefits for the village and local area.

However, in Collado's study (2019), when grouped according to province, there was a significant difference in the respondents' perceived impacts of river-based tourism destinations in Panay Island in terms of economic viability, socio-cultural equity, and environmental conservation. The author's study aimed to determine the impacts of river-based tourism destinations sustainability of Panay Island in terms of economic viability, socio-cultural equity, and environmental conservation. Results revealed from across four provinces, river-based tourism destinations in Panay Island have high economic, socio-cultural, and environmental significance among its stakeholders. When rank in terms of the sustainability indicators, data showed that the most favored response in the economic viability was to "create income opportunity". Likewise, Mejere et al. (2022) found a significant difference on their respondents' perceived viability of tourism in Baltic Sea Countries when grouped according to their age. Further, young people tend to be indifferent to tourism policies and benefits, are neutral in addressing environmental sustainability issues, and are skeptical on the development of sustainable tourism. Socio-economic type which comprises 71.5% of young people is more focused on the long-term socio-economic wellbeing of the destinations which for them can be achieved through efficient management, tourism planning, and active participated on the implement tourism policies. This was corroborated by Gkoumas (2019) who connoted tourism as a multi-actor field as people have their own interests, espouse certain views, and have varying degrees of the influence of policies. For instance, hoteliers, restaurateurs, and bar owners claimed Mediterranean Standard for Sustainable Tourism (MESST) as a viable tool for enterprises to put sustainability into action; while

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tourism professionals negate them as absence of follow-up activities, limited use of networking and its inability to obtain national recognition led to poor applicability of standard.

6. Difference in the Prospects of Ecotourism as Assessed by the Respondents

As shown in Table 6, no significant difference was noted in the prospects of ecotourism in Lobo, Batangas as assessed by the respondents when grouped according to age ($F = 0.404$; $p = 0.750 > 0.05$), gender ($t = 0.224$; $p = 0.823 > 0.05$), educational attainment ($\chi^2 = 10.213$; $p = 0.069 > 0.05$), number of years involvement in ecotourism ($t = 1.316$; $p = 0.191 > 0.05$), and number of trainings attended in ecotourism ($F = 2.227$; $p = 0.112 > 0.05$).

Table 6. Difference in the Prospects of Ecotourism in Lobo, Batangas as assessed by the Respondents when grouped according to Profile Variables

Profile	Test statistic	p-value	Interpretation
Age	$F = 0.404$	0.750	Not Significant
Gender	$t = 0.224$	0.823	Not Significant
Educational attainment	$\chi^2 = 10.213$	0.069	Not Significant
Number of years of involvement in ecotourism	$t = 1.316$	0.191	Not Significant
Number of trainings attended in ecotourism	$F = 2.227$	0.112	Not Significant
Significance level @ 0.05			

This means that regardless of their profile variables, they all similarly strongly agreed to the prospects and opportunities of ecotourism in their place that are waiting for them to study and explore with the support of national and local government units, non-government organizations and together with local initiatives.

This finding, which shows the respondents' unanimity in their assessment of the prospects and opportunities of ecotourism in Lobo, Batangas, deviates from the findings of Chen et al. (2020), which analyzed the heterogeneity of different groups, including the differences between local people and tourists, different occupational groups and groups with different educational levels, thus clarifying the problems existing in the development of marine park ecotourism, and providing reference for the further development and management of the marine park.

The results show that Dongshan Island has a good carrying capacity and a certain level of tourism development foundation, which can provide opportunities for mass tourists to participate in ecotourism. However, weak environmental awareness of Dongshan Island residents will become an important obstacle to the island's ecotourism development. Barnes and Sutcliffe (2018) noted the perceived diverse prospects of ecotourism in Hawaii. For some, only environmentally minded people will be attracted to cage free shark diving ecotourism program and their participation will not lead to meaningful conservation gains. On the other hand, tour participants who have knowledge on the ecological role of sharks negate this premise. Sarpong, Blankson and Britwum (2018) brought to the fore issues on residents' views on the benefits and costs of ecotourism projects at Bobiri Forest and Butterfly Sanctuary in Ghana. Their study revealed that socio-demographic characteristics, native status, place of residence and length of stay influence residents' perceptions of tourism. Statistically a significant difference was found between place of residence and economic, socio-cultural and environmental impacts of tourism. It was concluded that for the goal of ecotourism development to be achieved, there is the need for residents' views on the project to be considered and thereby involving residents in ecotourism development.

Le et al. (2021) studied the key factors that affect tourists' awareness and perception of entomological ecotourism based on their demographic profiles. Results showed little difference in perception and awareness between Malaysian and Non-Malaysian respondents. Respondents also show three main factors, such as 'Knowledge', 'Experience' and 'Appearance' that may cause different perceptions of insects other than their cultural background. Though there are no significant differences between the respondents' perceptions of insects, there are still some items among the respondents' perceptions need to be considered. These items include the respondents' perspective on diversity, behaviors, life cycle, and insects' appearance. Additionally, Nigatu and Tegegne (2021) concluded significant difference on respondents perceived prospect of ecotourism on the conserved forest of Ethiopia. They have considered the areas as factors on perceiving potential for outdoor recreation. Consequently, education also influence the diverse perspective as 92.9% of high school completers who have limited knowledge on ecotourism and outdoor recreation perceived no prospect of tourism in the place; while, 86.7% of college graduates and 92.9%

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proved the contradictory. The local communities either have positive and negative perception towards outdoor recreation and ecotourism.

7. Difference in the Challenges met by the Respondents in their involvement in ecotourism in Lobo, Batangas

Table 7. Difference in the Challenges Met by the Respondents in their Involvement in ecotourism in Lobo, Batangas when grouped according to Profile Variables

Profile	Test statistic	p-value	Interpretation
Age	F = 0.398	0.755	Not Significant
Gender	t= -0.286	0.775	Not Significant
Educational attainment	$\chi^2 = 2.941$	0.709	Not Significant
Number of years of involvement in ecotourism	t = 0.966	0.336	Not Significant
Number of trainings attended in ecotourism	F = 0.216	0.806	Not Significant
Significance level @ 0.05			

As seen in Table 7, there was no significant difference in the challenges encountered by the respondents in their involvement in ecotourism in their own town when grouped according to age ($F = 0.398$; $p = 0.755 > 0.05$), gender ($t = 0.286$; $p = 0.775 > 0.05$), educational attainment ($\chi^2 = 2.941$; $p = 0.709 > 0.05$), number of years involvement in ecotourism ($t = 0.966$; $p = 0.336 > 0.05$), and number of trainings attended in ecotourism ($F = 0.216$; $p = 0.806 > 0.05$). This means that regardless of their profile variables, they all uniformly agreed to the various challenges they encountered in their involvement in ecotourism in their locality. Such challenges, problems or difficulties, however, were perceived to be surmountable with the support of national and local government units and non-government organizations, and the steady stream of domestic and international tourists and visitors in the new normal bringing revenues to the local government unit and to the community and local enterprises.

This finding on the common challenges encountered by the respondents in their involvement in the ecotourism in Lobo, Batangas, differs from the study conducted by Joushi and Poudel (2020), which revealed a significant difference on the perceived challenges met by ecotourism. In fact, their respondents who are found to be mostly high school graduates, age around 35 – 45 years, and with a few involvement agriculture activities, perceived that lack of transportation and ineffective communication strategies limit the promotion of ecotourism in the area. Those who stayed longer in the area observed the declining number of tourists year by year due to the unstable condition of the country and lack of promotion. Meanwhile, younger respondents saw the increase of domestic tourists because of trekking, trainings, and tours. Likewise, Lee' study (2022) quantified and revealed the diverse perception between the majority and minority of places where there is severe conflict. In fact, Korean public officials and tour guides seek for the establishment of a river-centered tourism plan, while residents and environmental groups prayed for the implementation of a conservation plan thru farming in the outskirts of the river. Moreover, Lellotery, Hitipeuw and Sahureka (2020) determined the strategy of developing ecotourism based on community participation and stakeholder involvement. FGD was conducted to get the same perception between the community and stakeholders. The findings revealed that community perception shows that 83.3% of respondents agreed to develop ecotourism activities and *community participation* related to tourism activity planning, implementation of activities and development of tourism facilities supported by *tourism stakeholders* such as local governments and NGOs. In addition, Xiaboa and Xiaoying (2020) found in their study challenges that are common in most countries. In Liaoning Province, China, there were two kinds of obstacles to the sustainable development of ecotourism in nature reserves. The first group of obstacles all represent common problems in China including: (1) environmental education is ignored; (2) community participation occurs on an ad hoc basis; (3) tourism management is not rigorous; (4) nature reserve administration is in a state of confrontation with local governments and residents. The second group of obstacles consists of specific problems faced by ecotourism in the three nature reserves, each of which has its own natural, social, cultural and economic environment that generate unique difficulties for ecotourism

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8. Action Plan

PROPOSED ACTION PLAN FOR SUSTAINABLE ECOTOURISM IN LOBO, BATANGAS

Area Thrust	Objectives	Strategies	Time Frame	Persons Involved	Sources of Funds	Budget (Php)	Success Indicator
Infrastructure and Facilities Development/ Maintenance Fund	<p>To improve the infrastructure (roads/ tourist routes) and facilities to attract more visitors and promote eco-friendly tourism sites</p> <p>To provide fund for the maintenance of infrastructure/ facilities</p>	<p>Request fund from Local Government Office (LGU), NonGovernment Units (NGOs), Environmental Organization</p> <p>Allocate fund from the organization's income</p>	As the need arises	Government Officials / Organizational Member and Officers /	<p>Approved Fund from LGU, NGO, and environmental organization</p> <p>Allocated fund of the organization</p>	1 Million	Improved and well maintained infrastructure and facilities
Capacity Building / Personnel Training	<p>To strengthen the capacity building of the organizational members to promote sustainable development</p> <p>To train personnel</p>	<p>Workshop Seminar and Training Need Assessment</p> <p>Collaboration with National & Local Tourism Office</p>	Year round	<p>Organizational Members DENR/ DA/ Tourism Office/LGU, NGO</p> <p>Tourism Office/NGO LGU</p>	<p>Allocated Fund from Tourism Office Training provided by Bantayan Kalikasan Foundation</p>	200,000	<p>Strengthened capacity building of the organizational members</p> <p>Well trained personnel</p>

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Visitor's Knowledge on Environmental Protection and Conservation	To provide the visitors knowledge on environmental protection and conservation	Orientation on waste management and protection of wildlife	Upon arrival	Tourism Office / Organizational Members / Visitors	N/A	N/A	Well oriented visitors
Ecotourism Planning / Marketing Strategy	To adopt a marketing strategy that will help attract more tourists and promote tourism sites and products To develop ecotourism plan to increase the income of the organization	Create social media sites, and channel Produce campaign materials/ advertisement Collaboration with LGU and Tourism Office	Periodically Every five years	Visitors / Organizational Officers & Members / Tourism Office / LGU / Commercial Establishment Tourism Office/NGO/LGU	Allocated Fund from organization and LGU	250,000	Ecotourism Plan / Well promoted sites
Training on Business Management Skills	To develop skills needed in managing ecotourism business	Training on business management, such as Financial management training, e.g. Budget allocation, Market planning	Year round	Sponsoring Agency/ Tourism Office NGO/LGU	Allocated Funds from LGU and Tourism Office	100,000	Well trained Ecotourism Business Managers
Environmental Information Campaign	To provide the tour guides with the knowledge on history of the	Training on environmental information campaign	Year round	Sponsoring Agency/ Tourism Office/NGO/LGU	Allocated fund of the organization and NGO	100,000	Knowledgeable tour guides

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	locale/site and environmental protection						
Local Business Opportunities	To create more local businesses/enterprises that will offer further employment opportunities	Partnership with NGO and private organization Seek investment from potential investors/capitalists	As the need arises	Tourism Office/NGO/LGU	Investment/Capital from individual/private sector	N/A	More local businesses
Entrepreneurial Culture	To develop entrepreneurial culture among community residents	To establish cooperative and <i>pasalubong</i> store	N/A	Tourism Office/PO's	Equity capital from the members of the organization	N/A	Well developed entrepreneurial culture
Private and public partnership	To establish private and public partnership with agencies that will provide services for sustainable operations	Partnership with public and private agencies	As the need arises	Tourism Office/Private Agencies	Allocated fund and/or services by the private agencies	N/A	Established private and public partnership

CONCLUSIONS

Based on the findings of the study, the following conclusions were drawn: (1) A typical respondent in this study is aged 56 to 59, male, a high school graduate, has been involved in the business of ecotourism for either 1 to 4 years or 5 to 8 years, and has attended 1 to 2 trainings in ecotourism as of this study. (2) The ecotourism business in Lobo, Batangas has the potentials to survive, grow and continue to be successful with all the stakeholders in it responsibly contributing its share to ensure its sustainability. (3) The members of the people's organizations in the locality who are involved in ecotourism recognize the business prospects and abundant opportunities for growth and development for the community and its residents in the ecotourism sites. (4) The members of the people's organizations are beset by a myriad of problems involving physical, human and financial infrastructures, etc. that could hinder growth and development in ecotourism if left unsolved or disregarded. (5) The respondents' perception of the level of viability of ecotourism based on their own understanding of the phenomenon is not dependent on whether he or she was younger or older, whether he or she was a male or female, and whether he or she was an elementary, high school or college graduate. The respondents with 1 to 4 years of involvement in ecotourism ($x_{1-4} = 3.65$) have higher appreciation of the level of viability of ecotourism in Lobo, Batangas than those with 5 to 8 years of involvement ($x_{5-8} = 3.50$). The more trainings the respondents attend, the more opportunities given them to widen their business horizons while interacting with various resource persons and benchmarking with their fellow trainees or attendees. (6) Regardless of their profile variables, they all similarly strongly agree to the prospects and opportunities of ecotourism in their place that are waiting for them to study and explore with

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the support of national and local government units, non-government organizations and together with local initiatives. (7) Regardless of their profile variables, they all uniformly agree to the various challenges they encountered in their involvement in ecotourism in their locality.

RECOMMENDATIONS

Based on the findings and conclusions of the study, the following recommendations are forwarded: (1) The local government unit together with the people's organizations should encourage the stakeholders in the locality' ecotourism to attend more trainings not only on ecotourism conservation and sustainability but likewise on the entrepreneurial aspects of it by sponsoring such activities. (2) More employment and income from ecotourism can encourage more conservation, but the loss of benefits may signal degradation. Thus, the local government unit, the tourism office and local entrepreneurs in Lobo should sustain its viability by revisiting its development tourism plan and ensuring that the key result areas along marketing, economic and financial aspects are on target. (3) The members of the peoples' organizations ranked promotion of wildlife conservation and creation of employment opportunities 1st and 2nd among the prospects of ecotourism in Lobo. Thus, the goal is to ensure that ecotourism benefits are sufficient to provide incentives for local residents to conserve natural habitat, species and other natural resources. (4) The local government could address the number one identified challenge in the respondents' involvement in ecotourism which was the insufficiency of maintenance fund for infrastructure and facilities through prioritization in its budget allocation or by tapping external sources. (5) Another problem identified was the lack of capacity building of organizational members towards sustainable development. The local tourism office can spearhead this human resource development project in coordination with concerned government agencies like the Department of Environment and National Resources and Department of Agriculture and non-government organizations like the Global Sustainable Tourism Council (GSTC) and the Society for Sustainable Tourism & Development Inc. (SSTDl). (6) The proposed action plan may be reviewed and adopted by the local government and people's organizations for implementation.

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Perception of Secondary School Teachers on Examination Malpractice in Ibadan Metropolis, Ibadan, Nigeria



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ABSTRACT: The study examined the perception of teachers towards examination malpractice in Ibadan metropolis, Ibadan, Nigeria. It ascertained the causes of examination malpractice in the study area and identified ways of curbing related examination malpractice. These were with a view to curbing examination malpractice in the study area. The study adopted a descriptive survey research design. The sample size for the study comprised one hundred (100) teachers selected using simple random sampling technique. An instrument tagged "Perception of Teachers on Examination Malpractice Questionnaire" (PTEMQ) was used for data collection. The data were analyzed using descriptive statistics, mainly frequency counts, percentages, mean and standard deviation. The findings of this study among others revealed that teachers' perception of examination malpractice in secondary schools was good (52%) in the study area. The most reported measures that curb examination malpractice in study area were: prevention of students from bringing prepared answers to the examination halls ($\bar{x} = 3.42$); and intensifying efforts in effective supervision of students during examinations ($\bar{x} = 3.41$); and strict punishment meted out to officials caught with the act of examination malpractice ($\bar{x} = 3.39$). The study concluded that teachers had good perception of examination malpractice in secondary schools in the study area.

KEYWORDS: Examination malpractice, Perception, Teachers, Students, Secondary schools

INTRODUCTION

An examination is a veritable tool for evaluating the understanding of the knowledge gained in a particular task being exposed to. Examination is extremely important not just in educational system, but also for the society at large. It is an activity undertaken to ascertain the level of mastery of certain skills. Hence, it is an activity embarked upon at both formal and informal settings of education since education is the process of facilitating learning, or the acquisition of knowledge, skills, values, morals, beliefs, habits, and personal development for transmission of cultural heritage from one generation to the next. However, in educational institutions, students are groomed through teaching to build required skills in them and promote knowledge of the organized contents of study. Apart from teacher-made examination conducted to quantify the extent to which the curriculum objectives are being achieved, examination bodies also conduct examinations especially at the completion of particular level in order for the award of certification or placement.

Certain learning outcomes are set for the students to build their knowledge and skills, and to check either the students have achieved those learning outcomes or not, the test is designed (Adegoke, 2011). In the early grades, schools are responsible to conduct an exam in school premises and evaluate students' performance. At the higher grades, students are appeared in standardized test. Examination is a formal test of someone's knowledge or aptitude in a certain topic, notably via answering questions or practical exercises, and that it is used to determine how much of a subject matter in a particular field of study the applicant has learned (Aslam, Niazi and Iqbal, 2021).

Examinations are extremely important not just in our educational system, but also for our society (Amadi & Opuiyo, 2018). In Nigeria for instance, different types of examinations are conducted by different authorities, for example, common entrance examination conducted at the completion of primary education for placement into junior secondary school, basic education certificate examination at the end of the junior secondary education, senior secondary school examination, a diploma or degree exams, entrance test among others etc. Students have to pass a particular examination in which they appeared to guarantee

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their achievement of the learnt concepts. However, students have a variety of options for gaining success in these examinations, one of which is cheating in examinations by copying from others or leaking exams papers (Birks, Mills, Allen and Tee, 2020).

Exam malpractice is defined as a purposeful violation of official examination norms intended to give unfairly advantage or disadvantage to a candidate (Aslam, Niazi and Iqbal, 2021). Examination malpractice is any illegal act committed by a student single handed or in collaboration with others like fellow students, parents, teachers, supervisors, invigilators, printers and anybody or group of people before, during or after examinations in order to obtain undeserved marks or grades (Omebe, 2014). Examination malpractice is any form of misbehavior that leads to the alteration of or a tempering with the prescribed ways of conducting examination in any given system. It is a punishable offence which is committed during the process of normal and recognized examination (Amadi and Opuiyo, 2018).

The wide spread and persistence of examination malpractices have been attributed to various reasons. The causes as identified by Petters and Maureen (2014) include fear of failure, craze for certificate, desire of parents to have their children in choice professions and university, pressure on students to pursue courses which they have no aptitude, pressure on teachers who want to gain favour of student and overcrowded sitting arrangement. George & Ukpong (2013) links the increasing rate of examination malpractice to poor teaching, ineffective preparation by students, ill-equipped library facilities, and dubious admission policy.

Also, Akaranga & Ongong (2013) views the cause of examination malpractice to parental upbringing. They opined that because of social status and economic ability, most parents are easily persuaded to bribe their way through for the sole success of their children and self-gratification. The overdependence on educational certificates as a measure of one's knowledge and competence has led to a mad rush by most people for educational certificates through unethical means. The Nigerian society today is characterized by a heavy emphasis on success and wealth without a corresponding emphasis on legitimate means and avenues to be used in achieving the success. The country has become a commercial venture and no longer a place for selfless service (Aslam, Niazi and Iqbal, 2021). Examination malpractice has been a problem affecting the quality of education worldwide and in turn has negative implications on the overall development of a nation. Despite all efforts by professionals in the education sector and policy makers to curb the wide spread of examination malpractice, examination malpractice still prevails in most secondary schools (Akunne, Chigbo-Obasi and Iwogbe, 2021). This unethical behaviour has led to cancellation and seizing of examination results by examination bodies and so requires urgent attention for more serious reason.

Curbing the unethical practices in examination conduct is achievable through a concerted effort of all the stakeholders in education. Researches were and are been conducted on the possible ways of curbing examination malpractices. Mashanyare and Chinamasa (2014) suggested, as a way of reducing examination malpractices, the need for debates on examinations leakages on mass media to raise public awareness. Adeyemi (2010) called for increased efforts on effective supervision of students during examinations, for instance, checking for electronic devices on students before entering examination halls, termination of examination officials and teachers involved in perpetrating examination malpractices so as to deter others from doing the same. Maheka (2015) recommended schools to conduct intensified sensitization to both teachers and learners; the relevant Ministry, through the standards officers and school managers, should intensify monitoring in order to ensure quality delivery of lessons so as to develop confidence in learners; conduct student awareness campaigns and workshops to highlight the importance of the integrity of the education system and also to stiffen and enforce security policies.

Tawiah, Alberta, Bossman and Ata (2015) recommended withdrawal, rustications and imprisonment of culprits while Pana Press (2016) emphasized the idea of arresting the culprits. In Kenya, Muthaa, Muriungi and Njue (2014) recommended that governments should develop policies that ensure examinations are only manned by security officers trained on examination management and that security officers should be training on examinations management and their role expectations. Muchemwa and Dhliwayo (2017) concluded in their study that it is possible to curb examination malpractices at all examination related levels, that is, student, teacher, examination boards, examination storage and transportation by providing necessary facilities, establishment of standing examination policies and decrees, proper training to all involved, awareness campaigns and workshops, arresting and terminating the culprits and abolishing ranking of schools per examination results.

STATEMENT OF THE PROBLEM

Examination is essential to student's academic experience at any educational level because the assessment of students' academic achievement hinges on it. Future progress, as well as employment opportunities of students, depends on the results of the examination taken which invariably means that such examination should be conducted properly to ensure that it tests what it is supposed to test and that the results reflect a candidate's genuine position. Despite the great value placed on examinations, examination misconduct is, however, widespread as researches suggest that examination misconduct is increasing day by day.

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To this end, the perception of teachers who are directly involved in the conduct of examinations on the examination malpractices among the students they teach and interact with, becomes necessary, hence this study.

Purpose of the Study

The main purpose of the study is to investigate the perception of teachers towards examination malpractice in Ibadan metropolis:

The specific objectives of the study are to:

1. examine the perception of secondary school teachers on examination malpractice in Ibadan metropolis;
2. ascertain the causes of examination malpractice among secondary school students in the study area; and
3. Identify ways of curbing related examination malpractice in the study area.

