Examination of the Impact of System Quality, Information Quality, and Service Quality on Net Benefits through User Satisfaction in the Performance of State Civil Apparatus in the Malang District Government

Sigid Tri Hartanto[1], Mokhamad Natsir[2], Yusaq Tomo Ardianto[3]

[1,2,3] Postgraduate Program, University of Merdeka Malang, Indonesia.

ABSTRACT: Information technology investment is currently occurring rapidly and has become a necessity in an organization, both in the business environment and in the government environment. The various characteristics of information systems created with all their advantages and disadvantages have become an arena for competition in terms of innovation to show the superiority of the organization. The Civil Servant Performance Information System is the management and procedures for collecting, processing, analyzing, presenting, utilizing, and documenting civil servant performance data in an integrated manner. The net benefits of an information system are influenced by system quality, information quality, service quality, and user satisfaction. This research aims to analyze the influence of system quality, information quality, and service quality on net benefits through user satisfaction in the Malang Regency Government. This research is quantitative research with a saturated sampling method, so a sample of 72 respondents was obtained. The data analysis techniques used are descriptive analysis, classical assumption test, t-test, and path analysis. The research results concluded that system quality, information quality, and service quality have a significant effect on user satisfaction with civil servant performance information systems. User satisfaction also has a significant effect on the emergence of net benefits from the performance information system.

KEYWORDS: System Quality, Information Quality, Service Quality, User Satisfaction, Net Benefit, Performance System

I. INTRODUCTION

The world of information technology is currently developing so rapidly and has become a necessity in an organization, both in the business sector and in the government sector. Various characteristics of information systems that are created with all their advantages and disadvantages have become a competition arena in terms of innovation to show the superiority of the organization that houses them. The existence of technology and information used in an organization, both small and large, has now become the main commodity in competition in the era of globalization (Buana and Wirawati, 2018). In line with that, Dandago and Rufai (2014) stated that information technology is one of the resources that must be available in an organization because it will only cause optimal decision-making. The government of the Republic of Indonesia currently also wants to be included in terms of building an information system to support various government affairs such as public service innovation, financial systems, and administration systems to manage the performance of its apparatus. This is shown in the development of several current government regulations that always juxtapose the use of information systems in the implementation process. Likewise, the Malang Regency Government, as a form of compliance with rules related to performance management, in this case, Government Regulation (PP) Number 30 of 2019 concerning Civil Servant Performance Assessment, which is then further outlined in the Regulation of the Minister of Empowerment of State Civil Apparatus and Bureaucratic Reform (PermenPANRB) Number 6 of 2022 concerning Management of State Civil Apparatus Performance, a state civil apparatus performance information system was created which is used for performance management starting from planning, implementation, assessment and evaluation of state civil apparatus performance within the Malang Regency Government which was then named the Performance Assessment Application System (*SiapKerja*).

Examination of the Impact of System Quality, Information Quality, and Service Quality on Net Benefits through User Satisfaction in the Performance of State Civil Apparatus in the Malang District Government

Changes in work culture in the government environment have also begun to shift. Several conventional procedures that have long been implemented have begun to change towards the digitalization process in order to improve the quality of service or performance management processes. In PP Number 30 of 2019, Article 60 states that the planning, implementation, monitoring, performance coaching, assessment, and evaluation of follow-up are carried out using the ASN Performance Information System so that the processes of managing the performance of state civil servants no longer use conventional assessment formats, but are directly stated in the state civil servant performance information system. The digitalization process in the field of apparatus performance also has an impact on several other personnel service processes, for example, the digitalization process of promotion which no longer requires verification of performance assessment documents in physical form or scanned documents but directly sees the performance assessment results data in the State Civil Apparatus Information System (SiASN) database. The impact of the implementation of the digitalization process in the government environment has brought about a change in mindset and a reduction in the bureaucratic flow, which has been known to be long and slow. Still, the implementation process does not mean that it runs efficiently; the gap between generations among state civil servants is one of the challenges in the implementation of digitalization in the bureaucratic environment. For state civil servants who were born as millennials or later, it will be straightforward to adapt and follow the digitalization process, but not for the opposite generation, so a gradual socialization process and technical assistance are needed to overcome these problems.

