Measuring the Impact of Value-Added Tax Cuts on Consumers in Vietnam

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ABSTRACT: This study aims to explore how temporary changes in VAT rates affect consumer perception and behavior in Vietnam. The research is conducted based on self-administered questionnaires collected from residents of Vietnam. The snowball sampling technique was utilized to gather the data set during 2023. A questionnaire was prepared and evenly distributed among three main subjects from three different sectors and with income levels in three groups: low; medium; and high, respectively: (1) Workers from the manufacturing and industrial sector; (2) Lecturers from the education and training sector; (3) Managers from the finance and banking sector. A total of 513 usable questionnaires were analyzed. This paper employs the multiple regression analysis model (OLS) to test the study hypothesis. Analysis results reveal that the reduction of VAT in Vietnam from 10% to 8% has significantly impacted consumer behavior, where consumer products within the daily and durable goods categories are anticipated to grow, however, expenditure on entertainment products or services tends to decrease. Additionally, reasons leading to changes in consumer behavior were also discussed in the study. The findings of this paper will offer insightful perspectives for policymakers in formulating future VAT policies, especially considering the items that significantly influence changes in consumer purchasing power following VAT changes.

KEYWORDS: VAT, consumer behavior, Vietnam

1. INTRODUCTION

Since the 1970s and 1980s, Value-Added Tax (VAT) has become a prominent feature in the tax systems of both developing and undeveloped countries, especially those classified as middle-income countries. VAT is identified as an indirect form of taxation, applied to the added value of a product or service from production and distribution to the point of sale to the consumer, and is paid into the state budget based on the level of goods/services consumption (IMF, 1996). The adoption of VAT rates is determined by the governments of these countries. Since its first introduction in France in 1954, it has now been adopted by 175 countries around the world (OECD, 2023). VAT plays a regulatory role in the income of organizations and individuals consuming goods and services subject to VAT and is an important revenue source for the national budget (Ebrill, M. L. P., Keen, M. M., & Perry, M. V. P, 2001; Hajdúchová, I., Sedliačiková, M., & Viszlai, I., 2015). Between 1985 and 2009, the share of revenue from VAT in global tax revenue increased from 11% to 19%, making it the third most important source of tax revenue after social security contributions and personal income tax. In 2014, VAT revenue in China was about 5.5% of GDP, and about 6.77% in Russia. The mobilization rate from VAT in European Union (EU) countries is especially high (Denmark at 9.9% of GDP, Finland at 8.5% of GDP). From 2018 to 2021, the VAT mobilization rate in EU countries stood at 6.7% of GDP based on the GDP weight in 2021 (OECD, 2023).

Moreover, VAT has become part of everyday life and has had a positive impact in several aspects such as encouraging investment and exports, aligning with international practices, and facilitating the economic integration of businesses; reforming administrative procedures. For instance, in Western Europe, the implementation of VAT is closely related to the broader economic integration efforts among European Community member states: VAT is particularly suitable to avoid distortions of trade associated with the indirect taxes it replaces. In South America, VAT is seen as a more efficient revenue-raising tax and is compatible with the increasingly outward orientation of economic policies. The rapid adoption of VAT in transition economies reflects the need to replace traditional revenue sources (such as taxes on state enterprises) declining due to economic transition with a tax regime suited to emerging market economies; in some cases, it also reflects VAT as a prerequisite for joining the European Union. In many developing countries, VAT has been further promoted by long-term impacts on revenue from trade reform - economic efficiency

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arguments in favor of VAT have been reinforced when revenue from trade taxes is pressured by deepening trade liberalization commitments (Ebrill, M. L. P., Keen, M. M., & Perry, M. V. P, 2001).