Research Questions

The following research questions guided the study and they are stated below:

1. What are the perceptions of secondary school teachers on examination malpractice in Ibadan metropolis?
2. What are the causes of examination malpractice among secondary school students in the study area?
3. What are the strategies for curbing examination malpractice in the study area?

METHODOLOGY

The study adopted a descriptive survey design since the intention was to determine the perception of public secondary school students towards examination malpractices and examination ethics. The population for the study comprised secondary school teachers in Ibadan metropolis. The sample for this study consisted of one hundred (100) secondary school teachers. Ten schools were selected for this study using simple random sampling technique. In each school, ten (10) teachers were selected using simple random sampling technique giving a total number of 100 teachers that constituted the sample for the study. An instrument tagged "Perception of Teachers on Examination Malpractice Questionnaire" (PTEMQ) was used to collect data for the study. The PTEMQ has four sections. Section A consisted of socio-demographic information of the respondents; Section B contained 10 items on the teachers perception of examination malpractice; Section C consisted 10 items on the causes of examination malpractice and Section D consisted 10 items on strategies for curbing examination malpractice based on Likert rating scale of Strongly Agreed (SA), Agreed (A), Disagree (D) and Strongly Disagree (SD).

A structured questionnaire used as the research instrument was subjected to face and content validity. The research instrument was adequately checked by experts in Test and Measurement and later administered on 40 teachers outside the study area and was validated in which the Cronbach Alpha yielded 0.74. The researchers personally visited the selected secondary schools and sought permission from the school principal to make use of the schools for the study. The researchers then approach the teachers and explain the purpose of the study to them. Thereafter, the researcher administered the questionnaire to the respondents to elicit information on their perception of examination malpractice. The data collected were analysed using frequency count, percentage, mean and standard deviation through (SPSS).

RESULTS

Socio-demographic information of secondary school teachers in Ibadan metropolis.

Table 1: Descriptive analysis of socio-demographic information of secondary school teachers in Ibadan metropolis

S/N	Variables	Frequency (f)	Percentage (%)
1.	Gender		
	Male	52	52.0
	Female	48	48.0
2.	Age		
	Less than 30 years	40	40.0
	30-40 years	58	58.0
	41 years and above	2	2.0
3.	Teaching Experience		
	Less than 10 years	48	48.0
	10-20 years	46	46.0
	21 years and above	6	6.0
4.	Qualifications		
	NCE	32	32.0
	BSc.Ed./BEEd./BSc.	56	56.0
	Others	12	12.0

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Results in Table 1 showed the descriptive analysis of socio-demographic information of secondary school teachers in Ibadan metropolis. From the Table 1, it can be gathered that 52.0% of the respondents are males while the remaining 48.0% are females even as 40.0%, 58.0% and 2.0% are in the age range of less than 30 years, 30-40 years and 41 years and above respectively. Additionally, 48.0%, 46.0% and 6.0% of the teachers had less than 10 years, 10-20 years and 21 years and above teaching experience respectively. Considering educational qualifications, 32.0% qualified with NCE, 56.0% qualified with BSc.Ed./BEd./BSc. and the remaining 2.0% pointed at others in the study area

Research Question 1: What is the teachers' perception of examination malpractice in secondary schools in Ibadan metropolis? In order to answer this research question, items in teachers' perception of examination malpractice considering the 10 items on the perception were scored using the format of "Strongly Agree" (SA) response that was allotted 4 points, "Agree" (A) response, 3 points, "Disagree" (D) response, 2 points and "Strongly Disagree" (SD) response, was allotted 1 point. Responses from individual to each item were computed and minimum and maximum scores obtained in this scale were 10 and 40 respectively. Scores of 10-15 (0.0%-39.9%) = Low Perception; 16-23 (40.0%-59.9%) = Moderate Perception; and 24-40 (60.0%-100.0%) = High Perception.

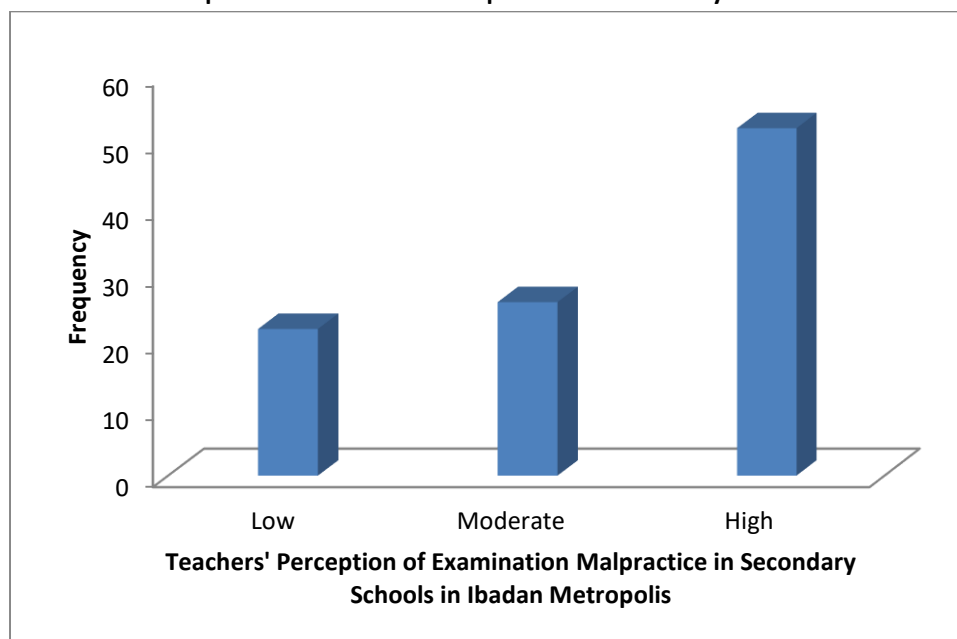
Table 2: Descriptive statistics of the teachers' perception of examination malpractice in secondary schools in Ibadan metropolise

S/N	Perception	Frequency (f)	Percentage (%)
1.	Low	22	22.0
2.	Moderate	26	26.0
3.	High	52	52.0
Total		100	100.0

N = 100

Results in Table 2 showed the descriptive analysis of the teachers' perception of examination malpractice in secondary schools in Ibadan. From the Table 2, it can be deduced that the teachers' perception of examination malpractice in secondary schools is high at 52.0% in the study area. However, 22.0% and 26.0% of the respondents had low perception and moderate perception of examination malpractice respectively in the study area.

Figure 1: Teachers' Perception of Examination Malpractice in Secondary Schools in Ibadan metropolis



Research Question 2: What are the causes of examination malpractice in secondary schools in the study area?

In order to answer this research question, data collected on various causes of examination malpractice considering the teachers' responses to the 10 items in Section B based on Strongly Agree (SA), Agree (A), Disagree (D) and Strongly Disagree (SD) were subjected to descriptive analysis of mean and standard deviation and the results are presented in Table 3.

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Mean value below 2.00 = Not Causes of Examination Malpractice

Mean value of 2.00 and above = Causes of Examination Malpractice

Mean = \bar{x} ; Standard Deviation = SD

Table 3: Descriptive analysis of the causes of examination malpractice in secondary schools in the study area

S/N	Items	\bar{x}	SD
1.	Lack of seriousness of students	3.75	0.48
2.	Inability of parents to provide textbooks	3.03	0.87
3.	Fear of failure	3.38	0.74
4.	Lack of proper supervision during examination	3.21	0.84
5.	Lack of necessary instructional facilities and resources	3.32	0.71
6.	Peer group influence	3.47	0.67
7.	Lack of ability to cope with both social and academic	3.32	0.80
8.	Lack of confidence by the students	3.26	0.72
9.	Scarcity of books in the library	2.98	0.95
10.	Overcrowded sitting arrangement	3.02	0.89

N = 100

Results in Table 3 showed the descriptive analysis of the causes of examination malpractice in secondary schools in the study area. Considering the mean scores, it can be observed from the Table that lack of seriousness of students, inability of parents to provide textbooks, fear of failure, lack of proper supervision during examination, lack of necessary instructional facilities and resources, peer group influence, lack of ability to cope with both social and academic, lack of confidence by the students, scarcity of books in the library and overcrowded sitting arrangement at the mean scores of 3.75, 3.03, 3.38, 3.21, 3.32, 3.47, 3.32, 3.26, 2.98 and 3.02 respectively are the causes of examination malpractice in secondary schools in Ibadan metropolis.

Research Question 3: What are the measures that can curb examination malpractice in secondary schools in the study area?

In order to answer this research question, data collected on various measures that can curb examination malpractice considering the teachers' responses to the 10 items in Section B based on Strongly Agree (SA), Agree (A), Disagree (D) and Strongly Disagree (SD) were subjected to descriptive analysis of mean and standard deviation and the results are presented in Table 4.

Mean value below 2.00 = Not Measures that can Curb Examination Malpractice

Mean value of 2.00 and above = Measures that can Curb Examination Malpractice

Mean = \bar{x} ; Standard Deviation = SD

Table 4: Descriptive analysis of the measures that can curb examination malpractice in secondary schools in the study area

S/N	Items	\bar{x}	SD
1.	Prevention of students from bringing prepared answers to the examination halls	3.42	0.67
2.	Cancellation of affected students' results	3.21	0.61
3.	Cancellation of the affected schools' results	3.03	0.74
4.	Blacklisting of the affected examination centres	3.19	0.69
5.	Making concerted efforts in enhancing discipline among students through counseling services in the schools	3.35	0.72
6.	Full implementation of the examination malpractice decree which provides for the imprisonment of culprits to 21 years jail term	3.05	0.82
7.	Using electronic devices to check candidate before entering examination halls	3.35	0.72
8.	Intensifying efforts in effective supervision of students during examinations	3.41	0.62
9.	Increased emphasis on the use of continuous assessment assessment by schools and examination boards	3.33	0.67
10.	Strict punishment should be meted out to officials caught with the act of examination malpractice	3.39	0.63

N = 100

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Results in Table 4 showed the descriptive analysis of the measures that can be used to curb examination malpractice in secondary schools in the study area. Considering the mean scores, it can be deduced that prevention of students from bringing prepared answers to the examination halls, cancellation of affected students' results, cancellation of the affected schools' results, blacklisting of the affected examination centres, making concerted efforts in enhancing discipline among students through counseling services in the schools, full implementation of the examination malpractice decree which provides for the imprisonment of culprits to 21 years jail term, using electronic devices to check candidate before entering examination halls, intensifying efforts in effective supervision of students during examinations, increased emphasis on the use of continuous assessment by schools and examination boards, strict punishment should be meted out to officials caught with the act of examination malpractice at the mean scores of 3.42, 3.21, 3.03, 3.19, 3.35, 3.05, 3.35, 3.41, 3.33 and 3.39 respectively are the measures that can be used to curb examination malpractice in secondary schools in the study area.

DISCUSSION OF FINDINGS

The results revealed that teachers' perception of examination malpractice in secondary schools in Ibadan is good. This means that it is an undeniable fact that examination malpractices is still very much been practiced despite the campaign against the act. This might also not be unconnected with the fact some teachers are also involved in perpetrating the unholy acts as pointed out by Situma and Wasike (2020) that teachers have been accused of facilitating test misconduct in numerous ways. Teachers give answers to students in the examination hall and even work sums for students to copy rapidly before they are rubbed. Teachers may believe that if the students do not get good marks in examinations, it may result to questioning their teaching activities as well as that of the school management and society will know that they did not provide instruction effectively, which ultimately cause bad appraisal. Therefore, they help students to cheat in examinations or assist them to write answers to protect their own false image (Aslam, Niazi and Iqbal, 2021).

The results further revealed several causes of examination malpractices especially in the study area. Some of the causes identified include lack of seriousness of students, inability of parents to provide textbooks, fear of failure, lack of proper supervision during examination, lack of necessary instructional facilities and resources, peer group influence, lack of ability to cope with both social and academic, lack of confidence by the students, scarcity of books in the library and overcrowded sitting arrangement. This tallied with the submissions of Nwankwo & Nwankwo (2020) and Osadebe & Bini, (2018) that students' attitude also play a significant role in examination misconduct. Because they are either sluggish or suspicious, certain pupils are more likely to cheat than others. Azar & Applebaum, (2020) asserted that youngsters witness and copy what other persons do, whether they are their teachers, friends, parents, relatives, or any person from the society. According to Gentina, Tang and Gu (2017), children are merely replicating what they observe in society. They may have witnessed their parents using money to get admittance, jobs, and other favours, either for themselves or for their children.

On curbing the prevalence of examination malpractices in schools, the results revealed that prevention of students from bringing prepared answers to the examination halls, cancellation of affected students' results, cancellation of the affected schools' results, blacklisting of the affected examination centres, making concerted efforts in enhancing discipline among students through counseling services in the schools, full implementation of the examination malpractice decree which provides for the imprisonment of culprits to 21 years jail term, using electronic devices to check candidate before entering examination halls, intensifying efforts in effective supervision of students during examinations, increased emphasis on the use of continuous assessment by schools and examination boards, strict punishment should be meted out to officials caught with the act of examination malpractice can be adopted to curb examination malpractice in secondary schools. This is in line with the assertion of Adeyemi (2010) who called for increased efforts on effective supervision of students during examinations such as serious searching to check for electronic devices on students before entering examination halls, termination of examination officials and teachers involved in perpetrating examination malpractices so as to deter others from doing the same.

Also, Maheka (2015) supported this view by recommending that schools conduct intensified sensitization to both teachers and learners. He further stated that the relevant Ministry, through the standard officers and school managers, should intensify monitoring in order to ensure quality delivery of lessons so as to develop confidence in learners; conduct student awareness campaigns and workshops to highlight the importance of the integrity of the education system and also to stiffen and enforce security policies.

Tawiah, Alberta, Bossman and Ata (2015) recommended withdrawal, rustications and imprisonment of culprits while Pana Press (2016) emphasized the idea of arresting the culprits. In furtherance, Muthaa, Muriungi and Njue (2014) recommended that governments should develop policies that ensure examinations are only manned by security officers trained on examination management and that security officers should be training on examinations management and their role expectations. Corroborating this finding, Muchemwa and Dhliwayo (2017) also concluded in their study that it is possible to curb examination

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malpractices at all examination related levels, that is, student, teacher, examination boards, examination storage and transportation by providing necessary facilities, establishment of standing examination policies and decrees, proper training to all involved, awareness campaigns and workshops, arresting and terminating the culprits and abolishing ranking of schools.

CONCLUSION

The study concluded based on the findings of the study that the teachers' perception of examination malpractice in secondary schools is high meaning they are well aware of the unethical act perpetrated during examinations. Also, lack of seriousness on the part of students, inability of parents to provide textbooks, fear of failure, lack of proper supervision during examination, lack of necessary instructional facilities and resources as well as peer group influence, are some of the reasons for indulging in the practices. Finally, prevention of students from bringing prepared answers to the examination halls, cancellation of affected students' results, cancellation of the affected schools' results, blacklisting of the affected examination centres, making concerted efforts in enhancing discipline among students through counseling services in the schools and full implementation of the examination malpractice decree are some of the ways to curbing examination malpractices in senior secondary schools.

RECOMMENDATIONS

The following recommendations are put forward based on the findings of the study.

- Students should be well prepared for examinations at all times.
- Teachers are expected to be more vigilant during examination invigilation
- Parents should endeavour to make available every necessary equipment and materials needed to complement the school effort to adequately enhance teaching and learning and to prepare students for examinations without engaging in malpractices
- Government through examination bodies or agencies should put every mercenaries to checkmate the practice of examination malpractices

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Stress, Techno-Pedagogical Skills, and Quality of Life among Faculty of a Local University in Laguna



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ABSTRACT: The study determined the stress, techno-pedagogical skills, and quality of life among faculty of a local university in Laguna. Descriptive correlational research design was employed. The study revealed that the faculty of a local university has a high-level stress along pandemic stress and job-related stress; very high level of techno-pedagogical skills along content knowledge, pedagogical knowledge, and technological knowledge; and have maintained satisfactory quality of life along physical health, psychological well-being, social relationships, and environmental factors. The study revealed that there was no significant association between level of stress and techno-pedagogical skills. However, there was a significant connection noted between level of stress and quality of life, on most of its domains. Lastly, the level of techno-pedagogical skills among faculty can be equated with better quality of life, that the higher the level of techno-pedagogical skills the more satisfied with their quality of life. Essentially, the results yield worthwhile implications to faculty of a local university. Similarly, in managing stress, maintaining their level of techno-pedagogical skills that will assist them in becoming more content and satisfied with many aspects of quality of life.

KEYWORDS: stress, techno-pedagogical skills, quality of life, faculty, local university

INTRODUCTION

The idea of quality of life has become a primary priority in modern society. Even though it is mixed up with living standards, it has recently moved from many angles. Possession of riches does not automatically imply better happiness. Increases in the world's richest countries' standard of living do not appear likely make a meaningful difference in people's quality of life, and they do not necessarily reflect happiness, contentment, or well-being. (Eustress and Distress: Reactivation, 2019).

A person's impression of life in the context of their culture and value systems, as well as their objectives, aspirations, perspectives, norms, and interests, is referred to as quality of life. (Mason et al., 2018). Even while a stress-free living might be considered a good quality of life, each person encounters their own myriad of challenges, hardships, and challenges. These difficulties include personal, psychological, biological, interpersonal, and even professional or work-related stress. (Jhon et al., 2017).

In terms of Covid-19's impact on teachers' quality of life, the worldwide crisis has harmed people's mental, psychological, and physical health. However, it was also said that the current scenario has a modest impact on quality of life, therefore the quality of life of instructors' educators must be highlighted, and repercussions must be supplied with support as they continue to thrive the current situation's impact, (Rabacal et al., 2020).

Stress is one of the most significant challenges faced by all as a result of global pandemic, which affects people from all walks of life. Similarly on the study, that among Filipino school personnel, the quality of life and mental and emotional stress have an adverse connection; as psychological distress and anxiety rise, so do psychological well-being, physical factors, social interactions, and environmental factors, (Clavecillas et al., 2020). Moreover, Filipino teachers' sources of stress include discipline and motivation, professional pain at work and expectations as they do their tasks and obligations, and time management, (Yazon et al., 2019).

Furthermore, all school employees reported the same level of mental anguish and overall quality of life; however, unmarried employees appeared to have more anxiety and stress symptoms than married employees. Moreover, on the study conducted by Gang, (2022) revealed a connection between workplace spirituality and stress, as well as the mediation effect of constructive deviance, which stated that work engagement promotes constructive deviance, thus, influences educators' psychological stress.

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Since then, teachers were already dealing with work-related stress, and additional burden imposed by the pandemic stress was due to the seminars and training required to simply upskill themselves in handling students using the internet so that they could improve their techno-pedagogical skills and offer lectures remotely to their students displaced to their homes and provinces due to lockdowns implemented, (Albrahim, 2020).

In addition, educators are negotiating new technologies, balancing different types of training, and expressing doubts about returning to face-to-face instruction and making teaching considerably more difficult and demanding due to having increased their working hours by working remotely via internet, indicated 86 percent on the effects on their work family balance, (Cardoza, 2021; Lizana et al., 2021). Further, efficient implementation of technologies in education necessitates teachers' prowess, which can entangle the linkage of curriculum requirements, (Tanucan et al., 2021).

There were numerous studies conducted about quality of life particularly the assessment of quality of life based on a comprehensible theoretical framework, established methods, and a variety of applications and quality of life among elders. Recently, the evaluation of quality of life has become useful in a wide range of fields, together with education, attempting to determine the impact of illness/disease, and many other instances. However, there were no study yet conducted among faculty on a local university particularly on stress, techno-pedagogical skills, and quality of life. In addition, there were no studies conducted about the significant relationships among the three variables.

Thus, the study was attempted to assess the level of stress, techno-pedagogical skills, and quality of life among faculty on a local university and addressed issues and concerns of the faculty stress, techno-pedagogical skills, and quality of life and served as a guideline and reference for the local university administrators in the policy making and establishing faculty development programs and activities in maintaining and improving employee's quality of life while achieving the university's mission and vision.

METHODS

Research Design

Descriptive-correlational research design was used specifically in this study as it is the most effective research model for this particular study. The study looked at the level of stress, level of techno-pedagogical skills, and quality of life among faculty at a local university in Laguna. The researcher used this research design to investigate the significance of a relationship between two or more factors or characteristics, (Bermudo et al. 2014, Polka, 2018).

Participants of the Study

The researchers used stratified random sampling to determine 160 faculty from a local university in Laguna. Slovin's formula had been used to extract the data. 114 participants were taken from four colleges at a local university. There are 27 faculty from the College of Computing and Engineering (CCE), 24 from the College of Business Administration and Accountancy (CBAA), 33 from the College of Education, Arts, and Sciences (CEAS), and 30 from the College of Health and Allied Sciences (CHAS). These faculty were teaching at a local university prior to the Pandemic and are currently employed in the Pamantasan ng Cabuyao Academic Year 2021-2022.

Data Analysis

For data processing, the following statistical tools were used, the Weighted Mean was used to calculate the level of stress along pandemic stress and job-related stress and level of techno-pedagogical skills along to content knowledge, pedagogical knowledge, and technological knowledge. For Quality of Life the researcher followed the Scoring of the WHOQOL-BREF for converting raw scores to transformed scores of the four domains such as physical health, psychological well-being, social relationships, and environmental factors all contribute to one's quality of life. Pearson r was used to determine whether there is a statistically significant relationship between respondents' level of stress and techno-pedagogical skills; and between level of stress and quality of life and level of techno-pedagogical skills and quality of life.

Through in-depth literature and related study readings, verification and validation were used to build links that support the findings of this paper. The Cronbach-Alpha reliability test was used to validate the questionnaires and guarantee that a substantial sample of respondents was used.

RESULTS AND DISCUSSION

The study aimed to determine the stress, techno-pedagogical skills, and quality of life among faculty of a local university in Laguna.

Specifically, the study sought answers to the following questions:

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Table 1. Summary Table for the Respondents' Level of Stress

Indicators	Weighted Mean	Verbal Interpretation	Rank
1. Pandemic stress	2.59	High (Agree)	1
2. Job-related stress	2.56	High (Agree)	2
Overall Weighted Mean	2.58	High (Agree)	

Legend: (Strongly Agree/Very High - 4, Agree/High – 3, Disagree/Low – 2, Strongly Disagree/ Very Low – 1)

Table 1 illustrated the summary for the respondents' level of stress along pandemic stress and job -related stress. The respondents' level of pandemic stress ranked 1st, with a weighted mean of 2.59 and a verbal interpretation of "high", while respondents' level of job-related stress ranked 2nd, with a verbal interpretation of "high".

To summarize, the overall weighted mean of 2.58 revealed that faculty of a local university experienced high-level of stress both related due to pandemic and job- related stress which means that they felt that something would occur abruptly, and the students were unable to participate actively during online activities due to internet disruptions and erratic connections.