The performance of civil servants in the Malang Regency Government has also changed after the provision of additional employee income (TPP), which has been given since 2019, with the number of allowances increasing gradually every year. TPP is given as a form of appreciation for the achievement of performance results, and deductions will be made when the performance results do not reach the predetermined target, so the phenomenon of the level of attendance and compliance in working for state civil servants in the Malang Regency Government has improved. The desire to obtain TPP in full and concerns about TPP deductions imposed if the apparatus does not achieve the maximum attendance and performance targets have changed the mindset of the Malang Regency Government apparatus for the better. To create fair and transparent conditions in order to meet attendance and performance targets, a state civil servant performance information system is needed that monitors and automatically calculates the TPP acquisition for each apparatus.

The implementation of information technology systems is expected to be helpful in support activities because information systems supported by information technology can support decision-making and bring success in activities, for example, in business life, economic life, social policy, and education (James A. O'Brien & Marakas, 2017). The state civil apparatus performance information system is present as a medium in the performance management process and a solution to its digitalization process in the Malang Regency Government environment, which can help the apparatus plan, implement, assess, and evaluate performance. The presence of the performance information system will certainly have an impact on the paradigm of apparatus performance management affairs, where performance assessment and evaluation are no longer an administrative function that is merely a formality but is considered a form of compliance that must be carried out on time. Changing the mindset of the apparatus from just working to performing is not easy, and this is because the old paradigm that made the mindset of the apparatus in working was to be present and wait for orders from superiors for a job. The issuance of PP Regulation Number 30 of 2019 has mandated that every apparatus must have a performance plan by setting targets and work realization for the next year using an information system as a medium for implementation. This will be a challenge in itself, so the apparatus in the Malang Regency Government environment is able to understand the process. Assistance is needed in the form of socialization and technical guidance in the preparation of performance planning for the evaluation process. Another change that accompanies the issuance of the regulation is that the assessor officials, who in this case are the direct superiors of the apparatus, must be able to express work expectations and behavioral expectations because, in this new regulation, the information system is more to help assessor officials to make decisions about an expectation, no longer as an information system that directly measures work results based on the formulation of numbers entered into the system. This paradigm shift has challenges for assessor officials because not all performance management matters are automated by the existing information system. Instead, it requires an active role from assessor officials to understand the results that their subordinates have achieved. According to research conducted by Ichsan (2020), company goals will be achieved optimally if supported by operational methods and work techniques that can optimize the time, energy, and costs that arise and are inseparable from the quality of resources in the organization. Information is used to support the decision-making process, with computers being a tool that is definitely used in the organizational environment.

Many studies have been conducted to identify several factors that influence the success of information technology systems, one of which was conducted by DeLone and McLean. DeLone and McLean (1992) proposed a model to evaluate the level of success of information technology systems, often referred to as the D&M IS Success Model, which shows that system quality and information quality affect user usage and satisfaction. In the theory of DeLone and McLean (2023), it is explained that system

Examination of the Impact of System Quality, Information Quality, and Service Quality on Net Benefits through User Satisfaction in the Performance of State Civil Apparatus in the Malang District Government

quality, information quality, and service quality can affect user usage and satisfaction, which will then affect net benefits. Usage must precede user satisfaction, but positive use will result in greater user satisfaction. Increasing user satisfaction will also increase interest in use and further use. The net benefit is an increase in the interest and satisfaction of the information system users. Based on the explanation of the facts, the phenomena mentioned above, and supported by the theories of experts and previous research, it is stated that there is an influence between system quality, information quality, and service quality on net benefits with user satisfaction factors as intervening media. Therefore, the researcher took the research title "Analysis of the Influence of System Quality, Information Quality, and Service Quality on Net Benefit through User Satisfaction of the State Civil Apparatus Performance Information System at the Malang Regency Government."

II. LITERATURE REVIEW
Information Systems Theory
According to O'Brien, 2010, an information system is an organized combination of people, hardware, software, communication networks, information resources, policies, and procedures that store, transform, and distribute information within an organization. Humans rely on modern information systems to communicate with each other using several physical devices (hardware), communication networks (networks), and stored data (data resources). According to Whitten and Bentley, 2007, it is defined that an information system is a combination of people, processes, technology, and data structures designed to collect, process, store, and share information to support management decision-making and organizational control. In another theory put forward by Davis, 1989, it is stated that an information system is a system that receives input data and instructions, processes data according to instructions, and produces results. An information system is also a man-made system that includes a set of integrated components and computer-based manual components that aim to collect data, process data, and produce information for users (Sidharta, 1995).