Prioritizing VAT as a tax transformation tool is strongly driven by the reality that VAT involves a broad tax base, capable of distributing the tax burden across the entire economy. Carroll (2010) identified VAT as a critical factor influencing a country's general economic situation, depending on various economic objectives, countries will have different VAT rates for each product or service, most commonly around 10%-25%. EU member states must comply with EU directives and currently form the region with the highest VAT rates in the world, such as Hungary (27%), Croatia, Denmark, and Sweden (all at 25%). Luxembourg charges the lowest standard VAT rate at 16%, followed by Malta (18%), Cyprus, Germany, and Romania (all at 19%). Conversely, Asian countries have relatively stable tax rates ranging from 7% to 15%, with many countries also implementing fiscal policies related to VAT reduction to stimulate consumption following the Covid-19 upheavals such as VAT rates in China varying from 6% to 13% depending on the region; VAT is charged at 5% in the United Arab Emirates (UAE); Oman with a standard tax rate of 7%; Thailand and Vietnam have respectively reduced their standard VAT rate from 10% to 7% and 8% until mid-2024 (Global VAT Compliance, 2024).

In Vietnam, according to the State Budget Settlement of the Ministry of Finance, 11 main taxes are contributing to the budget. The budget mobilization rate from taxes generally increases with the income of country groups. Vietnam's budget mobilization from taxes is relatively high in the region, many years approaching the average of the high-income group. This reflects the relatively large tax burden on Vietnamese people. Excluding resource tax, the 10 types of taxes are divided into two categories: direct and indirect taxes. In recent years, the contribution share of direct taxes has been gradually decreasing, which corresponds to the increasing proportion of indirect taxes. During this time, Value-Added Tax (VAT) has emerged as a primary policy tool for countries in the process of tax system reform aimed at consolidating finances after the global financial crisis, particularly with the demand to strengthen national budget revenue sources. Recently, there has been a trend of shifting from direct to indirect taxes, wherein numerous measures have been implemented to enhance the mobilizing role of VAT revenue. In Vietnam, the share of indirect taxes in the total tax revenue has been increasing, exceeding 60% in 2016 and accounting for 11% of GDP. VAT revenue, which makes up 50% to 60% of the total revenue from indirect taxes from 2006 to 2019, shows the current significant role of VAT as the largest source of tax revenue for the Vietnamese budget.

However, the global economic context has changed significantly after the COVID-19 pandemic, with severe disruptions in supply chains, and economic and financial activities directly affecting the state budget deficit and public debt, as well as consumer spending. Therefore, swift actions following this crisis are essential. Amongst them, fiscal policy is regarded as the best and most popular tool available (Baldwin & Weder di Mauro, 2020). To ensure the maintenance of living standards for the population and assist businesses in overcoming bankruptcy storms, governments have introduced conditions for tax rate reductions or direct financial support packages. Accordingly, on January 11, 2022, the Vietnamese National Assembly passed Resolution No. 43/2022/QH15 on fiscal and monetary policies to support the economic and social recovery and development program. Along with this, a 2% reduction in VAT rates in 2022 was applied to groups of goods and services currently applying a 10% VAT rate. After the policy was implemented, the issue raised was evaluating the effectiveness of the policy regarding consumer reactions in an economy heavily affected by the COVID-19 pandemic. Thus, how does the policy of reducing the VAT rate from 10% to 8% by the Vietnamese government affect the perception and spending reaction of consumers, and what differences does it make for high, medium, and low-income groups for the items with reduced tax rates?

2. LITERATURE REVIEW
2.1. Value Added Tax (VAT) in Vietnam

In Vietnam, research on Value-Added Tax (VAT) commenced with the first phase of tax reform in 1990, being experimentally applied in 1993 to 11 units (in the sugar, textile, and cement industries). On May 10, 1997, the first VAT Law, No. 57/1997/L-CTN, was enacted and officially came into effect on January 1, 1999, replacing sales tax. After several amendments, on March 6, 2008, VAT Law No. 13/2008/QH was introduced to replace VAT Law No. 57/1997/L-CTN, marking a new development in our country's VAT policy. Nearly nine years into its implementation, VAT Law No. 13/2008/QH has been amended and supplemented three times (in the years 2013, 2014, and 2016) to align with the country's socioeconomic development and international economic integration.

Currently, according to the decree on VAT rates last amended in 2016, Vietnam applies three VAT rates: 0%, 5%, and 10%. Specifically, the 0% rate applies to exported goods and services consumed outside Vietnam or in duty-free zones. Some exceptions include transfer of technology, transfer of intellectual property rights abroad; reinsurance services abroad; and postal and telecommunications services. The 5% rate primarily applies to fields related to essential goods and services such as clean water, fertilizers, animal feed, certain unprocessed agricultural products, medical equipment and instruments, and teaching aids. Meanwhile, the standard VAT rate of 10% applies to other taxable cases.