The findings support the studies that individuals' lives were severely disrupted during pandemic, with daily interaction being replaced by long periods of isolation and loneliness, (Armigate et al., 2020). In addition, many people were terrified of infection and death, worried about their loved one's safety and worried about the future, (Brooks et al. 2020). Furthermore, Cardoza, (2021) mentioned that teachers have been challenged by the new working conditions as a result of pandemic, making teaching considerably more difficult and demanding job in the Philippines since teachers are deeply challenged by the demands of the work and the situations.

Overall, on the study made by Jhon et al. (2017); Riberion et al. (2017); Oducalo et al. (2021); and Yazon et al. (2019), that stress is a circumstance in which a worker's job-related influences move away from normal functions and can contribute to the emergence of job-burn out. Moreover, they asserted that stress may be harmful to one's health. Further to that, the infection risk was regarded as one of half of the professional teachers' sources of stress. Moreover, that due to stress, teachers tend to be less committed in teaching and may experiences job burnout which is characterized by a state of physically and psychologically exhaustion related to work or caregiving activities.

Table 2. Summary Table for the Respondents' Level of Techno-pedagogical Skills

Indicators	Weighted Mean	Verbal Interpretation	Rank
1. Content knowledge	3.44	Very High (Strongly Agree)	1
2. Pedagogical knowledge	3.37	Very High (Strongly Agree)	3
3. Technological knowledge	3.40	Very High (Strongly Agree)	2
Overall Weighted Mean	3.40	Very High (Strongly Agree)	

Legend: (Strongly Agree/Very High - 4, Agree/High – 3, Disagree/Low – 2, Strongly Disagree/ Very Low – 1)

As shown on Table 2, the summary for the respondents' level of techno-pedagogical skills among faculty where the level of techno-pedagogical skills along content knowledge. The overall weighted mean obtained 3.40, revealed that the faculty of a local university has a very high level of techno-pedagogical skills along content knowledge, pedagogical knowledge, and technological knowledge. This means that faculty respondents are techno-pedagogically proficient such that they can draft and develop learning and assessment activities that align with learning goals and objectives, had the ability to motivate students and show enthusiasm and interest while teaching virtually, had the ability to make use of technology effectively in teaching.

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The findings support the study made by Bold et al. (2017); Sen et al. (2022) which states that teachers' decision about components, instructional approaches, assessing student learning feedbacks, and other factors are influenced between content knowledge and pedagogical content knowledge. In addition, on the study conducted by Nami, (2022) which states that through professional development courses promotes teachers' pedagogical knowledge by providing them opportunities for reflection and practice course preparation. Further, in the other study conducted, in the emerging economy in education, technological innovation can be used to incorporate different strategies in teaching practice, thus further improving teachers teaching performance and in order to become competent teachers, they must be familiar with and apply all the necessary pedagogical skills for teaching with technological knowledge, (Gallegos et al., 2022; Tondeur et al., 2019).

Overall, the findings support the studies made by Albrahim, (2020); Sikshanamadira; (2020); and Guru et al. (2019) , since they gained similar results with the attributes or skills of e- moderators defined in five categories such as understanding the online process, technical skills, online communication skills, content expertise and personal characteristics, Further, it was also mentioned that effective online educators should be familiar with the fundamentals of online pedagogy and instructions such learning theories and design. Likewise, technology -based scientific pedagogical approach is an unavoidable requirement for teachers in the rest of Covid-19 era. Lastly, techno-pedagogical competency of teachers is significant to the academic achievement of students, (Guru et al., 2019).

Table 3. The Respondents' Quality of Life

Domains	Mean Transformed Score (0-100)	Verbal Interpretation	Rank
1. Physical Health	64.05	Good (Satisfied)	4
2. Psychological Well-Being	67.85	Good (Satisfied)	2
3. Social Relationships	69.48	Good (Satisfied)	1
4. Environmental Factors	65.35	Good (Satisfied))	3
Average	66.68	Good (Satisfied)	

Legend: less than median (poor QoL/ unsatisfied feeling with physical health and other domains) and those who had score equal or more than medium (good QoL/ satisfactorily feeling with physical health and other domains.

Table 3 illustrates the respondents' quality of life along physical health, psychological well- being, social relationships, and environmental factors. The domain/dimension 3 which is the social relationships with the highest Mean Transformed Scores of 69.48 out of 100 which means that the respondents were satisfied with their personal relationships, as well as with their sex life and satisfied with the support they had gotten from their friends.

Domain 2/dimension 2 which is the psychological well-being with the second highest mean transformed scores of 67.85 out of 100 which means that the respondents had mostly accepted, felt good and satisfied with their body appearance and were very much able to concentrate.

The domain/dimension 4 which is the environmental factors ranked 3rd with the Mean Transformed Scores of 65.35 out of 100 which means that faculty of a local university were satisfied/good and had very much felt safe in their daily lives, healthy with their physical environment, and mostly had enough money to provide their needs as well as mostly had the opportunity for leisure activities.

The domain/dimension 1 which is the physical health ranked 4th with the Mean Transformed Scores of 64.05 out of 100 which means that the faculty were satisfied with their ability to perform daily activities and gained high energy for their daily lives.

To summarize, with the Weighted Mean Transformed Scores of 66.68 out of 100, this indicated that the quality of life among faculty in a local university was satisfied since it is above median even during this pandemic, above all, this implies that despite of struggles and challenges, faculty still had found time to maintain a reasonable quality of life along with social relationships, psychological well-being, environmental factors and physical health.

The results of the study showed similarity in the study conducted that the concept of Quality of Life had become a key goal of the modern world. However, based on the Eustress and Distress: Reactivation, (2019) that resource possession does not always lead to greater happiness. Moreover, increases in the standard of living in the world's richest countries do not appear to make a

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significant difference in people's quality of life, and they do not necessarily indicate happiness and contentment or well-being. Furthermore, quality of life is the subjective assessment of how an individual interacts with the world in the setting that they are now experiencing, particularly during this pandemic moment, (Mason et al., 2018).

In addition, on the studies made by Camara et al. (2017); CIS, (2018); Riberion et al. (2021); and Benevene, (2020), the following dimensions of social relationships, physical health, psychological well-being, and environmental factors all have an impact on faculty quality of life. Since it was noted that social relationships are associated with a reduced level of psychological challenges and shield people from the onset of any depression symptoms, it has been related to a reduced number of psychological issues. Additionally, teachers who had been teaching for a long time had developed a stronger sense of resilience and had a greater ability to build a positive dynamic equilibrium through resources, emotional difficulties, and struggles. Likewise, teachers' physical and psychological health have suffered as a result of the negative influence on their quality of life. Teachers' physical health and psychological well-being are impacted by burnout and attrition. As a result, poor physical health, mental health, and chronic insomnia all contributed to a much lower quality of life. Lastly, in terms of environmental factors, a favorable classroom environment helps teachers and students pay attention, alleviate anxiety, and maintain emotional and social rules. As a result, a positive school climate and healthy surroundings promote teachers' emotional and physical well-being, and a favorable school climate increases faculty and teacher quality of life.

However, on the study conducted about the WHOQOL-BREF Scale, there is no clear cut -off to determine "good or poor Quality of Life or feeling satisfied with physical health and other domains. Thus, it can be classified that faculty who had less than median (poor QoL/ unsatisfied feeling with physical health) and those who had score equal or more than medium (good QoL/ satisfactorily feeling with physical health and other domains, (Singh et al., 2022). In conclusion, the domain scores were scaled in a positive direction, the higher the transformed scores denote higher quality of life, (WHOQOL- BREF).

Table 4. Relationship between the Respondents' Level of Stress and Level of Techno-pedagogical Skills

Stress	Techno-pedagogical skills		
	Content knowledge	Pedagogical knowledge	Technological knowledge
Pandemic stress	r = -0.043 Negligible correlation p = 0.651	r = -0.077 Negligible correlation p = 0.413	r = 0.003 Negligible correlation p = 0.972
Job-related stress	r = -0.035 Negligible correlation p = 0.712	r = -0.079 Negligible correlation p = 0.406	r = -0.048 Negligible correlation p = 0.609
Significance level @ 0.05			

Table 4 showed that the conducted Pearson r correlation analysis generated a computed Pearson r values ranged from -0.077 to 0.003 interpreted as negligible correlation with probability values ranged from 0.406 to 0.972 were greater than the 0.05 significance level. In this case, the decision is failed to reject the null hypothesis, which means there was no significant relationship between the respondents' level of stress and level of techno-pedagogical skills.

This implies that no matter how low or high the level of stress it did not affect their level of techno-pedagogical skills among faculty. Furthermore, this would also mean that majority of the faculty were resilient with stress and frustrations while there is transition on the delivery of instructions.

The results of the study contradicted the findings of the study by Albrahim, (2020) that the infusion of technology may bring discomfort to the teachers especially when dealing with technology-enhanced classrooms. and how to deal with stress and frustrations while making the transition to online learning environment. In addition, Steiner et al. (2021) mentioned the top ranked sources of stress among teachers are teaching in person and remotely at the same time. Further, changes in school's instructional model and other workloads including attending seminar and training to get familiarized with different platforms during the beginning of pandemic since teachers are negotiating new technology as well as balancing different forms of instructions, (Pressley, 2021).

However, it was mentioned that online faculty members require a framework and guidelines that support them improve their abilities, and aid in the design of appropriate training programs. Therefore, continuous training and seminars for teachers must be provided in the technology emerging profession, (Albrahim, 2020).

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Table 5. Relationship between the Respondents' Level of Stress and Quality of Life

Stress	Quality of Life			
	Physical health	Psychological well-being	Social relationship	Environmental factors
Pandemic stress	r = -0.321* Low correlation p = 0.001	r = -0.379* Low correlation p = 0.000	r = -0.133 Low correlation p = 0.159	r = -0.191* Low correlation p = 0.042
Job-related stress	r = -0.348* Low correlation p = 0.000	r = -0.365* Low correlation p = 0.000	r = -0.200* Low correlation p = 0.033	r = -0.329* Low correlation p = 0.000

*Significant @ 0.05

As shown in the table above, for the relationship between the respondents' level of stress and quality of life among faculty of a local university in Laguna, specifically pandemic stress and quality of life along physical health, psychological well-being, and environmental factors, and social relationships along job-related stress with a Pearson r correlation analysis generated a computed values ranged from -0.321 to 0.379 interpreted as low correlation with probability ranged from 0.000 to 0.042 which were less than the 0.05 level of significance. However, on the social relationship along pandemic stress with a Pearson r value of -0.133 with probability value of 0.159 which was greater than 0.05 level of significance. This means there was significant relationship between stress along pandemic stress and job-related stress and quality of life along physical health, psychological well-being, and environmental factors, job related stress along social relationship, however, pandemic stress along social relationship showed no significant relationship.

This implies that the higher the level of pandemic stress and job-related stress the lower the satisfaction of the quality of life along of physical health, psychological well-being, and environmental factors. Furthermore, job related stress had inverse relationship along social relationships which means that the higher the job-related stress the lower the satisfaction along social relationships, however, no matter how high or low the pandemic stress, the quality of life along social relationships remains unaffected. To summarize, this means that in general stress had affected most of the domains of quality of life but not all.

The findings support the study made by Riberion et al. (2017) which states that teachers' well-being has received more attention, owing to a significant increase in sick leave and job deciding to quit across countries and culture as a result teaching is a demanding, more difficult profession that is prone to stress and higher rate of attrition. In addition, it was also stated that perceived stress was significantly has negative correlation association with quality of life specifically with physical health and psychological well-being, which means if the person has a high level of stress, more likely the immune system will be affected they tend to get physically sick and prone to mental exhaustion and depression. Moreover, environmental factors played a significant role in teachers achieving a high quality of life. A positive classroom environment improves attention, reduces anxiety, and upholds emotional and social regulation for both teachers and students, (CIS, 2018). However, the result of the findings on social relationship contradicted the findings of Camara et al. (2017); Alsubaie et al. (2019), and Kim, (2020) that social relationship has positive association with quality of life with three sources of social support such as family, friends and significant others which means that stress can be avoided if you have better social relationship with the people around you. In addition, positive relationships can manifest stress free environment. Furthermore, a positive culture associated with a positive school climate improves the quality of life for both students and teachers, (Kim, 2020).

Table 6. Relationship between the Respondents' Level of Techno-pedagogical Skills and Quality of Life

Techno-pedagogical skills	Quality of Life			
	Physical health	Psychological well-being	Social relationship	Environmental factors
Content knowledge	r = 0.246* Low correlation p = 0.008	r = 0.281* Low correlation p = 0.002	r = 0.214* Low correlation p = 0.022	r = 0.303* Low correlation p = 0.001

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Pedagogical knowledge	r = 0.320* Low correlation p = 0.001	r = 0.300* Low correlation p = 0.001	r = 0.331* Low correlation p = 0.000	r = 0.391* Low correlation p = 0.000
Technological knowledge	r = 0.219* Low correlation p = 0.019	r = 0.240* Low correlation p = 0.010	r = 0.270* Low correlation p = 0.004	r = 0.298* Low correlation p = 0.001
*Significant @ 0.05				

As shown in the table above, Pearson r correlation analysis generated computed values ranging from 0.214 to 0.391 interpreted as low correlation with probability values in the range from 0.000 to 0.022 were less than 0.05 level of significance for the relationship between respondents' level of techno-pedagogical skills and quality of life. This means that domains/dimensions of quality of life along physical health, psychological well-being, social relationships, and environmental factors and techno-pedagogical skills along content knowledge, pedagogical knowledge, and technological knowledge were significant at the 0.05 level of significance. Therefore, rejected the null hypothesis. Furthermore, this implies that the higher the level of content knowledge, pedagogical knowledge and technological knowledge the higher the quality of life along physical health, psychological well-being, social relationships, and environment factors among the faculty of a local university in Laguna. In general, there was a link between respondents' level of techno-pedagogical skills and their overall quality of life.

The findings support the studies made by Dhawan, (2020) ; Favale et al. (2020); and Fernandez et al. (2020) which state that there was the existence of a connection between techno-pedagogical skills along content knowledge, pedagogical knowledge, and technological knowledge and quality of life along physical health, psychological well-being, social relationships, and environmental factors since there are drawbacks to using technological-pedagogical practices because to the current situation such as virtual learning and teaching, an imbalance due to insufficient similitude. Similarly, the psychological well-being such as the level of anxiety and silent attitude toward using the latest technology in teaching it was revealed which played a huge part in obstructing techno-pedagogical practices. As a result, technologies have caused mental problems due to a variety of factors such as lack of training and herd mentality to use them.

However, these endeavors that teachers exhibit anxiety issues or stress as a result of their information technology in the classroom, and digital literacy has become effective venue in education and teachers' professional development, thus that virtual professional development supports the challenges that teachers face in the current digital age, and that teaching-based professional development can improve teachers' digital learning identities that can improve their quality of life. (Zimmer et al., 2022) Moreover, on the study conducted that those teachers had low mean Quality of Life scores particularly on Mental Component Summary due to adverse effects and detrimental effects of teaching digitally and remotely, (Lizana et al., 2021).

CONCLUSIONS

That the faculty of al local university experienced high level of stressed both related to pandemic and job-related stress due to current situation brought by many uncertainties of Covid-19 as well as the fear of getting infected by the deadly virus and the attitudes of students during online due to intermittent internet signals. They were techno-pedagogically proficient since they had the ability to express various strategies and techniques about the course being taught, their expertise helped them develop their deep understanding of the corresponding curriculum, they have had very high level of specialized knowledge displayed for effective learning environments to diverse students. Lastly, they were technologically proficient in which they understood the basic computer functions, operations, and other online platforms. Moreover, respondents' quality of life along physical health, psychological well-being, social relationships, and environmental factors were satisfied because they maintained good physical health despite of pandemic and threat on their health, they have mostly accepted their body appearance, they were satisfied with their personal relationships, sex life, and to the support they have gotten from their friends, and lastly, had very much felt safe in their lives, satisfactorily healthy with their physical health.

The results showed that faculty's level of stress has nothing to do with their level of techno-pedagogical skills, that despite of their anxieties, and fear felt they will continue to be techno-pedagogically proficient in order to perform their duties and responsibilities in the delivery of instruction. On the other hand, there was a connection between the level of stress and quality of life more particularly the physical health, psychological well-being and environmental factors, however pandemic stress had nothing with the social relationships. Overall, low level of stress among faculty assured good quality of life in most of its domains.

Furthermore, there was a significant relationship between level of techno-pedagogical skills and quality of life. Thus, the higher the level of techno-pedagogical skills the better the quality of life among faculty.

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Lastly, there is a need to continuously implement the action plan to improve, and enhance on managing stress, sustain and maintain the level of techno-pedagogical skills and sustain the quality of life among faculty of a local university in Laguna.

FUTURE DIRECTIONS

The investigation, however, has some limitations, most notably the sample size, which was limited to the faculty of a local university in Laguna during the Academic Year 2021-2022. It is proposed that future researchers conduct a similar study with such a larger number of respondents to optimize generalization. Other employees of the local university, as well as other variables, may be considered for a more comprehensive picture of the interplay of the variables. On a practical level, the study's findings have important impacts for faculty at a local university as a whole, particularly in terms of stress and quality of life, as well as degree of techno-pedagogical skills and quality of life. A knowledge of the links between stress, techno-pedagogical skills, and quality of life were determined to assist faculty in better managing stress, keeping their techno-pedagogical skills, and enhancing and sustaining their quality of life's satisfaction. Thus, stress management and techno-pedagogical skills will assist faculty at a local university in becoming more content and satisfied with many aspects of quality of life.

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Wellbeing, Online Course Delivery, and Learning Loss of College Students in a Local University in Laguna



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ABSTRACT: The purpose of the study was to determine the manifestation of wellbeing, the attitude toward online course delivery, and the learning loss among college students at a local university in Laguna and the relationship between these variables, which are crucial during the pandemic delivery of academic instruction. In this study, the descriptive correlational methodology was employed. The study found that college students had a moderate level of manifestation of the domains of wellbeing, a positive attitude toward online course delivery, and a high level of learning loss. Correlations suggested that the more domains of wellbeing a student manifests, the more favorable their attitude toward online course delivery and the less learning loss will be encountered. The results have considerable consequences for the new form of academic delivery at the local institution. Similarly, understanding the relationship between the students' wellbeing, the university's online course delivery, and the resulting learning loss aids the academic institution in implementing the new form of online learning without jeopardizing the students' wellbeing and minimizing learning loss.

KEYWORDS: descriptive correlational study, wellbeing, online course delivery, learning loss, college students, local university

INTRODUCTION

In the context of the pandemic, terms such as lockdown, social distancing, face mask, and new normal have defined the last two years. On January 30, 2020, the World Health Organization (WHO) declared the SARS-CoV-2 epidemic an International Public Health Emergency, then a global pandemic on March 11, 2020. Since then, the virus has wreaked havoc on individual private lives, economies, scientific communication, and the environment. Even the educational system was not spared.

The Covid-19 pandemic has caused considerable interruptions and modifications to the education of the student population. Worse, many of these modifications are not intended to increase educational quality and equity. In response to the unexpected arrival of the pandemic and accompanying school closures, educators and academic institutions around the world exerted enormous efforts to adapt and innovate. Due to the current circumstance, these adjustments had to be done immediately (Zhao & Watterston, 2021).

The change from on-site to online education has substantially affected the individual's wellbeing. Individuals' anxiety levels increased, and as a result, their behavior altered. Fear of infection has had a detrimental effect on the wellbeing of young people, which has been aggravated by unanticipated isolation and online learning. The pandemic has had a negative effect on mental health, particularly among individuals who lack job security or who are exposed to significant dangers, such as the prospect of losing one's work or being unable to find another, such as young people still in school. The COVID-19 pandemic has had several short-term detrimental consequences on young people's mental health, including social isolation and the near-total stoppage of all social activities, as well as school, job, and training. Predictions of a large-scale economic disaster might be detrimental to the psychological wellbeing of children (Butnaru, et al., 2021).

Mateo reported in September 2020 that 748 of 14,435 private educational institutions in the Philippines ceased operations for the academic year 2020-2021 when the pandemic began on 2020, affecting roughly 3,233 teachers and 40,335 students. Due to the potential of a COVID-19 pandemic, face-to-face classes for the balance of the year have been suspended. This spurred schools to create strategies for distant learning, such as online or modular instruction. Nevertheless, the change to online education affected the students. According to Chakraborty et al. (2020), students believe they study more effectively in a physical classroom and that online education is unpleasant and negatively affects their health and social lives.

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According to more than half of K-12 public school teachers, the pandemic has resulted in a significant loss of academic and social-emotional development for their students. Comparing the current year to previous years, virtually all educators stated that their students had experienced some learning loss. The majority of educators felt that their students' social and emotional development had fallen behind by more than three months (Dickler, 2021). Another research done between April and June of 2021 in 165 countries, including 7,000 replies from the Philippines, indicated that 72% of teachers reported declining academic performance among children from poor homes during the epidemic. In the Philippines, the most significant element was poverty, which also represented the digital divide (Dumlao-Abadilla, 2021).

During the compilation of the current study, several gaps in the collected literature and studies were discovered. There are few studies on the relationship between student wellbeing, online course delivery, and learning loss in the Philippines. Similarly, there have been few studies on perceived learning loss, especially in higher education institutions. In addition, few studies have been undertaken on the variables relating to the investigation site, which is a local institution.

Consequently, the objective of this study was to assess the wellbeing, perceptions of online course delivery, and degree of learning loss among college students at a local university. The study's findings guided the formulation of action plans to enhance the wellbeing of students, their attitude toward online course delivery, and the prevention of learning loss.

METHODS

The researcher employed the descriptive-correlational method since this method was suitable to determine the relationship between the wellbeing, the online course delivery, and the learning loss of the students in a local university in Laguna.

Descriptive research is used to describe a population's characteristics. It collects data to answer what, when, and how inquiries about a population or group. It doesn't explain why something happens or what causes it. Descriptive research is used to describe individuals, events, or conditions in their natural setting. The researcher does not modify any of the variables; but, they simply describe the sample and/or the variables. Although descriptive research can investigate several variables, it is the only design that can examine only one variable (Siedlecki, 2020). According to Creswell, correlational research is a non-experimental quantitative approach in which the researcher uses correlational statistics to assess and characterize the degree of relationship between variables or sets of scores and then they try to find links between the respondents' attributes and their reported behaviors and opinions (Asenahabi, 2019).

The responses of the study's participants were used to gather empirical data. The primary data sources were 362 college students from a local university in Laguna.

The study population was 5904 college students from a local university – Pamantasan ng Cabuyao. The actual sample of the study was 362 students computed using Slovin's formula and was chosen from the four colleges across all 12 programs through a stratified random sampling technique. The distribution of the respondents was as follows: BS Psychology, 54; BS Accountancy, 21; BS Business Administration major in Financial Management, 36; BS Business Administration major in Marketing Management, 32; BS Computer Science, 10; BS Information Technology, 36; BS Nursing, 36; BS Electronics Engineering, 21; BS Industrial Engineering, 43; BS Computer Engineering, 14; Bachelor in Elementary Education, 14; and Bachelor of Secondary Education, 45.