Net Benefit
According to the theory presented by DeLone and McLean, 2003, it is stated that net benefit is the result of using an information system that provides benefits to individuals, groups, and organizations. Usage refers to how often users use the information system. The more systems are used, the greater the net benefit. The net benefit is the result of using a system that helps individuals, groups, and organizations. User satisfaction with the results of using the system affects user performance; the more users are satisfied with the system, the greater the user feels the system contributes. There are five indicators used by DeLone and McLean in measuring net benefit, namely (a) cost savings, (b) expanded market, (c) additional sales development, (d) reducing search costs, and (e) time savings.

III. METHOD
This research uses a positive paradigm as a line of thought that uses deductive reasoning and quantitative methods to obtain the truth. The primary data used in this research is a questionnaire that is obtained from Google Forms. The population in this study was the Head of the General and Personnel Sub-Division, the person in charge of the Regional Apparatus within the Malang Regency Government, who handled the implementation of the state civil servant performance information system, with a total of 72 people. Sampling in this study used the saturated sampling method, where all members of the population became research subjects.

The data analysis technique used is descriptive analysis for each variable and a requirements analysis test for further hypothesis testing using multiple regression and path analysis. The analysis requirements tests performed were the normality, multicollinearity, and heteroscedasticity tests. Hypothesis testing using multiple regression analysis was carried out to determine whether the independent variables partially influence the dependent variable and to determine the linear regression equation. Path analysis was carried out to determine whether the mediating variable can mediate the independent variables on the dependent variable. Analysis of needs testing, hypothesis testing, and multiple linear regression analysis equations using the help of IBM SPSS Statistics version 29 software.

IV. RESULT AND DISCUSSION
A. Result
1. Partial test (t-test)
The basis for decision-making in this partial test is that if the significance value t is < 0.05, Ha is accepted, whereas if the significance value t is > 0.05, Ha is rejected. Partial test results (t-test) are presented in the table 1:

Examination of the Impact of System Quality, Information Quality, and Service Quality on Net Benefits through User Satisfaction in the Performance of State Civil Apparatus in the Malang District Government

Table 1 Partial Test Results Model 1

Model	Unstandardized Coefficients	Standardized Coefficients	Beta	t	Sig.
	B	Std. Error			
Constant	3,962	0,700		5,660	0,01
System Quality (X_1)	-0,746	0,034	-0,242	-3,082	0.03
Information Quality (X_2)	0,425	0,046	0,945	9,132	0,01
Service Quality (X_3)	0,147	0,41	0,258	3,609	0,01

The system quality variable (X_1) obtained a negative t-count of -3,082 with a sig. of 0.003 < 0.05. So, the system quality variable negatively and significantly affects the job satisfaction variable. It shows that hypothesis 1, which is that system quality has a significant effect on user satisfaction, is accepted.

The information quality (X_2) obtained a positive t-count of 9,132 with a sig. of 0.001 < 0.05. So, information quality is positive and significantly affects the variable of user satisfaction. It shows that hypothesis 2, which is that information quality has a significant effect on user satisfaction, is accepted.

The service quality (X_3) obtained a positive t-count of 3,609 with a sig. of 0.001 < 0.05. So, service quality is positive and significantly affects the variable of user satisfaction. It shows that hypothesis 3, which is that service quality has a significant effect on user satisfaction, is accepted.

Table 2 Partial Test Results Model 2

Model	Unstandardized Coefficients	Standardized Coefficients	Beta	t	Sig.
	B	Std. Error			
Constant	3,024	3,760		0,804	0.01
System quality (X_1)	0,325	0,039	0,702	8,242	0,01
Information quality (X_2)	0,370	0,036	0,775	10,882	0,02
Service quality (X_3)	0,464	0,047	0,763	9,865	0,01
User satisfaction (Y_1)	0,912	0,065	0,857	13,927	0,000

The system quality variable (X_1) obtained a positive t-count of 8,242 with a sig. of 0.01 < 0.05. So, the system quality variable positively and significantly affects the net benefit variable. It shows that hypothesis 3, which is that system quality has a significant effect on net benefit, is accepted.

The information quality variable (X_2) obtained a positive t-count of 10,882 with a sig of 0.02 < 0.05. So, the information quality variable positively and significantly affects the net benefit variable. It shows that hypothesis 4, which is that information quality has a significant effect on net benefit, is accepted.

The service quality variable (X_3) obtained a positive t-count of 9,865 with a sig of 0.01 < 0.05. So, the service quality variable positively and significantly affects the net benefit variable. It shows that hypothesis 5, which is that service quality has a significant effect on net benefit, is accepted.