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According to annual data from the Ministry of Finance, taxes are the main source of budget revenue, usually accounting for more than 70% to over 80% of Vietnam's total state budget revenue. The proportion of indirect taxes is increasing significantly, while the share of direct taxes is decreasing rapidly. Among these, revenue from VAT continues to play the most important mobilizing role for Vietnam's current state budget. The share of revenue from VAT (excluding refunds) accounted for 24.4% of the total state budget revenue for the period 2011 - 2020, with VAT revenue from domestic production and consumption accounting for 17% of the total state budget revenue (Truong Ba Tuan, 2022).

2.2. Theoretical framework

The theory on the impact of taxation has been discussed by many scholars and researchers previously, but distinguishing clearly between the different schools of thought remains a challenge (Seligman, 1892; Mun, 1620; Petty, 1677). Essentially, theories on tax impacts often aim to determine who ultimately bears the tax burden, how changes in taxation can affect different layers or individuals with varying income levels in society, or how taxes are transferred from one individual to another. The effects of indirect taxes can be quite varied. For instance, if consumers are less responsive to the increase in the prices of goods due to taxes, the tax burden falls on the end consumer (Delipalla et al., 2022; Slemrod & Yitzhaki, 2002). On the contrary, if consumers are responsive to price increases, the burden of taxation may fall on the producer (Slemrod & Yitzhaki, 2002).

In the context of this study on Value-Added Tax (VAT), the author draws upon the doctrine of tax impact as discussed by Smith (1776), an English economist and philosopher with significant contributions in the field of taxation and economics. This theory discusses the impact of taxation with a focus on how tax policies affect the prices of goods and the distribution of utilities that accompany them. Moreover, it assumes the effect of implementing a new type of tax on prices and consumption levels of products. In an ideal market, this theory illustrates the impact of tax changes on the efficiency of all economic agents (e.g., consumers, producers, suppliers, and government) (Chetty & Bruich, 2012). It predicts that changing the rate of a tax will alter the price of the targeted product, which may also affect consumption and demand for these products, thereby influencing consumer buying behavior. For example, in the case of a VAT rate change in Vietnam from 10% to 8%, the price of goods and services would theoretically decrease, with prices potentially dropping by about 1.82% (Nguyen Duc Thanh, 2018). Thus, this study assumes that in the short term, the full impact of the VAT rate decrease would be borne by the end consumer. The impact of taxation can be investigated at various levels such as producers, consumers, income sources, income levels, regions, or countries, and across generations (Chetty & Bruich, 2012). In the context of this paper, the theory on tax impact is used to hypothesize the potential impact of VAT changes on consumer behavior towards goods or services experiencing tax reductions for three representative income levels in Vietnam - low, medium, and high - as categorized by the Vietnam General Statistics Office (GSO).

2.3. Empirical studies

Several studies have been conducted on the theme of Value-Added Tax (VAT), focusing on identifying and analyzing the impact of VAT or VAT changes on different entities in various contexts. Some researchers have made significant contributions to the field of VAT by identifying and analyzing its impact on different themes. There are studies evaluating the impact of tax reforms in countries around the world, including the research by Auerbach and Kotlikoff (1987), which analyzed a tax reform program based on simulations of the impact of tax increases on consumer welfare in a general equilibrium model with consumers of different ages. Furthermore, the theme of tax reform in developing countries was analyzed by Emran and Stiglitz (2002) based on a general equilibrium model that takes into account the existence of the informal economic sector. This group of authors focused on evaluating indirect tax reform in developing countries, based on reducing trade taxes combined with increasing VAT to increase tax revenue for the Government. The results of the model show that when the informal economic sector is outside the tax coverage area, the proposed tax reform reduces the overall welfare level in some cases.

Bye, Strom and Avitsland (2003) analyzed the impact of the tax reform program on the overall welfare of the Norwegian economy. The study utilized data from the 2001 tax reform event when the same VAT rate was applied to all goods and services in Norway. The analysis showed that tax reform based on the application of non-uniform taxes would decrease welfare compared to tax reform based on the application of a uniform tax on all goods and services.