The researcher used standardized, adapted, and self-made questionnaires. Part I focused on the respondents' wellbeing using the instrument called The EPOCH Measure of Adolescent Wellbeing. The instrument was divided into the five different positive characteristics that support higher levels of wellbeing: engagement, perseverance, optimism, connectedness, and happiness. Part II focused on the perception of the online course delivery using the Community of Inquiry Survey Instrument. The instrument was composed of 34 items and divided into three major categories: teaching presence, social presence, and cognitive presence. The last part focused on the level of learning loss, a self-made research instrument. Since the instrument was self-made, it was presented to a panel of experts for validation. It was also tested for reliability using Cronbach's Alpha, which resulted in a reliability index of 0.953.

The researcher sought for the approval of the president of the local university to survey the respondents. After the request was approved, questionnaires were delivered to respondents using an online form. The respondents were guaranteed that the researcher would treat the information they provided with utmost confidentiality as part of the study's ethical considerations.

The respondents were asked to answer three types of online questionnaires using google form by choosing the appropriate answer for every statement that best represents their wellbeing, their attitude on the online course delivery, and the level of their learning loss. The responses to the online forms were subsequently counted, tabulated, and subjected to statistical treatment with the guidance of the researcher's statistician. Statistical tools were used for the treatment of data, notably the weighted mean and ranking, to determine the (a) the students' manifestation of wellbeing; (b) the students' attitude toward the

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online course delivery; and (3) the students' level of learning loss. Pearson r Moment Correlation Coefficient was used to determine if there is a significant relationship between the respondents' (a) manifestation of wellbeing and the attitude toward the online course delivery, (b) manifestation of wellbeing and the level of learning loss, and (c) attitude on the online course delivery and the level of learning loss.

RESULTS AND DISCUSSIONS

The following tables and textual presentations discuss the level of manifestation of the domains of wellbeing, the attitude toward online course delivery, and the level of learning loss, as well as their relationship:

Table 1. The Respondents' Overall Wellbeing

Components	Weighted Mean	Verbal Interpretation	Rank
1. Engagement	2.99	Moderate Manifestation	5
2. Perseverance	3.43	Moderate Manifestation	2
3. Optimism	3.41	Moderate Manifestation	3
4. Connectedness	3.47	Moderate Manifestation	1
5. Happiness	3.20	Moderate Manifestation	4
Overall Weighted Mean	3.30	Moderate Manifestation	

Legend: (Very High Manifestation – 5, High Manifestation – 4, Moderate Manifestation – 3, Low Manifestation – 2, Very Low Manifestation – 1)

Table 1 gives a composite summary of the manifestation of the components of respondents' wellbeing with an overall weighted mean of 3.30. This means that overall, the respondents had a moderate level of manifestation of wellbeing. Among the components, Connectedness ranked 1st with a weighted mean of 3.47, followed by Perseverance with a weighted mean of 3.43, Optimism, with a weighted mean of 3.41, Happiness with a weighted mean of 3.20, and ranked 5th and last is Engagement with a weighted mean of 2.99.

During the pandemic, physical isolation was imposed to prevent the spread of the Covid-19 virus; nevertheless, this distance or separation inhibits people's in-person social ties, which is worrying given that social connection is essential to wellbeing, according to research. However, individuals have new opportunities to connect, such as through digital interactions (Okabe-Miyamoto et al., 2021). In contrast, the EdWeek Research Center discovered in 2021 that student motivation and morale had deteriorated due to the pandemic. Fifty percent of the students reported reduced motivation, and forty-nine percent reported lower morale compared to the past. This reinforces the conclusion that the mean average of engagement is the lowest contributor to the overall wellbeing of respondents (Toth, 2021).

While completing their program under pandemic conditions, students face several obstacles, expectations, and setbacks that influence their wellbeing including different social and economic demands, balancing education, family, and work responsibilities, social isolation, and other experiences. Students at all educational levels and in all disciplines must have adequate and timely resources to meet these demands and succeed in their pursuit of education. These resources assist in satisfying the needs of students, minimizing burnout and stress while promoting engagement in learning, meaning-making, and life satisfaction (Plakhotnik et al., 2021).

According to a study, wellbeing, engagement, and learning all positively influence one another. The study concludes that schools and education systems can achieve synergy by focusing on all three components concurrently. The report provides excellent encouragement for educational systems, schools, and teachers to enhance students' social and emotional development so that each student can realize their maximum learning potential. The report revealed the relationship between wellbeing, school involvement, and academic achievement (Evans-Whipp et al., 2018).

According to the World Happiness Report, psychological and social aspects are among the protective variables for positive wellbeing during COVID-19. Social protective factors include the quality and number of connections, connectedness and positivity

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resonance, and prosocial activities. Increased experiences of connectedness before and during the pandemic were associated with better levels of life satisfaction, whereas increased feelings of loneliness were associated with lower levels of life satisfaction. Similarly, higher levels of relatedness (i.e., connectedness) were associated with improved wellbeing during COVID-19, and related research demonstrated that having a team of people rather than a single close individual to rely on for support may be protective of wellbeing during the pandemic (Okabe-Miyamoto, Lyubomirsky, 2021).

Table 2. The Respondents' Attitude on Online Course Delivery

Indicators	Weighted Mean	Verbal Interpretation	Rank
1. Teaching presence	3.14	Positive	2
2. Social presence	2.91	Positive	3
3. Cognitive presence	3.15	Positive	1
Average	3.07	Positive	

Legend: (Strongly Agree/Very Positive – 4, Agree/Positive – 3, Disagree/Negative – 2, Strongly Disagree/Very Negative – 1)

The respondents' attitude toward the online course delivery was positive, with an overall weighted mean of 3.07, as shown in Table 2. The cognitive presence ranked 1st with a weighted mean of 3.15, followed by the teaching presence with a weighted mean of 3.14, and lastly, the social presence with a weighted mean of 2.91. This indicates that respondents value the quality and quantity of critical thinking, collaborative work, and meaning construction in an online setting and that someone is fully responsible for the design, facilitation, and direction of all online processes to achieve worthwhile learning outcomes.

During the COVID-19 epidemic, Meda et al. (2021) explored how certified online teachers established social, cognitive, and teacher presences in their online classes. Students' involvement, critical thinking, self-directed learning, and constant engagement were found to be vital for their distance learning. The study found that developing the three components of a community of inquiry enhances students' learning experiences and enables teachers to react to the diverse learning needs of all students in an online community.

A study was undertaken on the impact of online education on the mental health of college students. Among the noteworthy findings of the study was an increase in mental health issues among students. This is due to the lack of engagement with peers and instructors, the difficulty of using online platforms, the absence of aid and counseling, and the presence of numerous distractions. The inability to communicate with peers and teachers is a significant source of stress for students. Despite providing a solution to the pandemic of lockdown to learning, online learning has been shown to cause severe stress (Akpnar, 2021). Another quasi-experimental study investigated students' perceptions of a community of inquiry through online learning activities based on the notion of a community of inquiry. Due to the pandemic of COVID-19, the research was undertaken simultaneously. The experimental group was instructed utilizing the community of inquiry approach, while the control group was instructed through direct instruction and question-and-answer sessions. The experimental group outperformed the control group in terms of cognitive and teaching presence. In terms of social presence, there was no substantial difference between the groups. Overall, experimental students did better in the community of inquiry than control students (Aslan et al., 2021).

Due to the COVID-19 outbreak, Australian schools closed in early 2020, forcing students to learn remotely. The study sought to investigate how instructors developed and implemented mathematics learning programs for their students, the problems they faced, and how motivated or engaged their students were. Teachers were concerned about catering to all students and monitoring their development and participation in tasks. Most students enjoyed remote learning, except for the lack of ability to learn mathematics with and from classmates (Kalogeropoulos et al., 2021).

Table 3. The Respondents' Level of Learning Loss

Indicators	Weighted Mean	Verbal Interpretation	Rank
1. Ask questions or participate in class discussions.	2.06	High (Sometimes)	23
2. Make your own class presentation.	2.04	High (Sometimes)	22
3. Make two or more drafts before submitting a paper or assignment.	2.00	High (Sometimes)	21

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4. Work on a paper or project that requires combining ideas or information from multiple sources.	1.66	Very High (Seldom)	3
5. Come to class prepared and with all readings and homework completed.	1.94	High (Sometimes)	19
6. Collaborate with other students on class tasks.	1.65	Very High (Seldom)	2
7. Collaborate with classmates outside of the LMS to complete an assignment.	1.83	High (Sometimes)	12.5
8. Utilize an electronic medium (Internet, chat group, etc.) to discuss an assignment or to complete it.	1.51	Very High (Seldom)	1
9. Discuss homework with the instructor.	2.15	High (Sometimes)	24
10. Discuss concepts from readings or classes with other faculty members.	2.41	High (Sometimes)	25
11. Discuss ideas from readings or classes with your classmates.	1.87	High (Sometimes)	15
12. Memorize information, ideas, or approaches from classes and readings so that they can be repeated in a similar format.	1.92	High (Sometimes)	18
13. Analyze the fundamental parts of a concept, event, or theory, such as thoroughly investigating a specific case or situation and considering its components.	1.79	High (Sometimes)	8
14. Create new, more complicated interpretations and relationships by synthesizing and organizing ideas, information, or experiences.	1.83	High (Sometimes)	12.5
15. Make value judgments regarding information, arguments, or procedures, such as reviewing how others acquired and interpreted data and evaluating the validity of their conclusions.	1.83	High (Sometimes)	12.5
16. Apply theories or concepts to real-world problems or situations.	1.96	High (Sometimes)	20
17. Obtain job-related knowledge and skills.	1.91	High (Sometimes)	16.5
18. Write clearly and effectively.	1.80	High (Sometimes)	9.5
19. Speak clearly and effectively.	1.91	High (Sometimes)	16.5
20. Think critically and analytically.	1.80	High (Sometimes)	9.5
21. Use computing and information technology.	1.84	High (Sometimes)	12.5
22. Collaborate effectively with others.	1.71	Very High (Seldom)	5
23. Learn effectively on your own.	1.75	High (Sometimes)	6
24. Self-evaluation to improve self-awareness.	1.68	Very High (Seldom)	4
25. Participate in research projects.	1.76	High (Sometimes)	7
Average	1.87	High	

Legend: (Almost Always/Very Low – 4, Often/Low – 3, Sometimes/High – 2, Seldom/Very High – 1)

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It is shown in Table 3 that the students had high learning loss, as evidenced by the obtained overall weighted mean of 1.87. The very high learning loss indicators imply that respondents were having difficulty using electronic media during the new learning mode to finish an assignment or work on a paper integrating information from numerous sources. The still-existing pandemic norms on social isolation limit students' physical contact with one another, as does the problem with the digital divide for online connectivity. The high learning loss indicators, on the other hand, suggested that respondents depended heavily on their instructors to grasp their lessons and to provide input during online class discussions to limit learning loss.

The findings support the study of Haser et al. (2022). They found that existing disparities and students' limited or lack of access to the instructor, learning environment, and learning materials were the primary causes of learning loss among Turkish middle school students. Although teachers created ways to engage students in teaching and learning interactions, the effects of disparities and access to learning resources were mitigated by students' participation, teaching approaches, and family socioeconomic position and involvement.

Donnelly et al. (2021) conducted an early systematic review on pandemic-related learning losses. Researchers are concerned about the impact of Covid-19 on student learning development and, in particular, whether students have experienced learning loss. Between March 2020 and March 2021, the authors examined all evidence of reported learning loss. That being said, eight studies were found, seven of which showed student learning loss, while one showed student learning improvements in a subgroup. Participants in the remaining studies gained more knowledge. The research found that certain student groups suffered more learning deficits than others. Increasing the number of investigations, geographical focus, and student observation is considered to be necessary.

Engzell et al. (2021) used national exams in The Netherlands that were given before and after a lockdown as a natural experiment to determine how school closures affect students' learning. The Netherlands is an interesting "best-case" scenario because it has a short lockdown, fair funding for schools, and the highest broadband access rates in the world. Even though the conditions were good, it was found that students who learned from home made little or no progress. Most of the learning loss was seen in students from poor homes, and it was thought that the loss might be even more significant in countries with worse infrastructure or longer school breaks.

Table 4. Relationship between the Respondents' Wellbeing and Attitude on the Online Course Delivery

Wellbeing	Online course delivery		
	Teaching	Social	Cognitive
Engagement	r = 0.153** Low correlation p = 0.004	r = 0.222** Low correlation p = 0.000	r = 0.259** Low correlation p = 0.000
Perseverance	r = 0.194** Low correlation p = 0.000	r = 0.216** Low correlation p = 0.000	r = 0.288** Low correlation p = 0.000
Optimism	r = 0.187** Low correlation p = 0.000	r = 0.206** Low correlation p = 0.000	r = 0.260** Low correlation p = 0.000
Connectedness	r = 0.190** Low correlation p = 0.000	r = 0.174** Low correlation p = 0.000	r = 0.197** Low correlation p = 0.000
Happiness	r = 0.239** Low correlation p = 0.000	r = 0.251** Low correlation p = 0.000	r = 0.293** Low correlation p = 0.000
**Significant @ 0.01			

As observed from the data in Table 4, there was a significant relationship between the respondents' wellbeing and their attitude on online course delivery. The Pearson r values ranged from 0.153 to 0.239, interpreted as low correlation, and were obtained with a probability value of 0.000 for all indicators which were less than the 0.01 significance level. This means that the more the respondents manifest the domains of wellbeing, the more positive is their attitude on the online course delivery.

Alibudbud (2021) reached a similar conclusion when he stated that the negative mental health repercussions of online learning among students include increased anxiety and absenteeism, which can be attributed to increased demand for new

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technology skills, productivity, and information overload. The COVID-19 pandemic exacerbated these repercussions by shifting educational institutions away from face-to-face activities and toward predominantly online learning modes to combat the spread of COVID-19. Given these factors, a digital divide caused by socioeconomic inequities may result in mental health disparities among students during the pandemic.

Another study supported by the findings was the study conducted by Walters et al. (2021). They found that high levels of self-reported focus, engagement, learning capacity, and self-worth through learning were linked to high mental wellbeing levels. Notably, online education is connected to a drop in students' concentration and perceived capacity to study and a decline in their wellbeing.

Mustika et al. (2021) discovered that students had moderate to high degrees of positive perception of online learning, high levels of positive emotions, and average levels of negative emotions, according to their findings. It was discovered that there were statistically significant disparities between groups based on the gender, year of study, and academic program of students. Student wellbeing was significantly predicted by almost all online learning environment features, with personal relevance and evaluation and assessment being the two most important predictors of wellbeing.

Table 5. Relationship between the Respondents' Wellbeing and Level of Learning Loss

Indicators	Pearson r	p-value	Interpretation
Engagement	-0.268** Low correlation	0.000	Significant
Perseverance	-0.357** Low correlation	0.000	Significant
Optimism	-0.338** Low correlation	0.000	Significant
Connectedness	-0.311** Low correlation	0.000	Significant
Happiness	-0.297** Low correlation	0.000	Significant
**Significant @ 0.01			

Table 5 shows the relationship between the respondents' wellbeing and learning loss. As shown in the table, there was a significant relationship between the respondents' manifestation of wellbeing and the level of their learning loss. The Pearson r values ranged from -0.268 to -0.357, interpreted as low correlation, and were obtained with a probability value of 0.000 for all indicators which were less than the 0.01 significance level. This means that the more the respondents manifest the domains of wellbeing, the less learning loss will be experienced.

It is crucial to emphasize that changes in the emotional wellbeing of students throughout the COVID-19 pandemic are not independent of their academic performance. According to a survey, more than half of high school and college students are concerned about their mental health as a result of the COVID-19 pandemic. As children of various ages, races, and geographic locations return to school, they feel the effects of these interruptions on mental health and learning loss. Students have lost much more than just academic knowledge and interpersonal relationships. According to research, students who are exposed to such events have poorer academic performance, shorter school days, and fewer educational and employment opportunities. Since the onset of the pandemic, students have reported an increase in mental health issues such as social disengagement, self-isolation, anxiety, and sadness (mindfulphilanthropy.org, 2021).

In addition to catching up on lost learning, many countries have put in place special measures to promote the wellbeing of their students. There was recognition of the link between wellbeing and learning outcomes. Some stated that investing in learners' wellbeing was critical to ensure that they are resilient, able to cope with adversity and thus catch up on missed learning. Many had mentioned specific attempts to provide psychosocial support to children and young people in recognition of the toll that the pandemic has taken on their emotional wellbeing (UNESCO, 2021).

When Italy's pandemic suddenly forced schools to switch to online learning platforms, a study was conducted to determine what factors impacted the quality of teaching and learning and general human comfort and wellbeing. In the survey, some findings included a lack of engagement with colleagues and the need for several gadgets. An inquiry into the relationships and connections between specified parameters and the characteristics of products/interactions/environment during eLearning courses could serve as a basis for future research and optimization. (Alessandro et al., 2021).

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Table 6. Relationship between the Respondents' Attitude on the Online Course Delivery and the Level of Learning Loss

Indicators	Pearson r	p-value	Interpretation
Teaching presence	-0.333** Low correlation	0.000	Significant
Social presence	-0.458** Moderate correlation	0.000	Significant
Cognitive presence	-0.535** Moderate correlation	0.000	Significant
**Significant @ 0.01			

Table 6 reveals a significant relationship between the respondents' attitude toward online course delivery and the level of learning loss. The Pearson r values -0.333, -0.458, and -0.535, as a low correlation for teaching presence and moderate correlation for both social and cognitive presences, were obtained with a probability value of 0.000 for all indicators which were less than the 0.01 significance level. This means that the more positive the respondents' attitude toward the online course delivery, the lower is their learning loss.

According to a March 2020 RAND Corporation survey, fully remote students experienced 90 percent less instructional time than their face-to-face or hybrid counterparts (those with a combination of in-person and remote instruction). According to a study conducted by MMS for GENYOUth Insights in Spring 2021, students are experiencing a diminished learning experience in a distant situation. Sixty-eight percent of students reported that it was more challenging to concentrate and recall information during remote learning. 53% of students believe the pandemic has had a "significant" influence on their academic preparation, and 30% say they are not studying or keeping up with their coursework before the pandemic. Remote learning made it harder to absorb knowledge and focus; there were no hands-on learning choices; it was difficult to seek individual guidance; there was too much solo work; and too many distractions (MMSEducation, 2021).

On the contrary, Spitzer et al. (2021) reported the favorable impact on academic achievement using online instruction. Closing schools due to the rapid growth of COVID-19 endanger young children's education and widens the educational gap. Over 2,500 K-12 students computed over 124,000 mathematical problem sets before and during the closure in 2020, and their performance improved compared to the year before. Analyses also demonstrated that low-achieving students improved more than high-achieving students, narrowing performance disparity. Online learning environments may be beneficial in avoiding educational losses related to school closures now and in the future.

CONCLUSION

The respondents' overall manifestation of wellbeing was characterized by "Moderate Manifestation," with the social connection being regarded as crucial for wellbeing and engagement being rated as the lowest essential component of their overall wellbeing. The respondents' attitude toward the online course delivery was "positive". They value the quality and quantity of cognitive activities in an online setting and the presence of the instructor who is in charge of the design, facilitation, and direction of all online activities to accomplish worthwhile learning outcomes. However, the respondents' learning loss was "high". Respondents reported having difficulty using electronic media or finishing an assignment or working on papers that combined material from multiple sources utilizing electronic media. The social isolation, physical and online, contributed to the loss of learning. Moreover, the more the respondents manifest the domains of wellbeing, the more positive their attitude toward the online course delivery, and the lower their learning loss.

FUTURE DIRECTIONS

The current investigation has certain limitations, specifically regarding the respondents' location and level of education. The research centered on a single local university and college students. Future researchers are encouraged to undertake a similar study with respondents from other local and private institutions to comprehend further and generalize the results of this study. The digital gap, family economic status, and the type of learning management system (LMS) utilized to deliver online courses are other variables that can be included in the study for a complete picture of academic delivery and performance during the pandemic. For a better understanding of the interplay of the variables, faculty members' perspectives can be examined. On the practical side, the results of the conducted study presented significant implications to higher education institutions for the delivery of online courses without jeopardizing the wellbeing of students and minimizing learning loss. Similarly, understanding the interaction of the variables enables students to be attentive to their wellbeing for improved academic performance and reversing learning loss.

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Dean's Visionary Leadership, Institution's Academic Culture and Faculty Performance of a Hei in Laguna

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ABSTRACT: This study attempted to determine the dean's visionary leadership, institution's academic culture, and faculty performance in the higher education institution in Laguna. The results or the findings of the study served as realization of the current status of the visionary leadership, academic culture, and faculty performance of the university. The study was conducted in Pamantasan ng Cabuyao. It is a local university located in Katapatan Subdivision, Brgy. Banay-banay, Cabuyao, Laguna. The respondents were the 361 college students of the mentioned higher educational institution for Academic Year 2021-2022. The researcher utilized the descriptive-correlational research design which was the most effective research model to use for this particular study. The research design determined the dean's visionary leadership, institution's academic culture, and level of faculty performance of a higher educational institution in Laguna. The findings showed that a significant relationship was noted in the dean's visionary leadership and the institution's academic culture; in the dean's visionary leadership and the level of faculty performance; and in the institution's academic culture and the level of faculty performance. It was therefore concluded that the more effective the dean's visionary leadership, the more positive the institution's academic culture; that the more effective the visionary leadership, the higher the level of faculty performance; and that the more positive the institution's academic culture, the higher the level of faculty performance.

KEYWORDS: Descriptive Correlational Study, Quantitative Research, Visionary Leadership, Academic Culture, Faculty Performance

INTRODUCTION

A leader is someone who sets goals and then helps people achieve them by utilizing their skills. The finest leaders understand their employees and are more aware of their strengths than of their flaws. Great leaders are aware of their own and others' flaws; they just recognize that their competitive advantage resides in their strengths. Nwachukwu, Chladkova, Zufan, & Olatunji (2017) stated that good leaders are seen as inspiring and empowering their followers to experience growth and change in the organizational function by considering the relevance of the institution's vision or mission. In the study Alegado (2018), it was stated that the concept of teacher leadership still struggles to thrive in school organizations. It emphasized two factors that make it difficult for teacher leadership to flourish: the traditional 'principal-oriented' nature of leadership, which is deeply ingrained in the system, and the lack of leadership training and teacher categorization. These circumstances severely limit the role of instructors in the classroom. Furthermore, in the study of Alegado (2018), it demonstrates that using teacher leadership in the classroom can help shape the culture of their schools, advance student learning, and influence practice among their peers.

Visionary leadership is defined as a leadership style that aims to provide direction and meaning to work and efforts that must be done collaboratively by members of the company by focusing on a clear vision (Sunarto, Tanjung, & Ellesia, 2020). In the study of Prestiadi, Zulkarnain, & Sumarsono (2019), it was stated that the role of visionary leadership in total quality management is the effort of an educational leader who is not only able to formulate a vision and strategic steps forward but is also able to improve the quality of education. Additionally, in the study of Migallos (2021), she explained how visionary leadership can be of use to higher educational institutions as they go through volatile changes.