The user satisfaction (Y_1) obtained a positive t-count of 13,927 with a sig. of 0.000 < 0.05. So, the user satisfaction variable positively and significantly affects the net benefit variable. It shows that hypothesis 6, which is that user satisfaction has a significant effect on net benefit, is accepted.

Examination of the Impact of System Quality, Information Quality, and Service Quality on Net Benefits through User Satisfaction in the Performance of State Civil Apparatus in the Malang District Government

2. **Path Analysis**

Table 3 Path Analysis Results

Variable	Direct Effect	Indirect Effect	Total Effect	Information
System Quality (X_1) – User Satisfaction (Y_1) – Net Benefit (Y_2)	0,702	0,242 x 0,857= 0,207	0,702 + 0,207 = 0,909	Indirect effect < direct effect, 0,207< 0,702
Information Quality (X_2) – User Satisfaction (Y_1) – Net Benefit (Y_2)	0,775	0,945 x 0,857 = 0,809	0,775 + 0,809 = 1,584	Indirect effect > direct effect, 0,809 < 0,775
Service Quality (X_3) – User Satisfaction (Y_1) – Net Benefit (Y_2)	0,763	0,258 x 0,857 = 0,221	0,763 + 0,221 = 0,984	Indirect effect < direct effect, 0,221 < 0,763

The indirect effect of system quality on the net benefit variable through the user satisfaction variable is 0.207 < direct effect 0.702. This means that the user satisfaction variable can become an imperfect mediating variable for the system quality variable on the net benefit variable.

The indirect effect of information quality on the net benefit variable through the user satisfaction variable is 0.809 > direct 0.775. This means that the user satisfaction variable can become a perfect mediating variable for the information quality variable on the net benefit variable.

The indirect effect of service quality on the net benefit variable through the user satisfaction variable is 0.221 < direct effect 0.763. This means that the user satisfaction variable can become an imperfect mediating variable for the service quality variable on the net benefit variable.

B. **DISCUSSION**

1. **The Influence of System Quality on User Satisfaction**

Based on the results of the research analysis, meaning that system quality, which includes availability, reliability, response time, and system usability, can foster satisfaction in system users. The results of this study related to system quality are in line with and strengthen the theory of the information system success model issued by DeLone and McLean (2003). System quality that has a significant effect on user satisfaction also strengthens previous research conducted by Hidayatullah, Khouroh, Windhyastiti, Patalo, and Waris, 2020, that system quality will increase user satisfaction. The study also strengthens previous research conducted by Utomo, Ardianto, and Sisharini, 2017, that system quality, information quality, and service quality together can contribute to user satisfaction.

2. **The Influence of Information Quality on User Satisfaction**

The results of this research analysis show that the quality of information has a significant effect on user satisfaction. The results of this study related to the quality of information are in line with and strengthen the theory of the information system success model issued by DeLone and McLean (2003). The quality of the system has a significant effect on user satisfaction. Also, it strengthens previous research conducted by Hidayatullah, Khouroh, Windhyastiti, Patalo, and Waris, 2020, that the more complete the information available, the easier it is to understand the features and the relevance or accuracy of the application, the higher the user satisfaction. The research also strengthens previous research conducted by Utomo, Ardianto, and Sisharini, 2017, that system quality, information quality, and service quality together can contribute to user satisfaction.

3. **The Influence of Service Quality on User Satisfaction**

Based on the results of the research analysis, the quality of service, which includes certainty, empathy, and responsiveness, can increase satisfaction in system users by 83%. The results of this study related to service quality are in line with and strengthen the theory of the information system success model issued by DeLone and McLean (2003). The quality of service has a significant effect on user satisfaction and also strengthens previous research conducted by Hidayatullah, Khouroh, Windhyastiti, Patalo, and Waris, 2020; that respondents have been satisfied with the use of the application, they also intend to use the application on another occasion. The study also strengthens previous research conducted by Utomo, Ardianto, and Sisharini, 2017, that system quality, information quality, and service quality together can contribute to user satisfaction.

Examination of the Impact of System Quality, Information Quality, and Service Quality on Net Benefits through User Satisfaction in the Performance of State Civil Apparatus in the Malang District Government

4. **The Influence of System Quality on Net Benefit**

   The results of the research analysis calculation show that system quality has a significant effect on net benefits; this is in line with the expert theory entitled the information system success model issued by DeLone and McLean (2003). The author's research provides different results from the results of previous research conducted by Hidayatullah, Alvianna, Sugeha, and Astuti (2022), which showed that system quality does not directly have a significant effect on net benefits.