In the study by Auziņš et al. (2008), the impact of changing VAT rates on the market equilibrium status was identified, concluding that reducing VAT rates led to lower market prices and increased consumer spending, thereby helping retail sales in stores.

Crossley, Low, and Sleeman (2014) studied the temporary VAT cut in 2008 in the UK by using other European countries as a control group. In December 2008, the UK cut VAT by 2.5% for 13 months to stimulate spending. The study estimated the impact of the cut on prices and spending using alternative strategies to identify counterfactual scenarios. While initially, companies passed on the VAT cut by lowering prices, at least part of the VAT cut was reversed within a few months. Despite this early reversal, the cut increased retail volume by about 1%, thereby generating an overall spending increase of 0.4%. The cut encouraged consumers

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to make purchases ahead of time and also noted a significant decline in sales volume after the VAT cut period ended. Thus, temporary indirect tax cuts significantly stimulate substitution between purchasing periods.

Bánociová and Ťahlová (2018) identified whether reducing VAT rates affects changes in total household expenditure in EU member countries. Based on a regression model with fixed effects for EU member countries, they found that VAT rates play an important role in affecting total household expenditure on food, thereby affecting consumers.

The study by Behringer, Dullien, and Gechert (2021) on the VAT cut in Germany, as part of the 2020 economic stimulus package, the federal government of Germany tried to stimulate private consumption through various measures. Key measures included temporarily reducing VAT and paying bonuses to children. The study indicates most respondents believed that the price reduction was due to the VAT cut. However, only a small proportion of respondents used the tax cut to make planned purchases or additional shopping. On the other hand, the money bonus for children brought about very clear changes in consumer behavior. More than half of the money was likely used for additional spending; within 12 months, it can be predicted that about two-thirds of the child, bonus money would be used for new expenses. Therefore, targeted transfers to households with low and medium incomes seem to be a better means of supporting the economy in a crisis than temporary tax cuts.

These studies each approach the issue of VAT differently, with many focusing on refining VAT at different economic stages for the regions under study, particularly regarding VAT deductions and refunds law. Additionally, studies on VAT's impact on the economy are of general interest globally and specifically in Vietnam. These typically employ either empirically-based approaches, using econometric models to verify and assess impacts, or predictive approaches, using computable general equilibrium (CGE) models for simulation and forecasting. However, research focusing on the effects of tax cuts on consumers is not yet widespread, even though they are the ultimate tax bearers and significantly affect economic recovery. Particularly in Vietnam recently, the government's fiscal policy of temporarily reducing VAT from 10% to 8% aimed at stimulating consumer demand and thereby reviving economic growth, makes researching from a practical standpoint, tied to the implementation of tax changes, even more essential. Especially, this study specifically divides the subjects into three categories, representing three wage levels in Vietnam's labor market: low, medium, and high, thus providing a deeper evaluation of the change in consumer behavior for each group after the government implemented tax cuts in 2023.

3. AN EMPIRICAL ANALYSIS: DATA AND METHODOLOGY

3.1. Data collection

Given the research on the impact of VAT (Value-Added Tax) changes, the primary data source typically comes from secondary data obtained from annual consumer surveys conducted by government agencies. However, due to the unique nature of surveying three different groups while simultaneously assessing the participants' awareness of VAT changes, the data for this study was collected using a Self-administered Questionnaire (SAQ) method. This study employs a quantitative methodology and primary data collected through SAQs from Vietnamese citizens in 2023 to examine the impact on the populace. SAQ is a commonly used approach to address ongoing discussion issues (Balcells et al., 2010; Miguel et al., 2019). The snowball sampling method involves contacting and soliciting research participants, who were initially approached by the researcher, to involve further subjects among their connections (Naderifar et al., 2017). This method proves effective in reaching a wider audience that the researcher might not directly contact (Khalil & Sidani, 2020; Polit & Beck, 2006). The primary data source for this study comes from surveying three target groups representing key wage levels, encompassing awareness of VAT changes and the alteration in consumer behavior towards products subject to VAT reduction, specifically:

(1) Factory and industrial sector workers, representing the low-income labor group. According to the 2022 General Statistics Office's living standards survey, workers from this sector have basic monthly wages ranging from 4.5 million to 5.5 million VND.