On both instrumental and symbolic levels, academic culture has a substantial impact on "what is done, how it is done, and who is involved in doing it" in terms of decisions, actions, and communication (Mangue & Gonondo, 2021). Academic culture focuses on the socialization of organizational members in order to build educational views, values, and beliefs (Gopinath, 2020). The effectiveness of the teacher is an important issue to consider. In the study of Karadag & Oztekin Bayir (2018), it was mentioned that that the school principals' authentic leadership behaviors had positive effect on teachers' perceptions of school culture.

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The importance of measurable teaching performance quality in the learning process cannot be overstated. This demonstrates that the quality of a faculty member's teaching performance is regarded as the most important aspect in a student's success (Elmunyah, Hidayat, & Asfani, 2019). In the study of Karmaker, Ahmed, Rahman, Tahiduzzaman, Biswas, Rahman, & Biswas (2018), it was concluded that assessment of faculty performance in education is very pivotal to enrich their knowledge as well as estimate each individual's contribution to the organization. Furthermore, in the study of Patimo & Lucero (2021), it was mentioned that the best predictor of the academic performance of the advance higher education students is the work experience of the faculty members.

The relationship among the variables, visionary leadership, academic culture, and faculty performance, has been explored in different studies conducted. In the study of Kurniadi, Lian, & Wahidy (2020) it was stated that visionary leadership and organization culture jointly have a positive and significant effect on the performance of the teachers. The claim was further strengthened in the study of Shanti, Gunawan, & Sobri (2020) where the result presented that there was a positive relationship between visionary leadership and organizational climate with teacher performance. Amorin (2021) stated in his study how each type of leadership behavior and organizational culture had positive and significant correlations. Furthermore, "management/administrative" and "encouraging/coaching" leadership behaviors significantly impact organizational culture.

METHODS

The researcher utilized the descriptive-correlational research design which was the most effective research model to use for this particular study. The research design determined the dean's visionary leadership, institution's academic culture, and level of faculty performance of a higher educational institution in Laguna. The researcher used empirical data and documentary data for the conduct of the study. The empirical data were acquired from the respondents of the study who were 361 college students from Pamantasan ng Cabuyao.

The study aimed at determining the dean's visionary leadership, institution's academic culture, and faculty performance of the higher education institution in Laguna. The respondents of the study were the college students of Pamantasan ng Cabuyao. The sample size was taken using Raosoft's Formula and stratified sampling technique was used to get the sample population.

From the total population 5,904 students enrolled in Pamantasan ng Cabuyao, there were 361 student-respondents for this study. Specifically, 59 students are from the College of Education, Arts, and Sciences; 87 students from the College of Business, Administration, and Accountancy; 126 students from the College of Computing and Engineering; and 89 students from the College of Health and Allied Sciences. The respondents are the currently enrolled in Pamantasan ng Cabuyao for the Academic Year 2021-2022.

The researcher used self-made questionnaire. The research questionnaire was composed of validated questionnaires, which attempted to determine the dean's visionary leadership, institution's academic culture, and faculty performance of the higher education institution. The questionnaire was divided into three parts. The first part of the questionnaire was about the dean's visionary leadership; the second part dealt in institution's academic culture; and the third part focused on the level of faculty performance.

Since the questionnaire was self-made, it was subjected to face and content validity. It was shown to the panel of experts in educational management, in statistics, and in research for their comments and suggestions. After some modifications, it was shown to the adviser for final approval and then distributed to the target respondents. Also, the research made questionnaire underwent Cronbach's Alpha reliability test, and the results were as follows: for the dean's visionary leadership: 0.904; for the institution's academic culture: 0.875; and for level of faculty performance: 0.886.

The results of the study were collected from a survey questionnaire. The questions were typed on Google form and the digital questionnaire was disseminated online. A letter of request was forwarded to the Office of the University President seeking approval for the conduct of the study. The survey was devised from writing down the appropriate and pertinent questions and measures to ensure that the respondents would answer accordingly, based on the variables presented to them. It was composed of 54 questions, which evaluated the dean's visionary leadership, institution's academic culture, and faculty performance of a higher educational institution in Laguna. The Likert scale was implemented to rate the independent and dependent variables of the respondents by making them placed a check mark in one of the scale measures for each question. The researcher comprehended the respondents' conscious thoughts regarding their answers which might reflect upon their personalities and affect their reputations. That's why they would remain anonymous. The questionnaires were allocated after the respondents answer and have them tallied, tabulated, analyzed, and interpreted.

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RESULTS AND DISCUSSIONS

Discussion of the dean's visionary leadership, institution's academic culture and faculty performance of an HEI is presented in the succeeding tables and textual presentations:

Table 1. Composite Table of the Dean's Visionary Leadership

Indicators	Weighted Mean	Verbal Interpretation	Rank
1. Communication	3.50	Highly Effective	1
2. Emotional intelligence	3.44	Highly Effective	3
3. Organizational climate	3.46	Highly Effective	2
Overall Weighted Mean	3.47	Highly Effective	

Legend: (Strongly Agree/Highly Effective - 4, Agree/Effective - 3, Disagree/Less Effective -2, Strongly Disagree/Least Effective - 1)

Table 1 shows the sub-variables of visionary leadership. Among the sub-variables, communication ranked 1st with a weighted mean of 3.50 and a verbal interpretation of "Highly Effective." The organizational climate ranked the 2nd with a general weighted mean of 3.46 and a verbal interpretation of "Highly Effective." The sub-variable emotional intelligence ranked 3rd with a weighted mean of 3.44 and a verbal interpretation if "Highly Effective."

To summarize, an average weighted mean of 3.47 revealed that the dean's visionary leadership was highly effective. This means that the college dean earned the respect of the students, showed a warm and approachable personality, and was firm in the implementation of quality instruction in the college.

In the study of Banwart (2020), he mentioned that while persuasive communication has long been at the heart of leadership development, the discipline's contributions to effective leadership also range from advancing the understanding of organizational communicative systems to the development of skills for deliberative democracy and civic engagement. Furthermore, Mascareno, Rietzschel, & Wisse (2019) explained how visionary leaders paint an image of the future with the intention to persuade others to contribute to the realization of that specific future. Visionary leadership to be related to both team creativity and innovation through goal alignment. Communication quality strengthened the relationship between goal alignment and team innovation. In the study Van der Voet & Steijin (2020), the intended contribution was to bridge research on leadership in collaborative governance and visionary leadership by examining vision communication as a driver of innovation of multidisciplinary teams. The study further discussed how visionary leadership strengthened internal team cohesion and enabled team members to more effectively span the boundaries of the team and collaborate with external stakeholders.

Table 2. Composite Table of the Higher Education Institution's Academic Culture

Indicators	Weighted Mean	Verbal Interpretation	Rank
1. Academic outlook	3.39	Very Positive	3
2. Academic ethics	3.41	Very Positive	1
3. Academic environment	3.40	Very Positive	2
Overall Weighted Mean	3.40	Very Positive	

Legend: (Strongly Agree/Very Positive - 4, Agree/Positive - 3, Disagree/Negative -2, Strongly Disagree/Very Negative - 1)

Table 2 shows the sub-variables of academic culture. Among the sub-variables, academic ethics ranked 1st with a weighted mean of 3.41 and a verbal interpretation of "Very Positive." The academic environment ranked the 2nd with a general weighted mean of 3.40 and a verbal interpretation of "Very Positive." The sub-variable academic outlook ranked 3rd with a weighted mean of 3.39 and a verbal interpretation of "Very Positive."

To summarize, an average weighted mean of 3.40 revealed that the institution's academic culture was very positive. This means that the institution gave recognition to student's achievement, persuaded them to be part of the educational or research activities of the college, and gave them opportunities to be part of these activities.

In the study of Glusac, Tasic, Nikolic, & Gligorovic (2017), it was mentioned that the culture of the school has a strong and positive impact on teaching and learning. Furthermore, Agi (2019) stated that school leadership and staff commitment towards school vision are strong combination in creating and sustaining most of the school culture. Amtu, Makulua, Matital, & Pattiruhu (2020) explained that there is a direct or indirect influence of school culture and work motivation on student learning outcomes

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through teacher performance. This emphasizes that the culture of each school needs to encourage teacher performance in an integrated and continuous manner so that it can encourage student learning outcomes.

Table 3. Composite Table of the Level of Faculty Performance

Indicators	Weighted Mean	Verbal Interpretation	Rank
1. Competence	3.21	High	1
2. Emotional intelligence	3.12	High	3
3. Work environment	3.15	High	2
Overall Weighted Mean	3.16	High	

Legend: (Strongly Agree/Very High - 4, Agree/High - 3, Disagree/Low -2, Strongly Disagree/Very Low - 1)

Table 3 shows the sub-variables of faculty performance. Among the sub-variables, competence ranked 1st with a weighted mean of 3.21 and a verbal interpretation of "High." The work environment ranked the 2nd with a general weighted mean of 3.15 and a verbal interpretation of "High." The sub-variable emotional intelligence ranked 3rd with a weighted mean of 3.12 and a verbal interpretation of "High."

To summarize, an average weighted mean of 3.16 revealed that the level of faculty performance was high. This means that the faculty had shown mastery of the subject matter by providing comprehensive, accurate, and up-to-date knowledge on the topic being discussed, allowed students to be active in the classroom learning environment but at the same time established an appropriate control mechanism in keeping order in the classroom, showed respect to students and in return encouraged them to show the same respect to themselves.

In the study of Wajdi, Rahayu, Ulfatin, Wiyono, & Imron (2018), it was stated that the teacher professional competence is able to mediate the effect of the teacher innovation and the emotional intelligence on the school effectiveness. Fauth, Decristan, Decker, Buttner, Hardy, Klieme, & Kunter (2019) further explained how teacher competence (pedagogical content knowledge, self-efficacy, and teaching enthusiasm) was positively related to student achievement. In the study of Caena & Redecker (2019), it was recommended for teachers to upgrade their competency profiles to meet the demands of the twenty-first century. To enable 21st-century learners, teaching practices must change, as must the competencies that instructors must build.

Table 4. Relationship between the Dean's Visionary Leadership and the Institution's Academic Culture

Visionary Leadership	Academic Culture		
	Academic outlook	Academic ethics	Academic environment
Communication	r=0.608** Moderate correlation p=0.000	r=0.599** Moderate correlation p=0.000	r=0.503** Moderate correlation p=0.000
Emotional intelligence	r=0.629** Moderate correlation p=0.000	r=0.631** Moderate correlation p=0.000	r=0.462** Moderate correlation p=0.000
Organizational climate	r=0.688** Moderate correlation p=0.000	r=0.561** Moderate correlation p=0.000	r=0.407** Moderate correlation p=0.000
**Significant @ 0.01			

Table 4 presents the dean's visionary leadership and the institution's academic culture. As observed, the obtained probability value of 0.000 for all the sub-variables was less than the 0.01 significance level; therefore, a significant relationship was noted in the dean's visionary leadership and the institution's academic culture. The result implies that the more effective the dean's visionary leadership, the more positive the institution's academic culture.

This correlation is further proven by the study of Kurniadi, Lian, & Wahidy (2021) where it states that visionary leadership and organization culture jointly have a positive and significant effect on performance. In addition, Mahmud (2017) mentioned how building an effective school culture establishes the commitment of an effective culture, providing a thorough understanding of vision, mission, and objectives of the school, determining clear policy direction, and emphasizing the importance of creativity

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and innovation. Furthermore, Widodo & Chandrawaty (2021) explained how the devotion of employees, especially teachers, is critical to the success of any organization, including schools. This has to do with the existence of a commitment that is necessary for employees and the business to succeed.

Table 5. Relationship between the Dean's Visionary Leadership and Level of Faculty Performance

Visionary Leadership	Faculty Performance		
	Competence	Emotional Intelligence	Work environment
Communication	r=0.406** Moderate correlation p=0.000	r=0.458** Moderate correlation p=0.000	r=0.448** Moderate correlation p=0.000
Emotional intelligence	r=0.372** Low correlation p=0.000	r=0.405* Moderate correlation p=0.000	r=0.430* Moderate correlation p=0.000
Organizational climate	r=0.322** Low correlation p=0.000	r=0.340** Low correlation p=0.000	r=0.481** Moderate correlation p=0.000
**Significant @ 0.01			

Table 5 presents the dean's visionary leadership and the level of faculty performance. As observed, the obtained probability value of 0.000 for all sub-variables was less than the 0.01 significance level; therefore, a significant relationship was noted in the dean's visionary leadership and the level of faculty performance. The result implies that the more effective the visionary leadership, the higher the level of faculty performance.

This correlation is further proven by the study of Sunarto (2020) where it was found out that the principal's visionary leadership style, competence, and work discipline have positive and significant effect on teacher performance. Ulfa & Waluyo (2021) explained in their study that there is a significant relationship between the visionary leadership and the teacher's performance – the stronger the visionary leadership of the principal, the better the teachers' performance. In addition, Zhou, Zhao, Tian, Zhang, & Chen (2018) stated that employee creativity in firms is positively associated with visionary leadership, and the relationship is positively mediated by employee knowledge sharing.

Table 6. Relationship between the Institution's Academic Culture and Level of Faculty Performance

Academic culture	Faculty Performance		
	Competence	Emotional Intelligence	Work environment
Academic outlook	r=0.351** Low correlation p=0.000	r=0.371** Low correlation p=0.000	r=0.488** Moderate correlation p=0.000
Academic ethics	r=0.474** Moderate correlation p=0.000	r=0.410* Moderate correlation p=0.000	r=0.453* Moderate correlation p=0.000
Academic environment	r=0.534** Low correlation p=0.000	r=0.427** Low correlation p=0.000	r=0.431** Moderate correlation p=0.000
**Significant @ 0.01			

Table 6 presents the institution's academic culture and the level of faculty performance. As observed, the obtained probability value of 0.000 for all sub-variables was less than the 0.01 significance level; therefore, a significant relationship was noted in the institution's academic culture and the level of faculty performance. The result implies that the more positive the institution's academic culture, the higher the level of faculty performance.

This correlation is further proven in the study of Amtu, Makulua, Matital, & Pattiruhu (2020) which explains that there is a direct or indirect influence of school culture and work motivation on student learning outcomes through teacher performance.

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This emphasizes that the culture of each school needs to encourage teacher performance in an integrated and continuous manner so that it can encourage student learning outcomes. In addition, Fitria (2018) mentioned in her study that there is a direct positive effect of organizational culture to the teacher performance. This means that conducive school organizational culture will lead to increased performance of teachers. Furthermore, Ozgenel, Pinar, & Parlar (2020), stated that the effective leadership qualities of school principals and the performance of teachers have a medium and positive association, and the effective leadership characteristics of school principals strongly predict the performance of instructors.

CONCLUSION

From the collected findings, it was concluded the college dean earned the respect of the students, showed a warm and approachable personality, and was firm in the implementation of quality instruction in the college. The institution gave recognition to student's achievement, persuaded them to be part of the educational or research activities of the college, and gave them opportunities to be part of these activities. Additionally, the faculty had shown mastery of the subject matter by providing comprehensive, accurate, and up-to-date knowledge on the topic being discussed, allowed students to be active in the classroom learning environment but at the same time established an appropriate control mechanism in keeping order in the classroom, showed respect to students and in return encouraged them to show the same respect to themselves. Furthermore, the more effective the dean's visionary leadership, the more positive the institution's academic culture. It is also noted that the more effective the visionary leadership, the higher the level of faculty performance. Likewise, the more positive the institution's academic culture, the higher the level of faculty performance.

FUTURE DIRECTIONS

The investigation, however, has some limitations particularly on the sub-contracts used for each variable. It is recommended that the future researchers may duplicate the present study by considering other variables not mentioned such as other types of leadership like transactional, transformational, etc.

Furthermore, an understanding of the relationship among the dean's visionary leadership, institution's academic culture and faculty performance helps the higher educational institution to adapt an action plan that would sustain or enhance the above-mentioned variables. This will further develop the skills of the deans as visionary leaders who set out concrete steps to bring a vision to life, and lead the people in the college to that direction.

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21st Century Digital Skills, Technology Integration in Instruction and Challenges Encountered by Senior High School Teachers in Muntinlupa National High School



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ABSTRACT: This descriptive-correlational study determined the 21st-century digital skills, technology integration in instruction, and challenges encountered in integrating technology. The participants in this study were composed of ninety-five Senior High School teachers in Muntinlupa National High School. The study sought to find a significant association between 21st-century digital skills and level of technology integration in instruction; challenges encountered and the level of technology integration of teachers in instruction. The study revealed that the majority of the respondents were female, aged 40 to 49 years old, acquired MA units, 7 – 12 years of teaching experience, and attended less than 3 related training on technology integration in instructions for the last past 6 months. Findings showed that the level of 21st-century digital skills and level of technology integration in instructions of the SHS teachers was very high. Teachers highly used video conferencing software such as Zoom, Microsoft Teams, GoogleMeet, Cisco, WebEx, and others as the technology they integrate for their instructions. The challenges experienced by teachers in integrating technology in instructions were the following; poor internet connection, students' lack of support system, limited electronic materials and equipment, and lack of technological support from the school experts. Senior high school teachers aged 40 to 49 have higher skills in the information of 21st-century digital skills than teachers aged 50 and above. And, female senior high school teachers have higher skills in communication, collaboration, and problem-solving in 21st-century digital skills than male senior high school teachers. Meanwhile, the teachers' level of technology integration in instruction and the challenges encountered in integrating technology were the same regardless of teachers' profiles. The result further revealed that the higher the 21st-century digital skills of the teachers, the higher the teachers' level of technology integration in instructions. And, the more challenges teachers encountered in integrating technology into instructions, the higher their level of technology integration into instructions.

KEYWORDS: 21st century digital skills, technology integration in instructions, challenges encountered, teachers, technology.

I. INTRODUCTION

Change is already inevitable. With that, the academic institution as one of the responsible bodies for preparing a new breed of workforce and leaders must adapt and be flexible with these transformations. Likewise, World Economic Forum [1] emphasizes that education models must adapt to globalization and rapid technological advancements to equip learners with the skills to create a more inclusive, cohesive, productive and innovative world. In response, the Philippines is embarking on a journey to deliver an excellent education to achieve excellence in learning and effective teaching, and produce competent lifelong learners who can respond to challenges and opportunities.

Technology is constantly developing and emerging. Back then, students had to go to the library and open books to obtain information and materials they needed. In the twentieth century, information has been transformed into readily available because of computers, devices, and the internet. Integrating technology into the teaching-learning process becomes a teaching strategy and it additionally provides an opportunity for accessible communication among learners and teachers. With this pandemic, the importance and role of technology in education have become clearer and expanded. Technology is helping new educational modalities for learning to be possible. In October 2020, nonconventional learning modalities were launched which include digital classes, printouts, lessons broadcast on television, radio and social media channels. As a result, the alternative learning modality rely on students and teachers having access to the internet, as well as the necessary devices and abilities to

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use them. Classroom interactions are transformed into a digital setup wherein teaching and learning happen with the aid of technology such as gadgets, digital tools, applications, and the internet.

There are numerous studies establishing the importance of technology in education even before the strike of the pandemic. Studies describe that technology integration would improve the teaching instructions and learning experiences [2]. It can cover the design, development, application, and evaluation of education at all levels of education either formal, non-formal, informal, special, inclusive, or lifelong education [3]. And with the practice of technology integration, educators find convenience, ease, and confidence that students could have rich learning experiences in class [4]. However, there are still limited empirical studies that recognize whether teachers have high integration of technology in the classroom.

Teachers must have the essential skills and knowledge to fully utilize and take full advantage of the potential of technology while using it in the classroom [5]. Learning certain skills requires teaching. Thus, teachers should be knowledgeable in the implementation and application of various teaching and learning tools and have mastered the necessary skills for teaching 21st-century learners. UNESCO [6] stresses the significance of Information and Communication Technology (ICT) on student learning, especially its importance for the teachers to be digitally literate and understand how to incorporate it into the curriculum. Van Laar et al. [7] suggested investigating the 21st-century digital skills of educators as the use of technologies emerges in their work description. Organization, such as education, that deals and concern with fast moving technology need highly proficient teachers in 21st century digital skills. Apparently, 21st-century digital skills are still not completely understood and scientifically investigated in the field of education, especially in the local setting. And most of the available articles aim to investigate 21st-century skills and digital skills, separately. Thus, there's a funding gap in incorporating digital skills into the actual 21st-century skills and another gap in determining whether teachers have a high level of 21st-century digital skills.

In this manner, the present study aimed to measure the 21st-century digital skills and level of technology integration in instructions in the field of education. Teachers may find it useful for enhancing their 21st-century digital skills and use of technology in instruction since they can incorporate it into lessons, teaching strategies, and student activity. Furthermore, the teachers' improvement on these levels may promote meaningful lifelong learning experiences for students. Since there's a transformation happening in teaching instructions and learning setup, the study's further aim was to identify the challenges encountered by the Senior High School teachers in integrating technology into instructions. Therefore, this study was intended to correlate the teachers' level of 21st-century digital skills and challenges faced by them in integrating technology with instructions to their level of technology integration in instructions.

II. METHODS

This study used the descriptive-correlational research design. Descriptive research aims to accurately and systematically describe a population, situation or phenomenon. It can answer what, when, where, and how questions [8]. The study looked into the significant difference in 21st century digital skills, technology integration and challenges between groups of teachers in accordance with their personal and academic characteristics. It also aimed to present the significant relationship, through correlation, between 21st century digital skills and technology integration; between technology integration and challenges experienced by teachers in instruction. Data used in the investigation came from the 95 Senior High School teachers from Muntinlupa National High School. Sample size was determined by Raosoft.com and the actual selection of the sample respondents was done using random sampling technique where each member of the population had an exact equal probability of being chosen using this sampling procedure [9].

The research used a questionnaire for the purpose of collecting the needed primary data. The research instrument was divided into four (4) parts. Part I dealt with the profile of the respondents. Part II pertained to the 21st century digital skills. Part III covered the level of technology integration in instruction. And Part IV concern on challenges in technology integration in instruction. The Part II of the questionnaire was adopted from van Laar et al. [10]. They used a three-fold approach to test the validity and reliability of the questionnaire. It included cognitive interview to enhance the clarity of the proposed skill items; pilot testing to explore the factor structure; and full survey to measure the consistency of the skill factors. Three items were not included in the final administration of the survey because the technical content is misaligned to the job description of the education profession under dimension of communication. While Part I, Part III and Part IV were researcher-made questionnaires. The items included in these parts were derived from different related literature. The whole questionnaire was subjected to face and content validity by seeking the opinions and insights of the panel of experts such as researcher, ICT teacher and a professional teacher for further improvements. The tools of 21st century digital skills, technology integration and

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challenges scored its reliability 0.967, 0.802, and 0.824, respectively on Cronbach alpha testing. Part II and III of the questionnaires were measured using the 4-point Likert scale: Always/Very High (3.25 - 4.00), Sometimes/High (2.50 - 3.24), Rarely/Low (1.75 - 2.49) and Never/Very Low (1.00 - 1.74). And Part III was encoded using the following scale: Strongly Agree (3.25 - 4.00), Agree (2.50 - 3.24), Disagree (1.75 - 2.49) and Strongly Disagree (1.00 - 1.74).