5. **The Influence of Information Quality on Net Benefit**

   Based on the research results, the direct influence of information quality, which consists of completeness, ease of understanding, relevance, and security, has a significant effect on net benefits. The results of this study related to information quality are in line with and strengthen the theory of the information system success model issued by DeLone and McLean (2003). This study also strengthens the results of previous research conducted by Hidayatullah, Alvianna, Sugeha, and Astuti, 2022, showing that information quality directly has a significant effect on net benefits.

6. **The Influence of Service Quality on Net Benefit**

   The results of the research analysis that has been carried out show the direct influence of service quality on net benefits. In line with the expert theory of the information system success model issued by DeLone and McLean (2003), the results of this study strengthen the expert theory. The results of this study also strengthen the results of previous research conducted by Hidayatullah, Alvianna, Sugeha, and Astuti, 2022, that service quality has a direct and significant effect on net benefits.

7. **The Influence of User Satisfaction on Net Benefit**

   Based on the results of the research analysis, user satisfaction has a significant effect on net benefits. The results of this study related to user satisfaction are in line with and strengthen the theory of the information system success model issued by DeLone and McLean (2003). User satisfaction, which has a significant effect on net benefits, also strengthens previous research conducted by Hidayatullah, Khouroh, Windhyastiti, Patalo, and Waris, 2020, that existing applications have provided more benefits for respondents, are able to facilitate the transfer of knowledge and are able to accommodate 100 participants at one time at once. The study also strengthens previous research conducted by Utomo, Ardianto, and Sisharini, 2017, that system quality, information quality, and service quality together can contribute to user satisfaction.

8. **The Influence of System Quality on Net Benefit Through User Satisfaction**

   Based on the research results, to measure the value of the indirect influence of system quality on net benefits through user satisfaction, it is necessary to calculate the total influence first. It can be concluded that the mediation effect of user satisfaction has an effective role in improving system quality and the net benefits of information system users. The results of this study strengthen the expert theory of the information system success model by DeLone and McLean (2003) and previous research conducted by Hidayatullah, Alvianna, Sugeha, and Astuti, 2022.

9. **The Influence of Information Quality on Net Benefit Through User Satisfaction**

   Based on the research results, the total measurement between information quality and net benefit through user satisfaction has a value of 1.593. It ranks first from the other total influences, meaning that the quality of the information presented dominates the performance assessment information system. The value of the direct influence between information quality and net benefit shows a figure of 0.775. In contrast, the value of the indirect influence between information quality and net benefit through user satisfaction shows a figure of 0.818, so it can be concluded that the mediation effect of user satisfaction has an effective role in improving the quality of information on the net benefit of information system users. The results of this study strengthen the expert theory of the information system success model by DeLone and McLean (2003). Still, the results of this study are not in line with the results of previous research conducted by Hidayatullah, Alvianna, Sugeha, and Astuti, 2022, which shows that the quality of information on net benefits is not significant; this is indicated by a significance value of 0.057.

10. **The Influence of Service Quality on Net Benefit Through User Satisfaction**

   Based on the research results, the total measurement between service quality and net benefit through user satisfaction has a value of 1.543 and is second place among other total influences. The value of the direct influence of service quality on net benefit is 0.763, while the value of the indirect influence between service quality and net benefit through user satisfaction is 0.780, so it can be concluded that the mediation effect of user satisfaction has an effective role in improving service quality on the net benefit of information system users. The results of this study strengthen the expert theory of the information system success model by DeLone and McLean (2003), but the results of this study are not in line with the results of previous research conducted by Hidayatullah, Alvianna, Sugeha, Astuti, 2022, which shows that the quality of information on net benefits is not significant, this is indicated by a significance value of 0.077.

V. CONCLUSION

Based on the results of research on the examination of the impact of system quality, information quality, and service quality on net benefit through user satisfaction in the Performance of State Civil Apparatus in the Malang District Government, the following conclusions are drawn:
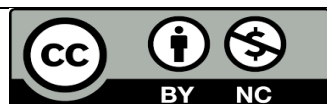
1. The quality of the system, consisting of indicators of availability, reliability, response time, and usability, is a variable that can grow user satisfaction because it is proven to have a significant influence. This condition can be interpreted as the state civil apparatus performance information system created and developed by the Malang Regency Government, which ASN can accept.

2. The quality of information consists of indicators of completeness, ease of understanding, relevance, and security, which are variables that have a significant influence on user satisfaction. It can be interpreted that the information presented in the state civil service performance information system is able to present accurate and quality information for ASN.