(2) Educators and trainers; representing the intellectual labor group. Based on the same survey, instructors earn an average income, with salaries ranging from 6.5 million to 15 million VND per month.

(3) Financial and banking sector managers; representing the high-income labor group. The survey indicated that managers in this sector earn between 10 million and 25 million VND per month.

Participants were informed about the survey's purpose and assured that their responses would be entirely anonymous and confidential; collected data would solely be used for research purposes. Consent for data collection and publication was obtained before completing the questionnaire. A total of 538 individuals participated, with 14 invalid surveys and 11 incomplete responses, resulting in 513 valid completed surveys. The survey gathered comprehensive personal information regarding gender, age, living area, education level, employment status, current occupation group, and income group. Among the 513 valid surveys, 59% of respondents were female, 82% lived in urban areas, and the most common age group was 22-30 years, accounting for

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34.9%. The survey respondents were well-distributed across the target groups, with 32.9% being factory workers, 33.7% educators, and the remaining managers. Table 1 details the survey information of the participants.

Table 1. Profile of the participants

Number of surveys delivered: 538					
Total number of respondents: 513 (97%)					
Demographics	Number of Participants	Percentage	Demographics	Number of Participants	Percentage
Age			**Income per month**		
From 18 to 22 years old	57	11,1%	Under 4.5 million VND	48	9,4%
From 22 to 30 years old	179	34,9%	From 4.5 - 5.5 million VND	94	18,3%
From 31 to 40 years old	134	26,1%	From 5.5 - 10 million VND	138	26,9%
From 41 to 50 years old	98	19,1%	From 10 - 25 million VND	168	32,7%
Over 51 years old	45	8,8%	Over 25 million VND	65	12,7%
Gender			**Education level**		
Male	225	43,9	Haven't graduated from University	181	35,3%
Female	288	56,1	Graduated from University	149	29,0%
			Postgraduate	183	35,7%
Living area			**Career**		
Cities	310	54.9	Workers	169	32,9
Rural	103	18.2	Lecturer	173	33,7
			Management	172	33,4

Source: Author's calculation

3.2. Variables measurements and study model

The Seattle Angina Questionnaire (SAQ) was designed and developed in 1995 by John A. Spertus and colleagues at the University of Washington in Seattle, Washington. In this research, the SAQ includes 14 questions aimed at measuring consumer awareness and behavioral changes. Additionally, the sample size for the study was determined as follows:

$$n = Z_{1-\alpha/2}^2 \frac{p(1-p)}{d^2}$$

n: sample size – the number of study participants;

Z: confidence coefficient (for a 95% confidence level, (Z = 1.96));

p: is the proportion estimate of successful sample size 7;

d: desired precision (with (d = 0.05) for 95% precision);

α: level of statistical significance ((\alpha = 0.05)).

Therefore, the minimum sample size is 109. The research was conducted with a survey of 150 subjects each from factories, universities, and enterprises in Vietnam. Participation in the study was voluntary and took about 20 minutes.

The SAQ consists of three parts. The first part collects demographic data of the respondents, and the second addresses the awareness of tax changes, and the consumption of goods related to the VAT change. The demographic section of the questionnaire gathered data on gender, age, residence, employment status, education level, and income group of the participants. The demographic data were used as control variables in this study. Previous documents were based on government data obtained from official data sources; however, currently in Vietnam, there is no specific government data source by sector on consumer

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expenditure under VAT changes. Therefore, the SAQ was drafted based on the nature of the dependent and independent variables. The general multiple regression analysis model used to test the research hypotheses in this paper is as follows:

$$DVi = \alpha + \beta1(IFCV)i + \beta2(GEN)i + \beta3(AGE)i + \beta4(LA)i \\ +\beta5(CA)i + \beta6(EDU)i + \beta7(IG)i + \varepsilon i \quad (1)$$

With

- DVi = Dependent variable is the level of consumer behavior change (including PCCB = Potential change in consumer behavior for products affected by the tax change; IOSP = Impact on spending plans; ICI = Increased consumption items (if any); DCI = Decreased consumption items (if any) and RECB = Reasons for changes in consumer behavior)
- (IFCV) = Awareness of VAT change information
- Demographic characteristics of the respondent include six variables: gender (GEN); age (AGE); Place of living (LA); Occupation (CA); Education level (EDU) income group (IG); (ϵ_i) = Remaining error term).