Data were collected from the respondents through a paper and pen survey and an online survey using Google Form. Permission to conduct the study and administer the questionnaire were secured from the School Division Office of Muntinlupa City and school head. The respondents were given a consent letter together with the survey questionnaires and they participated voluntarily. The study achieved 100% retrieval of survey questionnaires through a paper and pen survey and online survey using Google Form. Data were organized, analyzed and interpreted using the following statistical tools: (1) Frequency count and percentage were used to describe the profile of the respondents. (2) Weighted mean was used to describe the level of 21st-century digital skills, level of technology integration in instruction, and challenges encountered by teachers in technology integration in instruction. (3) Tests of difference such as t-test for independent means, Kruskal Wallis Test, chi-square and ANOVA were used to determine the difference in the teachers' level of 21st-century digital skills when grouped according to profile variables; the difference in the teachers' level of technology integration in instruction when grouped according to profile variables; and the difference in the challenges encountered by teachers in technology integration in instruction when grouped according to profile variables. And, (4) Pearson product-moment correlation coefficient was utilized to determine the relationship between the teachers' level of 21st century digital skills and level of technology integration in instruction; and between the teachers' challenges encountered and level of technology integration in instruction.

III. RESULTS AND DISCUSSIONS

Discussion of the 21st-century digital skills, technology integration in instruction, and challenges encountered in integrating technology is presented in the succeeding tables and textual presentations:

Table 1. The Personal and Academic Characteristics of the Respondents

	<i>Demographic Variables</i>	<i>Frequency (n = 95)</i>	<i>Percentage</i>
<i>Personal Characteristics</i>	Age		
	<i>Below 30</i>	17	17.90
	<i>30-39</i>	27	28.40
	<i>40-49</i>	31	32.60
	<i>50 and above</i>	20	21.60
	Gender		
	Male	34	35.80
Female	61	64.20	
<i>Academic Characteristics</i>	Highest Educational Attainment		
	<i>Bachelor's Degree</i>	9	9.50
	<i>With MA units</i>	55	57.90
	<i>Master's degree</i>	19	20.00
	<i>With PhD/EdD units</i>	8	8.40
	<i>Doctorate degree</i>	4	4.20
	Number of Years in Teaching		
	<i>1-6</i>	33	34.70
	<i>7-12</i>	35	36.80
	<i>13 and above</i>	27	28.40
Number of Trainings Attended			
<i>0-2</i>	37	38.90	
<i>3-5</i>	36	37.90	
<i>6 and above</i>	22	23.20	

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Table 1 shows the personal and academic characteristics of the respondents. The majority of the respondents were 40-49 years (32.60%) of age, female (64.20%), with MA units (57.90%), had 7-12 years of teaching experience (36.80%), and had 0-2 training attended (38.90%) in technology integration.

Table 2. Composite Table of the Teachers' Level of 21st Century Digital Skills

<i>Skills</i>	<i>Weighted Mean</i>	<i>Verbal Interpretation</i>	<i>Rank</i>
Information Digital Skills	3.43	Very High	2
Communication Digital Skills	3.24	High	6
Collaboration Digital Skills	3.53	Very High	1
Critical Thinking Digital Skills	3.39	Very High	4
Creativity Digital Skills	3.40	Very High	3
Problem Solving Digital Skills	3.29	Very High	5
Overall Weighted Mean	3.38	Very High	

It is shown in Table 2 that the Senior High School teachers had very high level of 21st century digital skills as evidenced by obtained overall weighted mean of 3.38. This suggests that senior high school teachers believe that they are proficient on the technical aspect of digital skills to listed competencies on 21st century skills. Results are related to the study of van Laar et al. [7] that working professionals are performers of 21st-century digital skills and in a greater range.

The table 2 also reveals that the respondents' highest level is on *Collaboration Digital Skills* as rank 1 with weighted mean of 3.52 signify *very high* level. This means that respondents have very high-level skills for searching, evaluating, and organizing information in digital environment. It also defined as the ability to reach a goal as a team, to complement and support each other [11]. As Kaur and Debel [12] study gives emphasis on teachers' collaboration as part of teachers' daily routines and they need to be involved in planning, implementing, and evaluation. This is congruent with the study made by Gonzales [13], teachers have a very high level of collaboration in 21st century skills, which is defined as the capacity to operate as a team, work effectively and respectfully in teams to achieve a common objective, and take shared responsibility for accomplishing a task.

The composite skills of *Information Digital Skills* (MW= 3.43), *Creativity Digital Skills* (MW=3.40), *Critical Thinking Digital Skills* (MW =3.39) and *Problem-Solving Digital Skills* (MW =3.29) where the respondents classified as having *very high* level. Van Laar et al. [7] corroborate the finding that information digital abilities include the capacity to clearly describe information demands, assess digital information, and pick digital information in an effective and efficient manner. Serezhkina [14] supported the findings that school teachers had a high level of digital competence, particularly in the areas of information management and technical internet use. Promoting critical thinking within media literacy education will lead to real integration of media and digital skills in the classroom [15]. Same findings on Gonzales [13] that faculty members on State University had a high degree of critical thinking, creativity and invention which includes the ability to examine a wide range of issues, explore and assess many points of view, and develop suitable conclusions and ability to produce and refine solutions to complicated issues or tasks based on synthesis, analysis, and then merging or presenting what they learnt in new and creative ways. While, Rensburg [16] emphasize developing creative digital abilities, which entails using digital tools and technology to test creative ideas. Castek et al. [17] describe digital problem solving involves the use of the skills, strategies and approaches needed to navigate online. And Gepila [18] claimed that Highly Proficient Teachers have superior educational situation cognition, are better at problem solving, and maximize possibilities obtained through experience.

Meanwhile, *Communication Digital Skills* is considered as the least performed skills among 21st century digital skills as it gains weighted mean of 3.24 which classify as *high* level. This finding conforms Al-Qahtani [19] study indicating that the current learning modality offered such as online class and virtual courses may enhance communication skills.

The result of the study confirms the discovery of van Laar et al. [20] that sub-skills among 21st century digital skills have interrelationship and it build on each other sequentially. Except for critical thinking, all dimensions affirm to lead directly to problem-solving digital abilities [20]. The findings were also discussed in the study of Benson [21]; Liwa [22]; and Caluza [23] on having high level of 21st century skills and other similar ICT competency of teachers. Meanwhile, Mannila, Norden & Pears [24] study supported these findings that the highest composite self-efficacy in digital competence was information and data literacy followed by collaboration. For the result in communication, it was explained by French [25] that it is included on the soft skills

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that are describe in more complex and less tangible skills that needed for communicate confidently and clearly with online contacts.

Table 2. The Teachers' Level of Technology Integration in Instruction

<i>Indicators</i>	<i>Weighted Mean</i>	<i>Verbal Interpretation</i>	<i>Rank</i>
1. I use social networking groups such as Facebook, Twitter, LinkedIn, and others to interact with students.	3.67	Very High	7
2. I utilize online integrated software such as google classroom, MS Teams, Moodle, EdApp, and others to plan, implement, facilitate, assess, and monitor student learning.	3.63	Very High	8
3. I use video-conferencing software such as Zoom, Microsoft Teams, Google Meet, Cisco Webex and others to communicate with students, colleagues, community, and others.	3.80	Very High	1
4. I incorporate video and multimedia into lessons and presentations.	3.69	Very High	4
5. I use online software tools such as Google Forms, MS Forms, SurveyMonkey, Facebook poll to solicit opinions, create forms, surveys, and quizzes.	3.69	Very High	4
6. I use video editing apps such as Filmora, iMovie, OBS and others to create video recorded lesson.	3.24	High	10
7. I let my students to use technology as learning tool that may produce and achieve learning objectives.	3.69	Very High	4
8. I give my students a project-based activities where they need the help of technology such as creating videos, poster and others.	3.59	Very High	9
9. I let my students to use technology to help them solve real-world problems and learn to assess information.	3.72	Very High	2
10. I allow my students to use technology as medium to share their ideas to other students that will promote teamwork, cooperation and collaboration.	3.68	Very High	6
Average	3.64	Very High	

From the data shown in the table 3, the level of technology integration in instruction of Senior High School teachers was *very high* based on overall weighted mean score of 3.64. This means that respondents have very high level of using technology resources such as computers, smartphones, tablets, digital cameras, social media platforms and networks, software applications, the Internet and others in teaching and learning class practices. TPACK framework of Mishra & Koehler [26] describe how teachers integrate technology into instruction in bringing meaningful learning experiences to the students.

It shows that teachers have a very high level of using technology to enhance and support the educational environment and support classroom instruction by using technology in presenting lessons and creating opportunities for students to complete the assigned task using different technological tools rather than with normal pencil and paper. Implementation of technology in classroom, the teachers need to guide students to ensure that they are meeting their learning objectives [27]. Likewise, Ivus et al. [5] emphasized the need for the teachers to develop skills needed to fully utilize digital technology in the classroom and in an online setting.

The finding conforms the following study: Gamboa & Gamboa [28] revealed that teachers are highly competent on MS Word, MS Excel and MS PowerPoint; Javier [29] claimed that most teachers are 'good' in ICT skills to utilized ICT tools and applications for teaching with the internet; Nueva [30] showed that teachers have high level of perceived technology integration practices; Albacete & Banhaw [31] revealed that Filipino found convenience and ease on the practice of technology integration; Ruman & Praksha [32] used TIM in measuring the extent of technology integration among teachers to facilitate their lesson; DeCoito & Richardson [33] proposed professional development opportunities for instructors to learn about the interaction of

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technology, pedagogy, and subject matter; Hero et al. [34] reported that Filipino teachers highly practiced the ICT integration as part of their instructional practices and strategies in teaching; Samote & De Guzman [35] describe public school teachers are advanced on the ICT competencies and technological operations; Lestiyawati [36] indicated that online chat, using video conference, and combining both online chat and video conference in online teaching and learning process were the teaching strategies applied by teacher with the aid of technology; and Hero [37] affirmed that technology integration in instruction helps and assists teachers to bridge the gap between traditional teaching approaches and technology-based teaching and learning tools and facilities.

Table 4. The Challenges Encountered by Teachers in Technology Integration in Instruction

<i>Indicators</i>	<i>Weighted Mean</i>	<i>Verbal Interpretation</i>	<i>Rank</i>
1. Internet connection issues in the area.	3.55	Strongly Agree	1
2. Lack of knowledge to facilitate online application such as Google Classroom, LMS, MS Teams, Moodle, EdApp and others.	2.98	Agree	9
3. Lack of a good internet connection of the student for participating to the online activities.	3.40	Strongly Agree	2
4. Students lack of support system.	3.34	Strongly Agree	3
5. Lack of ability to perform necessary skills needed for successful online teaching.	2.98	Agree	9
6. Limited electronic materials and equipment such as gadgets, laptop and others.	3.15	Agree	4
7. Lack of available technological support from the expert in school.	3.12	Agree	5
8. Lack of proper training and mentoring to fully gasps the use of such tools.	3.09	Agree	6
9. Problem in conducting video-conferencing software such as Zoom, Microsoft Teams, Google Meet, Cisco Webex and others to communicate with students, colleagues, community, and others.	3.02	Agree	7
10. Low computer literacy level.	2.89	Agree	10

Table 4 displays that Internet connection ranks one (1) as the challenge encountered by Senior High School teachers in technology integration in instructions based on weighted mean of 3.55. Senior High School teachers also strongly agree that they experience challenges such as lack of a good internet connection of the student for participating to the online activities ($WM=3.40$), and lack of support system for students ($WM=3.34$). Another hindrance for successful integration of technology in instruction are the following: limited electronic materials and equipment such as gadgets, laptop and others ($WM=3.15$); Lack of available technological support from the expert in school ($WM=3.12$); lack of proper training and mentoring to fully gasps the use of such tools ($WM=3.09$); Problem in conducting video-conferencing software such as Zoom, Microsoft Teams, Google Meet, Cisco Webex and others to communicate with students colleagues, community, and others ($WM=3.02$); lack of ability to perform necessary skills needed for successful online teaching ($WM=2.98$); Lack of knowledge to facilitate online application such as Google Classroom, LMS, MS Teams, Moodle, EdApp and others ($WM=2.98$), and low computer literacy level ($WM=2.89$).

This means that teachers admitting that they are experiencing problems related to internet connection, gadgets, computers, required skills, and difficulty in using technology as learning and teaching tool. The findings about challenges encountered by teachers in technology integration in instruction strengthened by König et al. [38] which analyzed the teachers' digital competencies were related to how they mastered the challenges during emergency remote education. Furthermore Fabito et al. [39]; Azhar and Iqbal [40]; Lestiyawati [36]; Almazova et al.[41]; Ivus et al. [5]; Tomaro [42]; Alda et al. [43]; Emre [44]; Klapproth et al.[45]; Hero [46], Samifanni & Gumanit [46]; and Tarman, Kilinc & Aydin [47]; and Javier [29] listed challenges experienced by the teachers on using technology in teaching and learning process. These includes lack of working are for doing online activities, lack of good internet connection, feedback and clarification from instructors, difficulty in using online and

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offline tools and application, lack of facilities, lack of parents' support system, computer literacy level, school support, lack of training, and lack of long-term supports.

Table 5. Difference in the Teachers' Level of 21st century Digital Skills when grouped according to Age

21 st Century Digital Skills	F-test	p-value	Interpretation
Information X _{below30} =3.46 X ₃₀₋₃₉ =3.43 X ₄₀₋₄₉ =3.56 X _{50&above} =3.19	2.894	0.040*	Significant (Between 40-49 & 50&above)
Communication	0.687	0.562	Not Significant
Collaboration	1.511	0.217	Not Significant
Critical thinking	1.445	0.235	Not Significant
Creativity	1.150	0.333	Not Significant
Problem solving	0.645	0.588	Not Significant

*Significant @ 0.05

As disclosed in table 5, there was no significant difference in communication, collaboration, critical thinking, creativity, problem solving on teachers' level of 21st century digital skills when grouped according to age. While 21st century digital skills under information revealed to have significant difference between teachers aged 40 - 49 and 50 & above with p-value of 0.040 at 0.05 margin of error. This means that the respondents who were 40-49 years of age had higher level of 21st century digital skills along information that those who were 50 years of age and above. Supported by the study of Gonzales [13] which revealed significant difference between the level of 21st century skills of faculty members when grouped according to age. Findings support the suggestion of Samifanni and Gumanit [46] that elderly teachers should be providing better technical support to provide quality education. And similar to Hinojo-Lucena et al. [48] that age as conditioning factor when developing digital competence of teachers, especially in the information and data literacy.

Table 6. Difference in the Teachers' Level of 21st century Digital Skills when grouped according to Gender

21 st Century Digital Skills	t-test	p-value	Interpretation
Information	0.179	0.858	Not Significant
Communication X _{male} =3.43 X _{female} =3.56	2.375	0.020*	Significant
Collaboration X _{male} =3.43 X _{female} =3.56	3.204	0.002*	Significant
Critical thinking	1.029	0.071	Not Significant
Creativity	1.829	0.071	Not Significant
Problem solving X _{male} =3.43 X _{female} =3.56	3.735	0.000*	Significant

*Significant @ 0.05

As observed from the data in table 6, the constraints under 21st century digital skills such as information, critical thinking and creativity have no significant difference between male and female teachers. While the computed p-value of communication (0.020), collaboration (0.002) and problem solving (0.000) revealed to have a significant difference between male and female senior high school teachers at 0.05 margin of error. This means the female teachers (WM=3.56) had higher level of 21st century skills along communication, collaboration and problem-solving digital skills than the male teachers (WM=3.43). The result of the study is parallel with the result of Rubach and Lazarides [49] about gender being correlated with

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the six dimension of teachers' basic ICT competence which includes problem solving, communication and collaboration while argue the result of Gonzales [13] that there is no significant difference between male and female teachers' level of skills.

Table 7. Difference in the Teachers' Level of 21st century Digital Skills when grouped according to Academic Characteristics Profile Variables

21 st Century Digital Skills	Highest Educational Attainment			Number of Years in Teaching			Number of Related Trainings Attended		
	Kruskal-Wallis test	p-value	Interpretation	F-test	p-value	Interpretation	F-test	p-value	Interpretation
Information	0.932	0.920	Not Significant	0.419	0.659	Not Significant	1.082	0.343	Not Significant
Communication	3.343	0.502	Not Significant	0.402	0.670	Not Significant	1.931	0.151	Not Significant
Collaboration	1.575	0.813	Not Significant	0.723	0.488	Not Significant	0.139	0.870	Not Significant
Critical thinking	2.898	0.575	Not Significant	1.260	0.288	Not Significant	0.167	0.846	Not Significant
Creativity	3.147	0.534	Not Significant	0.573	0.566	Not Significant	1.342	0.267	Not Significant
Problem solving	4.850	0.303	Not Significant	0.174	0.840	Not Significant	1.443	0.242	Not Significant

Significance level @ 0.05

Table 7 unveils that the constraints under 21st century digital skills have no significant difference on grouped according to highest educational attainment, number of years in teaching, and number of related trainings attended. This means that the level of 21st century digital skills of the teachers was the same, regardless of their highest education attainment, number of years in teaching, and number of related trainings attended. This finding supported by Garcia et al. [50] that the teacher's level of education was not related to the level of digital abilities in the twenty-first century. Same with Blažič & Blažič [51] study that instructors' attitudes regarding seminars and training are the primary cause of inadequate outcomes, particularly in bridging the digital divide with digital skills. It reveals that regardless of how many trainings the teachers attended, their level of digital abilities in the twenty-first century was the unaffected. The same result on Gonzales [13] that length of service of teaching personnel had nothing to do with their level of skills. The result contradicts the study of Hinojo-Lucena et al. [48] claiming that Master's Degree and teaching experiences have significant weight and makes greatest impact on digital competence development of teachers. And, prior training on ICT confirmed that it may affect to for teachers to have low digital competence.

Table 8. Difference in the Teachers' Level of Technology Integration in Instruction and Challenges Encountered by Teachers in Technology Integration in Instruction when grouped according to Profile Variables

Profile	Technology Integration in Instruction			Challenges Encountered		
	Test statistic	p-value	Interpretation	Test statistic	p-value	Interpretation
Age	F=1.419	0.242	Not Significant	F=0.421	0.738	Not Significant
Gender	t=1.265	0.209	Not Significant	t=-1.296	0.198	Not Significant
Highest educational attainment	$\chi^2=4.099$	0.393	Not Significant	$\chi^2=2.751$	0.600	Not Significant
Number of years in teaching	F=0.111	0.895	Not Significant	F=1.516	0.225	Not Significant
Number of related trainings attended	F=0.495	0.611	Not Significant	F=1.495	0.230	Not Significant

Significance level @ 0.05

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Table 8 revealed that the teachers' level of technology integration in instructions and challenges encountered have no significant difference when group according to their profile. This means that regardless of the teachers' profile variables, their level of technology integration in instruction and challenges encountered in integrating technology in instructions was the same.

Javier [29] exposed that age and year in teaching are not associated with practices in the use of digital teaching and learning tools, similar to Nueva [30] claimed that age has weaker association with the teachers' belief on using technology. It also underpinned to Sawyer [52] claims that one's ability to integrate ICT into the classroom is not determined by their educational achievement or profile characteristics. As a result, the extent of technology integration in instruction was the same despite of the teachers' profile characteristics. Moreover, findings of the study are comparable with Moralista and Oducado [53] where educational attainment has significantly differed in the favorability toward online education while number of trainings in online teaching was not. The result opposes with Claro et al. [54] assertion that younger teachers with more years of teaching experience performed better on solving information and communication tasks in a digital environment. And contrasting the findings of Germino [55] and Adedokun [56], that there is significant association between the teachers' profile and teachers' capability in technology integration especially on using computers and internet.

While the result in challenges experience by teachers has the same findings with the study of Li et al. [57], where obstacles in utilizing technology into classrooms are observed whatever of the teachers' profile characteristics. Similar to the findings of Tarman, Kilinc & Aydin [47] that there is no statistical difference between male and female teachers' perceived barriers but contradict significant difference between teachers who attended technology-related professional development and those who did not. It also contradicts the study of Hamutogly and Basarmak [58] that lack of training as part of external barriers affects the internal barriers directly and positively in technology integration. Meanwhile, experienced educators suggested way to overcome barriers as posted on the study of Atabek [59], improve quality of in-service and preservice training, allow teachers more time by simplifying number of courses in the instructional program and supplying teachers with technology incentives and technical assistance.

Table 9. Relationship between the Teachers' Level of 21st century Digital Skills and Level of Technology Integration in Instruction

21 st Century Digital Skills	Pearson r	p-value	Interpretation
Information	0.516 Moderate Correlation	0.000**	Significant
Communication	0.477 Moderate Correlation	0.000**	Significant
Collaboration	0.564 Moderate Correlation	0.000**	Significant
Critical thinking	0.411 Moderate Correlation	0.000**	Significant
Creativity	0.593 Moderate Correlation	0.000**	Significant
Problem solving	0.484 Moderate Correlation	0.000**	Significant

**Significant @ 0.01

Based on table 9 the computed *r*-value under information is 0.516, communication is 0.477, collaboration is 0.564, critical thinking is 0.411, creativity is 0.593, problem solving is 0.484 are indicating a moderate correlation to level of technology integration. Furthermore, calculated *p*-value from the pair of 21st century digital skills and technology integration in instructions is less than the level of significance at 0.01. Thus, it reveals a significant relationship between the teachers' level of 21st century

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digital skills and level of technology integration in instruction. This means that the higher the level of teachers 21st century digital skills, the higher their level of technology integration in instruction. The result is related to the Samonte and De Guzman [35] study which give emphasize on the role of teachers' professional development as a critical factor on the successful integration of computers in teaching. It is also similar to claims of Manco-Chavez et al. [60] and Limjuco [61] about the significant relationship of utilization of technology and level of digital skills.

Table 19. Relationship between the Level of Technology Integration in Instruction and Teachers' Challenges Encountered

Indicator	Pearson r	p-value	Interpretation
Level of Technology Integration in Instruction and Challenges Encountered by teachers	0.214	0.037*	Significant
	Low correlation		

*Significant @ 0.05

Table 19 shows the result of relationship between and level of technology integration in instruction and challenges encountered by teachers. The computed Pearson r-value is 0.214 that shows low correlation between teachers' level of technology integration in instruction and their challenges encountered. There is significant relationship between teachers' level of technology integration in instruction and their challenges encountered based on the calculated p-value of 0.037. Since the p-value is less than the level of significance set for the study ($p=0.05$) thus, the level of technology integration in instruction of senior high school teachers have significant relationship to the challenges they encountered. It means that the higher is the level of technology integration in instruction, the more challenges the teachers encounter in integrating technology in instructions. When teachers have low integration of technology in the classroom, it means that the chance of encountering challenges is also low. Similar to the claimed of König et al. [38] that teacher's digital competencies to integrate technology were related to how they mastered the challenges during emergency remote education. It conveys an idea that teachers who had experienced more challenges the more likely they mastered technology integration. Findings also comparable to the findings of Sillat et al. [62] on the connection between the use of emerging technologies and teacher's barriers in integrating technology.