3. Service quality, consisting of indicators of certainty, empathy, and responsiveness, is a variable that can also grow user satisfaction, which is proven to significantly affect user satisfaction. This condition proves that the service carried out by the state civil service performance information system can serve ASN well in the Malang Regency Government environment.

4. User satisfaction, consisting of repeat visit indicators and user surveys, proves that user satisfaction brings net benefits and has a significant effect. This proves that the higher the level of ASN satisfaction in the Malang Regency Government environment towards the state civil apparatus performance information system, the more benefits it will bring to the ASN performance management process.

5. In this study, Net Benefit was measured using cost-saving and time-saving indicators. Based on the research results, respondents generally agreed that the performance information system was able to bring its own net benefits to ASN within the Malang Regency Government.

6. The results of the study of the mediation effect between independent variables consisting of system quality, information quality, and service quality with interfering variables, namely net benefit through user satisfaction, showed that the type of mediation was partial mediation. Path analysis resulted in findings that the mediation effect of user satisfaction variables had an effective role in increasing net benefits, so it can be concluded that the satisfaction of users of the state civil service performance information system needs to be maintained so that the information system can have a better impact on ASN in the Malang Regency Government environment.

REFERENCES

1) Brien, J. O., & Markas, G. (2011). Management Information System (Vol. 10th).
2) Davis, F. D., 1989. Perceived Ease of Use and User Acceptance of Information Technology. Management Information Systems Quality Journal Volume 13 No.3 p 319–340.
3) DeLone, W.H., & McLean, E.R. (2003). The DeLone and McLean model of information system success: A ten-year update. Journal of Management Information System. http://doi.org/10.1080/07421222.2003.11045748
4) Hidayatullah, S., Khouroh, U., Windhyastiti, I., Patalo, R.G., Waris, A. (2020.) Implementasi Model Kesuksesan Sistem Informasi DeLone & McLean Terhadap Sistem Pembelajaran Berbasis Aplikasi Zoom di Saat Pandemi Covid-19. Jurnal Teknologi dan Manajemen Informatika.
5) Hidayayullah, S., Alvianna, S., Sugeha, A.Z., Astuti, W. (2022). Penerapan Model Kesuksesan Sistem Informasi DeLone and McLean dalam Penggunaan Aplikasi Pedulilindungi pada Sektor Pariwisata Kota Malang.
6) Ichsan, M., Sujoko, S., Guntur M., Choirunnisa, W. (2017). Evaluasi Kesuksesan Implementasi OM SPAN Menggunakan Model DeLone dan McLean. Jurnal BPPK volume 10.
7) Irfan. (2019). Pengaruh Kualitas Sistem, Kualitas Informasi, dan Kualitas Pelayanan Terhadap Net Benefit Pemakaian BRIVA dengan Variabel Interfening Kepuasan Pengguna. Providing National Conference on Applied Business.
8) Kurniawan, I., Ardianto, Y.T., Hidayatullah, S. (2021). The Effect of System Information Quality, Service Quality, and User Satisfaction on Academic Information System User Loyalty. Internation Journal of Scientific & Technology Research Volume 10.
9) Respati, H., Hiidayatullah, S., (2017). Analisis Kualitas Sistem dan Kualitas Informasi Terhadap Kepuasan Pemakai Sistem Informasi Akademik Dosen. Seminar Nasional Sistem Informasi.
10) Sidharta,Lani.1995.Pengantar Sistem Informasi Bisnis, P.T. ELEX Media Komputindo, Jakarta.

11) Utomo, L.T., Ardianto, Y.T., Sisharini, N. (2017). Pengaruh Kualitas Sistem, Kualitas Informasi, Kualitas Layanan Terhadap Kepuasan Pengguna Sistem Informasi Akademik Universitas Merdeka Malang. Jurnal Teknologi dan Manajemen Informatika.

12) Wara, L.S., Kalangi, L., Gamaliel, H. (2021). Pengujian Model Kesuksesan Sistem Informasi DeLone dan McLean Pada Sistem Aplikasi Pemeriksaan (SIAP) di Badan Pemeriksa Keuangan Republik Indonesia Perwakilan Provinsi Sulawesi Utara. Jurnal Riset Akuntansi dan Auditing "GOODWILL".

13) Whitten, J. L., & Bentley, L. D. (2007). Systems Analysis and Design Methods. New York: McGraw-Hill.