Measurement of VAT implementation information related to the level of awareness, behavior, and reasons for changes in consumer behavior during the tax change period was carried out on a 5-point Likert scale (1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree). The nature of the questionnaire components, including demographic characteristics in the survey, was chosen based on previous studies (DeCicca et al., 2021; Khalil & Sidani, 2020).

4. RESULT

4.1. Validation and reliability

The study utilized the Cronbach Alpha method to assess the consistency and reliability of variables within the research. Table 2 shows that the Cronbach Alpha value for the independent variable (1) The information on changes in VAT (IFCV) is 0.61. For the dependent variables, (1) Potential change in consumer behavior for products affected by the tax change (PCCB), the Cronbach Alpha value is 0.73; for (2) Impact on spending plans (IOSP), this value is 0.74; (3) Increased consumption items result in 0.78; (4) Decreased consumption items are 0.79, and (5) Reasons for changes in consumer behavior result in 0.84. Overall, the Cronbach Alpha values for each construct range from 0.61 to 0.84, exceeding the acceptable minimum standard of 0.50 (Khalil & Sidani, 2020; Shantz et al., 2018; AlMekhlafi, 2011), affirming the reliability and consistency of the construct. Factor analysis was conducted to ensure the validity of each measure. The explained variance for each measure also falls within an acceptable range (Table 2).

Table 2. Validation and reliability

Variables	Cronbach's alpha	Cumulative explained variance (%)
Independent variable		
(1) The information on changes in VAT (IFCV)	0.61	34.42
Dependent variables		
(1) Potential change in consumer behavior for products affected by the tax change (PCCB)	0.73	88.79
(2) Impact on spending plans (IOSP)	0.74	63,48
(3) Increased consumption items (if any) (ICI)		
- Everyday/short-term items (ESTI)	0.78	100.000
- Durable goods (DUGO)	0.78	57.29
- Expenditure on entertainment products and services(EXES)	0.78	78.90
(4) Decreased consumption items (if any) (DCI)		
- Everyday/short-term items (ESTI)	0.79	39.41
- Durable goods (DUGO)	0.79	57.29
- Expenditure on entertainment products and services (DCI)	0.79	100.00

(5) Reasons for changes in consumer behavior (RECB)		
- Deferred demand (DEDE)	0.84	76.51
- Changes in income (CAIN)	0.84	92.71
- Anticipated decrease in prices of most goods (DPRI)	0.84	80.56
- Anticipated increase in prices of most goods in the future (IPRI)	0.84	57.29
- Perception of the VAT changes (PEV)	0.84	10.000

Source: Author's calculation

4.2. Descriptive statistics and correlations matrix

The study aims to assess the correlation between independent and dependent variables. Table 3 presents the descriptive statistics of all the research variables. From the dependent variable structure, the standard deviation of the ability to change the consumption behavior of products affected by tax changes is 0.59. The standard deviation of the impact on spending plans is 1.45. The standard deviation of the consumption-increasing factor falls within the range of 0.58 to 0.82, while the consumption-decreasing factor falls within a similar range of 0.51 to 1.50. The standard deviation of the independent variable "Everyday/short-term use" in the consumption-decreasing factor is the lowest among all independent as well as other dependent variables. All research variables have a normal distribution within an acceptable range of 5 degrees for both deviation and kurtosis.

Furthermore, the correlation between the research variables is computed using Spearman's rank correlation statistics (Table 4). The study results also indicate a significant correlation between various factors of dependent and independent variables. The dependent variables, including the ability to change consumption behavior of products affected by tax changes, impact on spending plans, consumption-increasing product (if any), consumption-decreasing product (if any), and reasons for changing consumption behavior, show significant correlation with the independent variable "Information about VAT changes." The likelihood of increased consumption for durable items (ICI-DUGO) has a significant correlation with the perception of information about VAT changes (IFCV) and concurrently has a significant relationship with the ability to change the consumption behavior of products affected by tax changes (PCCB) with respective weights of .106* and .126*.