IV. CONCLUSIONS

The 21st Century Digital Skills of the Senior High School teachers in Muntinlupa National High School is in very high level. Its composite skills of information, communication, collaboration, critical thinking, creativity, and problem-solving is in very high level while their communication is in high level. The level of technology integration in the instruction of the Senior High School teachers in Muntinlupa National High School is very high. Teachers highly use video conferencing software such as Zoom, Microsoft Teams, Google meet, Cisco, Webex, and others as the technology they integrate for their instructions. The challenges experienced by teachers in integrating technology in instructions are the following; poor internet connection, students' lack of support system, limited electronic materials and equipment, and lack of technological support from the school experts. Senior high school teachers aged 40 to 49 have higher skills in the information of 21st-century digital skills than teachers aged 50 and above. On the other hand, female senior high school teachers have higher skills in communication, collaboration, and problem-solving in 21st-century digital skills than male senior high school teachers. Hence, it can be viewed that the higher the 21st-century digital skills of the teachers, the higher the teachers' level of technology integration in instructions. And, the more challenges teachers encountered in integrating technology into instructions, the higher their level of technology integration into instructions.

V. RECOMMENDATIONS

Teachers should attend and be active in collaboration, participate in peer-to-peer teaching, and promote and maintain effective and active learning communities that promote innovation in technology and 21st-century digital skills. To create an expert teacher that could transform their students to be 21st century digitally skilled, leaders, administrators, and school heads should analyze, design, develop, implement and evaluate programs such as professional development programs to sustain and improve teachers' competence and skill for successfully and effectively using technology in the teaching and learning process. Leaders and school heads should establish continuous training and development through seminars and hands-on workshops for teachers to expand and achieve proficiency levels in using different technological teaching and learning tools for teaching instruction and practices. There is a need for strengthening the partnership between the community and school. Reinforcement is needed from local government, NGOs, barangays, and others to address the problems that hinder the effective adaptation of digital

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classrooms and distance learning. School heads should adopt the proposed action plan in this study to resolve issues with the integration of technology in the classroom. It will help to strengthen engagement and enhance the learning experience of learners. Teachers should be innovative and adaptive in integrating essential technological tools for teaching. They should have their initiatives to develop skills and learn operational ability to perform the necessary and critical teaching tools for embracing Education 4.0. Furthermore, similar studies must be conducted using the other population and environments not considered in this study such as investigating 21st-century digital skills of other professions and assessing of actual use of technological learning and teaching tools. They may also consider creating and evaluating a program that will enhance teachers' skills and integration of technology in the classroom.

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Linguistic Anxiety in Foreign Language Learning Process Preuniversity Level Dominican Students



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ABSTRACT: Learning a second language has become a necessity for human beings, because in daily life they face globalization, which requires knowing or mastering other languages or languages apart from the native one. This has become a challenge for the inhabitants of a country or nation, generating in them an anxious feeling that prevents them from learning easily. Linguistic anxiety is the apprehension experienced in front of a situation that requires the use of a second foreign language with which the individual does not have all his communicative potential [...] which causes the propensity of individuals to react nervously when they speak, listen, read or write in this other idiom For these reasons, through this study we will try to explain briefly and simply about anxiety, its intervention in learning a foreign language, the causes that generate it and the role of the teacher when this factor occurs.

KEYWORDS: Anxiety, types of anxiety, cognitive load, language learning.

INTRODUCTION

The study stems from personal experiences and observations of the various students who are studying in the various educational institutions of the Dominican Republic, who present certain tensions, nervousness, worries, anguish, among others, when carrying out activities related to the foreign language to be taught.

In today's world and through globalization, social, economic and political demands have been leading humanity to multilingualism in all social strata.

In today's societies, dealing with two or more languages has become a differentiated and essential medium in training and job opportunities for the youth population, whose main objective in the Dominican educational system is to promote comprehensive education in young people at the national.

Despite the implementation of new educational methodologies within the context of language teaching in the Dominican nation, there is still a latent deficit in the command of foreign languages by students and, at present, linguistic anxiety has become one of the biggest obstacles to language learning.

These feelings can be present in all four language skills, being more common in the development of oral skills. For these reasons, it is intended to know what anxiety consists of. Also, we will comment on the possible causes that generate it and how it affects students.

Anxiety is an affective factor that positively or negatively influences the personality of students and their education. This kind of feeling is called foreign language anxiety. Because, for some students, learning another language is complex, since they face the formation of a grammar different from the one they have achieved innately.

This is one of the cases faced by the students of the Dominican nation, who have faced certain obstacles in learning a foreign language, due to the coexistence of environments far from this type of language and by not having the necessary skills and knowledge. Show behaviors of nervousness and apathy towards language.

Anxiety has made students fearful and nervous, generating poor linguistic skills, as it is related to the wisdom and memory of the human being. In other words, they are the ones who are most often inferior to others, they are shy and easily embarrassed. On the other hand, they suffer from various transformations such as: accelerated heart rate, abundant perspiration, and desire to go to the bathroom, among others. To this situation is added the inability to order or structure the ideas well and therefore they cannot give an answer to the questions that the teacher asks.

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The problem of anxiety in students may have arisen from having been ridiculed by other people when making mistakes in the response or activities in the classroom called "Archaic Anxiety", that is, repressed anguish from the past. Also, it is perceived due to the scolding and negative thoughts that some teachers have created in them.

The study that is presented corresponds to the investigations that have been carried out in the different educational centers of the Dominican Republic in which levels of linguistic anxiety in the students have been explored. The presence of this construct in language classrooms shed light on this reality. A second language or language has received little research in the country.

On the other hand, language teachers are interested in delving into the knowledge in the process of learning a language and what interferes with said learning, since the better the problem is understood, the better pedagogical orientations will emerge for the teaching of languages. That they want to impart.

In other words, language anxiety is central to understanding how learners approach language learning, their expectations of success or failure, and ultimately why they continue or stop studying.

ANXIETY IN THE ACQUISITION OF SECOND LANGUAGES

Conceptualization

Merino-Crespo (2019) defines anxiety as "an alert signal that warns of imminent danger and allows the person to take the necessary measures to face a threat" (p.19). The detriment in student performance is associated with anxiety and stress problems, causing long-term mental and physical health problems.

Cáceres-Caballero & Meza-Aranda (2021) argue that anxiety in learning a foreign language is a unique type of anxiety that has a broad theoretical study not only addressed by theorists who expose results in fields of anxiety, but, as part of the reality experienced by many foreign language learners. This type of anxiety accompanies the process of learning a new language, affecting all productive skills (written and speaking skills) as well as receptive skills (reading and listening skills) typical of the language.

Also, "anxiety always occurs as a result of difficulties in adapting to the changes that are taking place in our lives." It is considered as an emotional response or pattern (triple response system) encompassing cognitive, physiological and motor aspects. In addition, it supports some of the repercussions associated with cognitive procedures: worry, fear, fear, insecurity, apprehension or negative thoughts (Merino-Crespo, 2019:19).

Anxiety is defined in the learning of a foreign language "as a complex psychological phenomenon and typical of the language while in a more specific way" (Cáceres-Caballero & Meza-Aranda, 2021:42). On the other hand, it is conceptualized as "that feeling of tension and apprehension associated with learning contexts of a foreign language in relation to the development of a negative feeling present when learning and using that target language orally or in writing" (p.42).

Anxiety in the context of learning a foreign language is one of the main impediments to the acquisition and future fluent production of the new language. On the other hand, it is typified as that language anxiety related to negative feelings produced within the context of learning a foreign language. Put another way, it is the apprehension experienced when a situation requires the use of language or language in which the learner is not fully competent.

In other words, various researchers and authors recognize the distinction between anxiety in learning a foreign language and any other type of anxiety based on the fact that the learning experience is a unique and specific process (Cáceres-Caballero & Meza-Aranda, 2021:41-42).

ANXIETY CLASSIFICATION

There are two types of anxiety: the positive one experienced as a consequence of real dangers and the negative one, which responds to the fears present in people's imagination. Others comment that it is a subjective feeling of tension, apprehension, nervousness and worry, associated with an activation of the parasympathetic nervous system. In addition, two categories associated with this concept are considered: state-anxiety and trait-anxiety.

To this is added a third, called situational anxiety. It is related to aspects of personality and may be a hereditary component, anxiety as a state is temporary. That is to say, it details a momentary period and a resistance against specific situations. This third category (situational anxiety) is considered a form of state-anxiety that appears in certain contexts and is characterized by a feeling of incapacity on the part of the individual. (Merino-Crespo, 2019: 19)

Anxiety and Learning a Second Language – Foreign

España-Reyes (2019), comments that one of the factors that affects students in the learning process is anxiety in subjects that they consider difficult, among which is learning other languages. For these reasons, various studies have been carried out focused on the investigation of anxiety (p.7).

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Anxiety is defined as "a threat to security and/or self-esteem perceived by students" (España-Reyes, 2019:8). In accordance with this definition, it can be seen that this threat can be direct, such as a decrease in a grade in a test. Also, a degree of intense anxiety can obstruct the ability to use specific skills necessary for learning the foreign language. For this reason, it has been identified as one of the factors that affects the learning of foreign languages.

The degree of anxiety can interfere with the unavoidable skills for learning the foreign language. Also, it is related to interaction with others, such as students who consider themselves disabled by their actions (when speaking in class) when they feel judged by others or insecure (España-Reyes, 2019:8).

CAUSES OF ANXIETY

For España-Reyes (2019), anxiety about learning foreign languages is attributed to various factors: "oral expression, fear of being negatively evaluated and anxiety before exams". Difficulty levels of foreign language classes, personal perception of language aptitude, certain personality variables (for example, perfectionism and fear of public speaking), and stressful classroom experiences are all possible causes of concern.

Six random sources of anxiety stemming from these aspects have been identified: the student, the teacher, and the instructional practice. It is caused by personal and interpersonal issues, student statements about language learning, teacher opinions about language teaching, teacher-student interaction, classroom methods, and exams (España-Reyes, 2019:9).

Other causes for which anxiety is generated

Fear of speaking: sometimes students speculate that they are going to make a mistake and feel fear, refraining from speaking, perhaps because of the ridicule of their classmates and the teacher's call for attention, making them unable to express themselves in another language. The student must risk talking regardless of the mistakes he may make when expressing himself, as this will help him improve and meet his goal.

Low self-esteem: students who have limited success in learning a foreign language often have low self-esteem, considering themselves incapable of carrying out activities that are related to the oral production of the language they are learning. Some consider that they must speak fluently, with a good accent that language learning must be done in a short time (López, 2019).

ANXIETY AND ACADEMIC PERFORMANCE

One of the important causes of anxiety is the nervousness caused by grammatical errors, pronunciation and the inability to talk spontaneously, to talk in front of others in the second language. For such purposes, it is suggested that the classroom environment should be encouraging, motivating and that teachers should deal with anxiety-provoking situations.

Negative emotions continue to appear in the classroom that teaches foreign languages, because the act of writing in another language is not attractive to students. Also, the situations that cause anxiety in students is not understanding what the teacher transmits to them.

and when they make mistakes when expressing themselves in the foreign language (España-Reyes, 2019:11).

Anxiety and Learning

Regarding the relationship between anxiety and learning, the lack of desire to communicate and the anxiety of the students, since most of them want to participate in interpersonal dialogues, because they do not like to risk talking in another language in the classroom. On the other hand, students of both sexes were facing anxiety in learning foreign languages, however, the female gender presents greater concerns than the male (España-Reyes, 2019:12).

Anxiety and Exams

España-Reyes (2019) argues that one of the important aspects in the growth of students is anxiety when facing exams, focusing on three dimensions: concern, emotionality and facilitation. This type of deduction has identified the relationship between test anxiety and the use of information acquisition, encoding and retrieval strategies in these students (p.12-13).

TYPES OF ANXIETY

Social anxiety: this includes shyness, embarrassment, a state of fear and apprehension in communication. They avoid social settings where they have to participate for fear of ridicule and rejection by others.

Evaluative anxiety: it is perceived as part of social anxiety, especially in situations in which the student must communicate in the language that she is learning. Therefore, when presenting this type of anxiety, he tends to be restless and worried about the results of his expression (López, 2019).

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Foreign Language Learning Anxiety

According to Merino-Crespo (2019), anxiety in the foreign language can be seen as an individual discernment or in any context in which a second or foreign language is used. This varies according to environmental conditions, perceptions of the level of threat in a given situation, and variations in the individual's level of stress. Three components were identified: apprehension in the act of communication, test anxiety and fear of negative evaluation.

The apprehension in the act of communication is related to the concern presented by the students when they have to communicate with others, being shy when speaking in public, experiencing difficulties when they have to speak in the foreign language, since they are observed by the teacher and is not in control of the situation. These learners are often involved in strategies to avoid the language learning process. In addition, the belief they have about the difficulty of understanding and being understood by others when they use non-native language, experiencing a feeling of fear and becoming silent in certain situations. Exam anxiety arises from the fear of failure, because students experience nervousness before obtaining an exam or evaluation test, giving them a feeling of discomfort that leads them to make certain mistakes that would not occur in a more relaxed environment.

The fear of negative evaluation is related to the fear of being evaluated, but in this case it goes beyond the context of the test or exam, because the student generates a feeling of fear when being evaluated by others in any social situation, such as speak in class using a language other than their mother tongue and tend to avoid such situations (Merino-Crespo, 2019:19-20).

On the other hand, there are six potential sources that produce anxiety in foreign language students, since they can be related to the student, the teacher or the educational practice. The first is due to the personal and interpersonal anxieties associated with the self-esteem of individuals and their concern about how others perceive them. Students have an incorrect concept of their abilities.

The second source is related to students' beliefs about language learning. In this sense, students with unrealistic beliefs about language learning are considered to experience anxiety when they are unable to meet expectations.

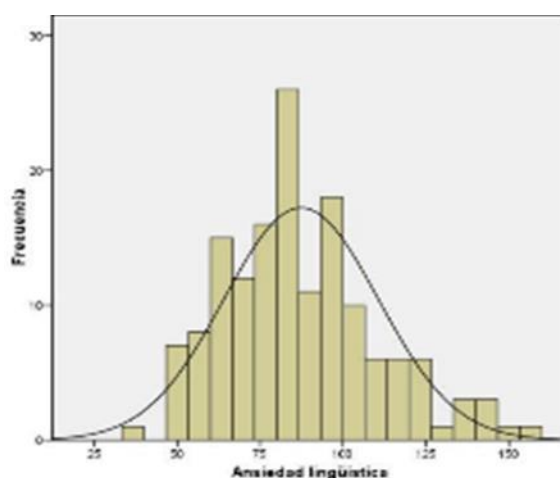
Third, it is supported that the misconceptions that teachers have about language teaching can be a source of linguistic anxiety in students, thinking that they have to constantly correct all mistakes, creating a tense atmosphere in the classroom.

The fourth source is the interaction between the teacher and the student, as well as the correction techniques used. In this part the corrective feedback is revealed, since the problem seems to be linked to the way of correcting the errors, not the correction of errors.

The fifth source of anxiety arises when students have to deal with speaking or interacting using the foreign language, especially frequently.

Talk to the teacher or the rest of the students.

Finally, the sixth and in relation to exams, it can cause anxiety. This is because students may worry when the teacher places too much importance on grammatical correctness in exams or other assessment activities, with the result that students may not pass exams even though they have good proficiency in the subject. Foreign language (Merino-Crespo, 2019: 21-22)



Histogram of language anxiety

Anxiety in Learning Foreign Languages

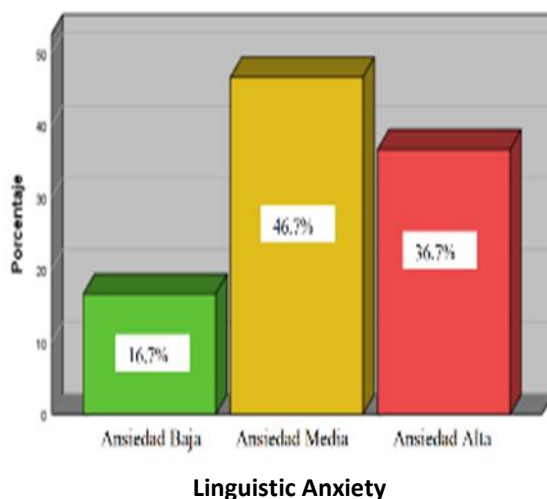
Adriánzén-Segovia (2021), comments that studies have been carried out in order to understand the levels of anxiety of developed

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people in relation to learning a foreign language since it affects it effectively or inefficiently. This is a feeling of tension and apprehension specifically associated with contexts that occur in the acquisition of second languages including oral production, listening comprehension and learning (p.61).

Anxiety can have a number of effects: academically, cognitively, socially, and personally. At the academic level, where high levels of anxiety are shown in learning the non-native language associated with low levels of performance in the language course. Cognitive, occurs in three stages: input, processing and output of information. Finally, in the social aspect, it is about the availability that students have to communicate during the class where this ability is usually compared between them.

As for the personal, each person faces anxiety since, for some, learning a foreign language can be an unpleasant experience.



However, a scale is presented to measure the level of linguistic anxiety of students in the process of learning a foreign language, using the components of anxiety in said learning, producing a negative effect on it:

Communicative apprehension: associated with the student's shyness in contexts where she has to communicate. That is, he is frustrated by not understanding another person or when he cannot communicate efficiently. In this there are three situations: speaking in public, with another person or in a group listening to a spoken message.

The fear of negative evaluation by peers: it depends on the appreciations that students have of their peers and these about them. This component can negatively affect the student both cognitively and emotionally. In the first case by hindering your ability to pay attention and understand new information. Second by generating feelings such as anxiety.

Exam anxiety: this is the expectations of students to get high grades and be successful in the foreign language class in which a series of exams and evaluations are constantly carried out in order to check the progress of the students. This process can raise stress and pressure levels in students who feel more anxious (Adrianzén-Segovia, 2021:61-62).

There are different studies focused on the relationship between anxiety and the skills that are developed as part of learning a foreign language: written and oral comprehension (reading & listening); written and oral production (writing & speaking). The perceptions of students in relation to anxiety have been investigated Influence of anxiety in learning English as a non-native language in higher education students and when speaking during language class resulting in high levels of anxiety when communicating with their peers. (Adrianzén-Segovia, 2021:62)

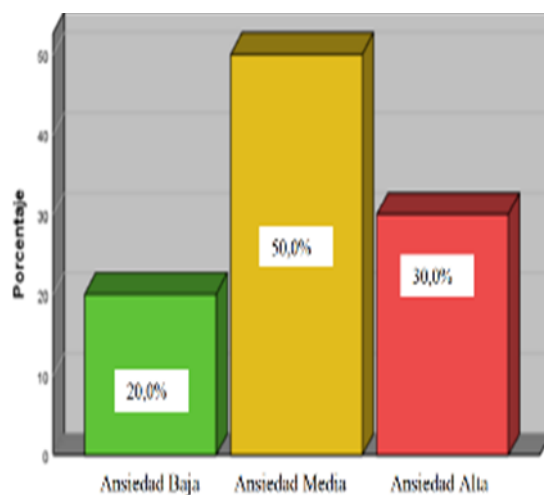
Cáceres-Caballero & Meza-Aranda (2021) believe that anxiety in learning a second language is a field that has been studied around the 1970s. However, until 1990, when a formal theory calling this class of anxiety as a syndrome related to three other types of anxiety: fear of negative evaluation, communicative apprehension, and evaluation anxiety.

Fear of negative evaluation: it manifests itself as excessive and disproportionate fear of self- and co-evaluation by the teacher or peers of the apprentice where not only the development of the person during the task but also to what extent they develop are objectively analyzed and valued. The various language skills. In other words, making mistakes in the process of learning a foreign language is allowed and develops naturally. However, these errors make the student find himself in constant fear of making mistakes, seeking to minimize any opportunity for participation to avoid any negative evaluation. (Cáceres-Caballero & Meza-Aranda, 2021:40-41)

Communicative apprehension: it is defined as the uncomfortable feeling mode and negative that is present when having to express thoughts, emotions or facts in public within a learning context. If the lack of command of this new language is added to this situation, both factors contribute to the unconscious development of anxiety. That is, the lack of ability to understand and be understood within this context causes frustration and the constant apprehension to communicate.

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Anxiety before the evaluation: it is based on the fear and suspicion of failing or not demonstrating sufficient ability to master the target language. This happens as a result of the unrealistic demands made by the learner where the only result that must be achieved is perfection, because they see evaluation (exams) as the only intelligent tool that can cause them to make mistakes (Cáceres- Caballero & Meza-Aranda, 2021:41-42).



Anxiety in learning situations and processes

Virtual Environments to reduce anxiety in foreign language students

Sánchez-Muñoz (2021), believes that the advantages of a second language is a theoretical construction to solve certain problems regarding cognitive and affective factors in the teaching and learning of foreign languages. It has been possible to appreciate that certain studies have found similarities between the learning of the non-native language and diversified aspects such as personality, motivation, attitude or anxiety. The purpose of the research regarding anxiety in learning a foreign language can be controlled with the implementation of virtual worlds (VM) for the teaching of a foreign language (p.1).

Anxiety in the foreign language plays an essential role in language teaching, where teachers must create environments that reduce anxiety in students. Information and Communication Technologies (ICT) and technological instruments offer these possibilities, since their purpose is to facilitate the learning and teaching of foreign languages.

Various investigations have been investigating how anxiety in the foreign language can be reduced through electronic teaching environments, smartphones or mobile phones, communication environments measured by computers, among other means.

The studies carried out have been able to show that virtual worlds could reduce anxiety, due to the possibilities they offer in the teaching of the foreign language. These studies analyzed the evolution of anxiety levels due to a foreign language.

Virtual worlds favor the reduction of anxiety levels for the foreign language in language students. In that same order, there are certain methodological obstacles for the development of activities in the teaching of the second language (Sánchez-Muñoz, 2021:6).

The use of technological tools in virtual environments for the development of the foreign language

Mendoza-Navas & Martos-Eliche (2021) are of the opinion that Information and Communication Technologies (ICT) offer the possibility of communicating in real time with any part of the world, as well as data access that increases every day. Knowledge of a foreign language offers communicative possibilities using it, creating real and functional communicative content.

The use of ICT in the foreign language classroom is a methodology that motivates students, because it stimulates them to feel attracted to them, which can be used in various ways. All teaching methods, the use of new technologies have advantages and disadvantages. The use of ICT in the foreign language classroom is an effort of teachers, because they must be constantly updated, receiving training for the use of these resources when teaching. Teaching methods are constantly changing and today the use of new technologies is inevitable in teaching.

The use of technology in the teaching of foreign languages responds to the following reasons: it is motivating, the interactivity offered by the linguistic exercises, the type of feedback offered by the interactive materials, which are perceived as useful by the students. On the other hand, the use of technology in the classroom allows students to be more autonomous.