The likelihood of switching to another brand (SOB) has a significant correlation with the perception of implementing VAT (ETIA); however, it does not show a correlation between implementing VAT and its impact on prices (ETIP). Other dependent variables, including awareness of health effects (HA), information about taxable products (IUH), the impact of taxable products on health (IEPH), awareness of taxable products and health (AEPH), and the future use of taxable products (FUE), have a significant correlation with the perception of implementing VAT (ETIA). Out of the total 13 evaluated variables related to the influence of perception of information about VAT changes, in which 7 variables are evaluated as significantly correlated, the fact that only 6 variables have weak or no correlation with VAT perception shows that the reduction of VAT has not yet significantly affected people's consumption behavior. The underlying reasons related to these results will be further supported and elaborated in the subsequent regression analysis section.

Table 3. Descriptive statistics

	N	Minimum	Maximum	Mean	Std
Independent variable					
(1) The information on changes in VAT (IFCV)	513	1	5	2.18	1.52
Dependent variables					
(1) Potential change in consumer behavior for products affected by the tax change (PCCB)	513	1	5	1.52	0.59
(2) Impact on spending plans (IOSP)	513	1	5	1.85	1.45
(3) Increased consumption items (if any) (ICI)					
- Everyday/short-term items (ESTI)	513	1	5	0.79	0.58
- Durable goods (DUGO)	513	1	5	0.95	0.82
- Expenditure on entertainment products and services(EXES)	513	1	5	1.01	0.69
(4) Decreased consumption items (if any) (DCI)					

	N	Min	Max	Mean	SD
- Everyday/short-term items (ESTI)	513	1	5	1.79	1.50
- Durable goods (DUGO)	513	1	5	0.71	0.52
- Expenditure on entertainment products and services (DCI)	513	1	5	0.74	0.51
(5) Reasons for changes in consumer behavior (RECB)					
- Deferred demand (DEDE)	513	1	5	2.91	1.46
- Changes in income (CAIN)	513	1	5	0.41	0.54
- Anticipated decrease in prices of most goods (DPRI)	513	1	5	2.17	1.72
- Anticipated increase in prices of most goods in the future (IPRI)	513	1	5	1.52	1.59
- Perception of the VAT changes (PEV)	513	1	5	2.14	1.51

Source: Author's calculation

Table 4. Correlation matrix

	IFCV	PCCB	IOSP	ICI-ESTI	ICI-DUGO	ICI-EXES	DCI-ESTI	DCI-DUGO	DCI-EXES	DEDE	CAIN	DPRI	IPRI	PREV
IFCV	1													
PCCB	.105*	1												
IOSP	0.167	0.038	1											
ICI - ESTI	0.047	0.054	.125*	1										
ICI-DUGO	.106*	.126*	0.048	0.052	1									
ICI - EXES	-0.001	-0.006	−.094*	−0.045	.187**	1								
DCI-ESTI	.216**	.176**	−0.004	0.061	0.074	−0.064	1							
DCI-DUGO	.0174	0.119	0.215	0.148	0.118	0.064	.331**	1						
DCI - EXES	.135**	0.123	.145	0.034	−.109*	−0.143	.037*	.146**	1					
DEDE	.0205	−0.135	-.137**	0.038	.116**	−0.081	0.075	.106**	.127**	1				
CAIN	.113**	0.0183	0.011	0.014	0.046	−0.064	−.126**	.0063	0.178	.226**	1			
DPRI	.104**	.121*	0.158	0.048	0.045	−0.470	.196**	.148**	192**	.279**	148**	1		
IPRI	−0.025	0.024	−0.034	0.056	−.210*	0.042	0.065	−0.026	−0.066	−0.012	.152**	.512**	1	
PREV	.241**	0.092	−0.012	0.008	−0.009	0.075	0.161	−0.033	−0.023	−0.018	−0.041	−.148**	0.132	1

Note: Pearson correlation coefficients (two-tailed) are provided. * and ** indicate significance at 5% and 1% level respectively.