The discussion about the benefits of technology, including investigations of technological applications to a specific area of language teaching and learning, considers that the role of technology is useful in differentiating linguistic abilities (reading,

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listening, writing and speaking), facilitating the practice of each of these skills such as the integration of skills and the incorporation of authentic cultural contexts important for language learning (Mendoza-Navas & Martos-Eliche, 2021).

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The Role of Customer-Based Brand Equity on Customer Loyalty in Employees' Social Security



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ABSTRACT: This study aims to analyze the role of customer-based brand equity (CBBE) in affecting customer loyalty in social security for employees. The Social Security Implementer Agency (BPJS) for Employment at Yogyakarta Branch Office is observed or this study. The research population is all participants of social security programs registered in Yogyakarta branch office. The research sample was 251 respondents who are participants of the social security program from BPJS for Employment. The research data were analyzed using the Structural Equation Model (AMOS v 23). The results of this research show that CBBE has a positive and significant effect on customer satisfaction. In addition, CBBE has a positive but not significant effect on trust and customer loyalty. Meanwhile, customer satisfaction has a positive and significant effect on trust. Furthermore, customer satisfaction has a positive but not significant effect on customer loyalty. The results of this study also show that trust has a positive and significant effect on customer loyalty.

KEYWORDS: CBBE, trust, satisfaction, customer loyalty, BPJS

INTRODUCTION

The Social Security Implementer Agency (BPJS) is a legal public entity arranged directly under the President of the Republic of Indonesia. This agency is in charge of administering the implementation of Indonesia's Social Security. According to Law Number 40 of 2004 on the National Social Security System, five types of social security must be owned by every Indonesian resident, including foreigners who work for a minimum of 6 (six) months in Indonesia. The five types of social security are health security, old age security, work accident security, death security, and pension security. Through Law Number 24 of 2011 on the Social Security Agency, two major operators of social security providers are appointed. They are BPJS for Health and BPJS for Employment. Based on data from BPJS for Employment's financial statements in 2019 and 2020, the participant satisfaction index decreased from 95.5% to 92.8%. Net Promoter Score (NPS) is the probability of a respondent recommending BPJS for Employment's products to others. This reflects that the loyalty of BPJS Employment participants is still very low. In terms of membership coverage, it can be seen that there is a slowdown growth of active participants of BPJS for Employment. Particularly, the slowdown happens when it is compared to the projected data of BPJS for Employment participants issued by the National Development Planning Agency.

Consumer Based Brand Equity (CBBE) is the differential effect of brand knowledge on customer responses to the brand's marketing (Raji, et al., 2019). The customer's perception of the features and brand of a product or service helps them recognize the organization, known as brand equity (Kotler & Keller, 2016). A brand has a positive CBBE when customers are interested in the brand. In addition, positive CBBE is shown when customers have a positive experience with a product and how to market it. On the contrary, a brand has a negative CBBE when customers react less interestedly to the brand's marketing under the same circumstances

To find out whether the perceived quality provided is corresponding to the wishes and needs of the participants, BPJS for Employment at Yogyakarta Branch Office needs to evaluate the quality of their existing services. By doing so, BPJS for Employment can improve its services that suit the customer's wishes and needs. Thus, the service improvement is expected to increase customer satisfaction and loyalty which become one of the factors to boost organizational profits in the future.

Previous research conducted by Thakur (2018) shows that customer satisfaction has a very large role. Specifically, customer satisfaction can mediate the relationship between service quality and loyalty. Aside from this result, research conducted by Neupane and Devkota (2017) shows that service quality has a significant effect on customer satisfaction at private hospitals in

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Nepal. Similarly, the study conducted by Yunan et al. (2017) states that service quality has a significant effect on customer loyalty. The research conducted by Yilmaz, et al (2018) concludes that bank-inspired trust, the reliability of bank services, and the physical appearance and accessibility of banks affect increasing customer satisfaction.

The results of Vironika and Pradana's (2020) research reveal that internal branding directly affects customer-based brand equity without requiring organizational loyalty as a mediating variable. These results can help the retail store industry with empirical evidence to apply internal branding in their organizations. It is done to create brand equity between stores and customers through front-line employees.

Pratama, et al. (2019) examined the effect of equity and consumer-based brand satisfaction on loyalty. His study argues that there are two unsupported hypotheses, namely (1) the relationship between ideal self-congruence and customer satisfaction and (2) the relationship between brand identification and customer satisfaction. Internal branding that is successfully implemented can improve employee compatibility with the work environment and increase employee brand knowledge (Boukis et al., 2017). Utami's research (2015) explains that the success of Bank Mandiri's internal branding program is assessed through brand performance, such as sales, brand recall, and brand equity, as well as indicators of satisfaction, understanding and commitment among employees. In addition, organizations also have a role where employees accept or ignore brand messages that must be conveyed (Boukis et al., 2017; Wang, et al., 2019). In Ebrahim's research (2020), It is stated that there is a very strong relationship between brand loyalty in influencing brand equity. In addition, this study argues that the company must focus on brand loyalty to increase brand equity.

THEORETICAL APPROACH AND LITERATURE REVIEW

Social Security Implementer Agency for Employment

The Social Security Implementer Agency (BPJS) for Employment is a transformation of PT. Jamsostek (Persero) or Worker's Social Security Program. BPJS for Employment is a government program that provides social security for every worker in Indonesia. BPJS for Employment organizes 4 Social Security programs for employees. They include Work Accident Security, Death Security, Old Age Security and Pension Security. In terms of BPJS for Employment membership, there are four types of participants as follows:

1. Wage Recipients (PU) are those who work by receiving salaries, wages, or other forms of remuneration from the employer.
2. Non-Wage Recipients (BPU) are people who work independently to carry out economic activities or businesses to earn income from the results of their activities or business.
3. Construction service sector workers (JAKON) are workers in the planning, implementation, supervision, and consulting services for construction work
4. Indonesian Migrant Worker (PMI) is every Indonesian citizen who will, is currently, or has done work by receiving wages outside the territory of the Republic of Indonesia.

Customer-Based Brand Equity (CBBE)

Aaker (1996) defines brand equity as a set of brand assets and liabilities linked to a brand, its name and symbol, that add to or subtract from the value provided by the product or service to a company and/or the company's customers. Perspectives on brand equity can be viewed from a financial perspective, a consumer perspective, and an employee perspective (Baalbaki, 2012). Consumer-based brand equity is a customer-based measure that is used to determine the relationship between brands and customers that gives value to a company (Jeon & Yoo, 2021; Algharabat, et al., 2020; Zarantonello, et al., 2020). Aaker (1991); Alexandra & Cerchia (2018); Mokhtar, et al., (2018); Sadek, et al., (2018) define CBBE as a commercial value that comes from consumers' perceptions of certain brand name, products or services, not from the products or services themselves. They also note that brand equity has five dimensions. They include brand loyalty, brand awareness, perceived quality, brand associations, and other brands.

Customer Satisfaction

Satisfaction is an attitude shown as consumers' response to their experience and their assessment of an event (Roostika & Muafi, 2014). According to Kotler and Keller (2016); Danthanarayana & Arachchi (2020), satisfaction is defined as "a person's feelings of pleasure or disappointment that result from comparing a product or service's perceived performance (or outcome) to expectations" with the intention that consumers can experience one of these three general levels of satisfaction. First, if the performance is below expectations, consumers will feel disappointed. Second, if the performance matches the expectations, the customer will be satisfied. Third, if the performance exceeds expectations, the customer will feel very satisfied, happy or happy. Regarding satisfaction, Rehman (2016) says that it is a "summary of psychological states that result when emotions towards unconfirmed expectations are combined with previous feelings about the consumer's experience." This consumer satisfaction can

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be measured. Consequently, companies can see the level of satisfaction of their consumers and also develop strategies to create consumer satisfaction. According to Kaihatu, et al. (2015), functional satisfaction is the satisfaction felt when the product matches the expected function. Meanwhile, psychological satisfaction is felt when an attribute has no form or is intangible but can give a feeling of satisfaction.

Customer Loyalty

Customer loyalty means customer commitment to brands, stores, and suppliers, and it is based on a very positive attitude from customers and reflected in their positive buying behavior (Bismo, et al., 2018). Kotler and Keller (2016) define loyalty as a customer's commitment to repurchase a particular product or service in the future, even if the circumstances and marketing efforts of rivals have the potential to make the customer switch to another company. Loyalty is a customer behavior that will lead to repeat purchases. This can be driven by price or a sense of belonging to a particular brand, perhaps through inferred exclusivity. Furthermore, loyalty is a customer's commitment to deeply keep on re-subscribing or re-purchasing the selected product/service consistently in the future, even though the influence of the situation and marketing efforts have the potential to cause behavior change (Vidayanti, 2020). Sivapalan & Jebarajakirthy (2017) conclude that improving service quality will have a good impact on increasing loyalty. According to Kim, et al. (2021), brand loyalty is one of the measurements of how a brand performs to consumers.

Trust

Brand trust is the perception of reliability from the consumer's point of view based on experience, or rather on a sequence of transactions or interactions characterized by the fulfillment of expectations for product performance and satisfaction (Rizan, 2012: 6). Trust is the expectation of each individual who will become a consumer that the company can be trusted and relied on in providing satisfaction for consumers (Siagian & Cahyono, 2014). Trust doesn't come easily. Trust is built because of the expectation that the other party will act according to the needs and desires of consumers. Trust is a consumer's belief in the attitude and behavior of another party or service provider. Trust must be built from the beginning of the business establishment to the implementation process of business activities. Trust itself functions as a catalyst in various transactions between sellers and buyers so that consumer satisfaction can be fulfilled and as a result will have an impact on higher buying interest (Nababan, et al., 2021; Chauhan & Hudaya, 2020). The theoretical framework is described as follows:

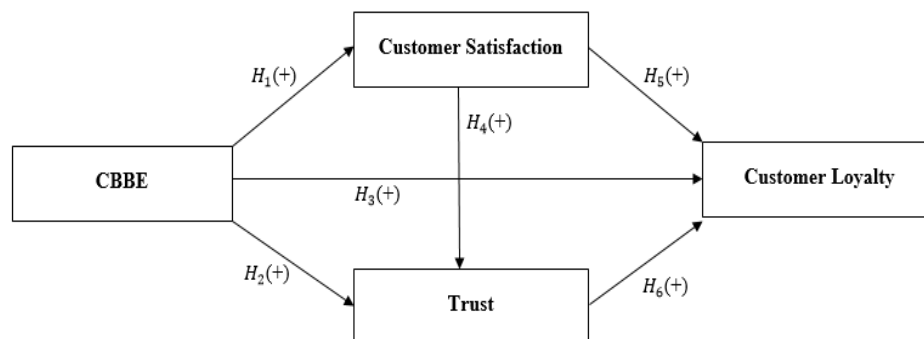


Figure 1. Conceptual Framework

RESEARCH METHOD

This research used a quantitative method. The population in this study were the participants of BPJS for Employment. The technique of determining the sample of this research was purposive sampling. The samples in this study were characterized or required to be the participants of BPJS for Employment at the Yogyakarta Branch Office who agreed to be the sample. So, the respondents in this study were at least $38 \times 5 = 190$ respondents. The data collection method used a questionnaire/questionnaire.

DATA ANALYSIS METHOD

This study used SEM (Structural Equation Modeling) analysis from the AMOS statistical package. In addition, this research used a validity test and reliability test. Validity is calculated by the product moment formula, between the item score (X_p) and the total score (X_t). Regarding the reliability, the instrument can be declared reliable if it has a Cronbach Alpha Coefficient > 60%, or more than 0.06.

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RESULTS AND DISCUSSION

Respondent Characteristics

The characteristics of the respondents in this study are described in terms of several criteria. They include sex, age, education, monthly expenses, and occupation. The characteristics of the respondents are stated in Table 1.

Table 1. Respondent Characteristics

Sex	Frequency	%
Male	92	37%
Female	159	63%
Age		
18-29 Years	51	20%
30-39 Years	104	41%
> 40 Years	96	38%
Education		
Senior High/Equivalent	39	16%
Diploma/Bachelor	194	77%
Master Degree	17	7%
etc.	10	4%
Monthly Expenses		
< 2 million	48	19%
2 million - 5 million	152	61%
5 million - 10 million	42	17%
> 10 million	9	4%
Occupation		
Civil Servant/Army/Police	22	9%
Private Employees	204	81%
Entrepreneur	21	8%
Unemployed /Housewife	4	2%

Structural Equation Modeling Analysis

The development of the model in this research is based on the concept of data analysis. In general, this research model consists of 1 exogenous variable and 3 endogenous variables. The exogenous variable in this study is CBBE. The endogenous variables in this study are customer satisfaction (CS), trust (CT) and customer loyalty (CL). Furthermore, these variables will be analyzed using the method of structural equation modeling through AMOS 24 software.

Confirmatory Analysis

Validity and Reliability Test

Confirmatory analysis was used to test the concept that is built using several measurable indicators. Based on confirmatory analysis, validity and reliability become the first factor to look at. Validity can be known through the value of the factor loading of each indicator. According to Hair et al. (2010), the minimum number of factor loading is 0.5 or ideally 0.7. As for the reliability test, construct reliability is declared good if the CR (construct reliability) value > 0.7 and the VE (variance extracted) value > 0.5. The results of the validity and reliability tests are shown in Table 2.

Table 2. Validity and Reliability Test

Variable	Indicator	Factor Loading	CR	VE
CBBE	CBBE2	0,823	0,9	0,8
	CBBE1	0,658		
	CBBE3	0,954		
	CBBE4	0,967		
	CBBE5	0,95		

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Customer Satisfaction	CS2	0,903	0,9	0,8
	CS3	0,783		
	CS1	0,92		
Customer Trust	CT2	0,914	0,9	0,8
	CT1	0,889		
	CT3	0,904		
	CT4	0,913		
Customer Loyalty	CL1	0,931	0,9	0,7
	CL2	0,933		
	CL3	0,778		
	CL4	0,888		
	CL5	0,634		

Table 2 shows that all indicators have a factor loading value of > 0.5 . This value means that all indicators are valid. Likewise, the CR value of each variable is > 0.7 and the VE value is > 0.5 . Thus, all variables are reliable.

Goodness of Fit

Furthermore, the conformity test of the confirmatory model was tested using the Goodness of Fit Index (GOFI). In this study, several criteria were taken from each type of GOFI. They include Chisquare, probability, RMSEA and GFI which represent absolute fit indices. In addition, they include CFI and TLI which represent incremental fit indices. Lastly, these criteria also include PGFI and PNFI which represent parsimony fit indices.

To increase the GOF value, it is necessary to modify the model that refers to the modification index table. Modifying the model can be done by providing a covariance relationship or eliminating indicators that have a high MI (Modification Index) value. In the model modification process, some indicators must be removed because they have a high MI (Modification Index) value. These indicators are CBBE1, CBBE2, CT1 and CL3. The results of the confirmatory analysis can be seen in Table 3.

Table 3. Results of the Goodness of Fit Test

Fit Index	Goodness of Fit	Criteria	Cut-off Value	Information
Absolute Fit	Chi-square	low	74,69	Fit
	Probability	≥ 0.05	0,05	Fit
	CMINDF	$\leq 2,00$	1,33	Fit
	GFI	≥ 0.90	0,96	Fit
Incremental Fit	CFI	≥ 0.90	1,00	Fit
	TLI	≥ 0.90	0,99	Fit
Parsimony Fit	PGFI	≥ 0.60	0,59	Marginal Fit
	PNFI	≥ 0.60	0,70	Fit

Table 3 shows that the Goodness of Fit value has met all the criteria so that the model in this study can be declared Fit.

Hypothesis Testing

The next analysis is the full model Structural Equation Model (SEM) analysis. It is used to test the hypotheses developed in this study. The results of the regression weight test in this study are shown in Figure 2 and Table 4.

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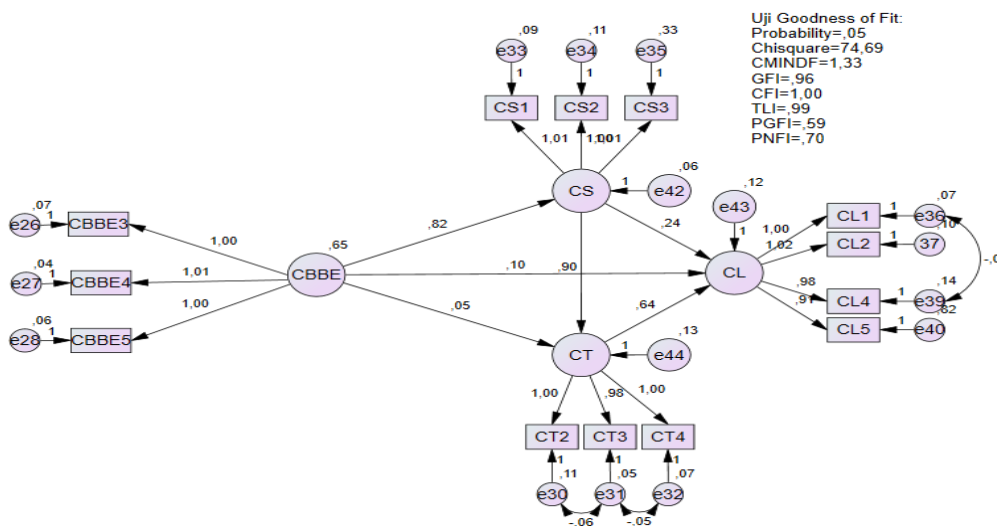


Figure 2. Flowchart

The results of hypothesis testing can be done by looking at the Critical Ratio (CR) value and the probability (P) value from the results of data processing. The direction of the relationship between variables can be seen from the estimate value. If the estimate value is positive, the relationship between the variables is positive. Meanwhile, if the estimate value is negative, the relationship is negative. Furthermore, if the test results show the CR value above 1.96 and the probability value (P) below 0.05/5%, the relationship between exogenous and endogenous variables is significant. The results of hypothesis testing are detailed in table 4.

Table 4. Results of Regression Weight Test

			Estimate	S.E.	C.R.	P	Information
CS	<---	CBBE	,820	,037	22,266	,000	Positive Significant
CT	<---	CBBE	,050	,134	,373	,709	Positive not Significant
CL	<---	CBBE	,101	,117	,865	,387	Positive not Significant
CT	<---	CS	,904	,161	5,616	,000	Positive Significant
CL	<---	CS	,236	,176	1,340	,180	Positive not Significant
CL	<---	CT	,640	,092	6,940	,000	Positive Significant

There are 6 hypotheses in this study. Among the 6 hypotheses, 3 hypotheses are supported and 3 hypotheses are not supported. The results of the analysis show that CBBE has a positive and significant effect on CS. These results indicate that H1 is supported. Furthermore, it is found that CBBE has a positive but not significant effect on trust. CBBE is the differential effect that brand knowledge has on customer responses to the marketing of the brand (Goyena, 2019). The customer's perception of the features and brand of a product or service helps customers recognize the organization, known as brand equity (Kotler and Keller, 2016). CBBE has no significant positive effect on Customer Loyalty. Customer-based brand equity is one of the most dominant conceptualizations in brand equity. It is known as the value that consumers get as the total number of values associated with the brand in the minds of customers. These values include awareness, loyalty and recognition of the brand (Arora & Neha, 2016; Bauer et al. al., 2005). Customer satisfaction has a positive and significant effect on trust. This is in line with the statement of Giovanis &

DISCUSSION

CBBE has a positive and significant effect on customer satisfaction. The results of the research are supported by a study conducted by Prasetyo & Rachmawati (2018) regarding customer-based brand equity on customer satisfaction. Meanwhile, CBBE has a positive but not significant effect on trust. CBBE is the differential effect that brand knowledge has on customer responses to the marketing of the brand (Goyena, 2019). The customer's perception of the features and brand of a product or service helps customers recognize the organization, known as brand equity (Kotler and Keller, 2016).

CBBE has no significant positive effect on Customer Loyalty. Customer-based brand equity is one of the most dominant conceptualizations in brand equity. It is known as the value that consumers get as the total number of values associated with the brand in the minds of customers. These values include awareness, loyalty and recognition of the brand (Arora & Neha, 2016; Bauer et al. al., 2005). Customer satisfaction has a positive and significant effect on trust. This is in line with the statement of Giovanis &

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Athanasopoulou (2017). They state when customers are satisfied with the use of a brand, the brand is considered to have fulfilled its promise. Thus, it creates trust in the brand.

Customer satisfaction has a positive but not significant effect on customer loyalty. The higher the satisfaction felt by consumers, the consumers will be more loyal to the brand. It is because they are able to get satisfaction. Consumers expect satisfaction when they decide to buy a brand. Furthermore, a positive and significant effect on customer loyalty is determined by trust. A complete understanding of brand loyalty cannot be obtained without an explanation of trust in a brand and how it relates to brand loyalty.

CONCLUSIONS

This study is conducted to determine whether the perceived quality provided by BPJS for Employment is corresponding with the wishes and needs of its participants. To increase the service quality, BPJS for Employment at the Yogyakarta Branch office needs to evaluate the quality of existing services. Based on the results of the research and data analysis, it can be concluded that CBBE has a positive and significant effect on customer satisfaction. This result is shown by a positive estimate value of 0.820, a t-statistic value above 1.96, which is 22.266 and a P-Value value below 0.05, which is 0.000. Thus, in this study, H1 is supported. Meanwhile, this study concludes that CBBE has no significant positive effect on customer trust. This result is proved by a positive estimate value of 0.50, a t-statistic value below 1.96, namely 0.373 and a P-Value value above 0.05, which is 0.709. So, H2 in this study is not supported. CBBE has no significant positive effect on customer loyalty. This result is shown by a positive estimate value of 0.101, a t-statistic value below 1.96, namely 0.865 and a P-Value value above 0.05, which is 0.387. Thus, in this study, H3 is not supported. Customer satisfaction has a positive and significant effect on trust. This result is proved by a positive estimate value of 0.904, a t-statistic value above 1.96, namely 5.616 and a P-Value value below 0.05, which is 0.000. So, H4 in this study is supported. Customer satisfaction has a positive but not significant effect on customer loyalty. This result is shown by a positive estimate value of 0.236, a t-statistic value below 1.96, namely 1.340 and a P-Value value above 0.05, namely 0.180. Thus, H5 in this study is not supported. Furthermore, trust has a positive and significant effect on customer loyalty. This result is demonstrated by a positive estimate value of 0.640, a t-statistic value above 1.96, namely 6.940 and a P-Value value below 0.05, which is 0.000. So, in this study, H5 is supported.

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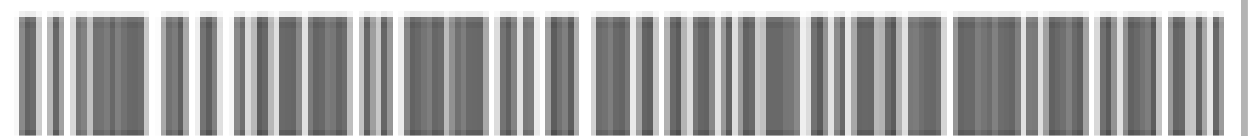
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