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4.3. The regression analysis model (OLS)

Predicting the value of a dependent variable based on one or more independent variables requires meticulous analysis. The enforcement aspects of the Value-Added Tax (VAT) consumption tax are dissected through multiple regression analysis (Ordinary Least Squares) individually to circumvent multicollinearity and unearth dominating internal environments. Results manifested in Table 5 (Panel A) significantly indicate that awareness about the changes in VAT leads to substantial impacts on (1) the potential to alter consumption patterns concerning VAT-adjusted products, with an adjusted R-Square of 0.048 and an F-value signifying a 4.31*** importance. This outcome implies that the reduction of VAT from 10% to 8% has positively influenced consumer behavior, manifesting a heightened likelihood of altering consumption habits. Therefore, Hypothesis H1, suggesting a positive relationship between VAT changes and the ability to modify consumer behavior, gains support. A contributing factor to this result could be attributed to the price elasticity of demand, where consumers are likely to respond positively to reduced prices due to the VAT cut. Lower prices may lead to increased consumer expenditure as products and services are perceived as more affordable, increasing their likelihood of purchase. These facets of the research findings can be connected to theories concerning the influence of tax on the consumption model of individuals, thus validating our hypothesis, contrary to prior studies indicating a negative VAT impact on taxable product consumption (Barzel, 1976; Evans & Farrelly, 1998; Lesley & Muehlegger, 2010; Wang and colleagues, 2021).

However, with regards to Hypothesis H2, concerning the effect of VAT change information on (2) consumer spending plans, the outcome is deemed insignificant. With a low adjusted R of 0.11 and no noteworthy F-statistics, this infers that the awareness concerning VAT reduction scarcely affects the long-term alteration of consumer spending plans. Thus, Hypothesis H2, predicting a proportional relationship between VAT changes and modifications in consumer expenditure plans, is negated. This could be due to the possibility that while individuals might be inclined to modify their consumption behavior, such changes only affect the surface level, leading to an intention to consume differently without genuinely altering the perception and long-term consumption behavior of citizens.

Regarding Panel C, information about VAT changes significantly affects the dependent variables for Increased consumer expenditure on Everyday/short-term items (ICI-ESTI) and Durable goods (ICI–DUGO). The properties of models (3) and (4) possess adjusted R values respectively at 0.059 and 0.062 with statistically significant F values at the 1% level. Nonetheless, the model (6), about increased spending on entertainment products, exhibits a low adjusted R and insignificant F statistics. Therefore, the findings of Panel C imply that from awareness of VAT change information, the public tends to increase consumption of both everyday and durable goods, yet, does not show an increased spending inclination towards entertainment products and services. For Panel D, information about VAT changes does not substantially impact the dependent variables of Decreased consumption of Everyday/short-term items (DCI-ESTI) and Durable goods (DCI -DUGO). The characteristics of models (6) and (7) display low adjusted R values and no significant F statistics. However, it significantly influences (8) Decreased Expenditure on entertainment products and services. This suggests that the VAT reduction does not lead to a decreased consumption of durable and short-term goods but indicates a trend towards reduced spending on entertainment activities. The cause of this could stem from post-COVID-19, where many households are tightening their budgets, hence significantly cutting down on entertainment spending. Consequently, Hypotheses H3a and H3b, supposing that VAT changes positively affect the demand for purchasing short-term and durable products, are correct, however, Hypothesis H3c is not accepted due to its negligible impact on increasing consumption behavior for entertainment products and services.

The outcomes of Panel E elucidate potential reasons for changes in consumption behavior following VAT reduction awareness, including (10) income changes; due to anticipated price decreases of most goods; due to VAT change perception with a 5% significance. The attributes of models CAIN; DPRI; IPRI; and PEV adjust R values respectively at 0.076, 0.047, 0.039, and 0.086 with statistically significant F values at the 1% level. Nevertheless, the model DEDE – representing delayed purchasing needs, does not significantly affect changes in the purchasing behavior of people. This suggests that the modifications in customers' perception and buying behavior could emanate from diverse reasons, ranging from the present to the future, with the most keenly observed factor being the reduced price of products during the tax change period, which further encourages increased consumer spending. Thus, Hypotheses H4b, H4c, H4d; and H4e are accepted. The findings in this study align with previous research (Horáková & colleagues, 2020; Snowdon, 2014). The multicollinearity issue does not pose a problem in any model because the Variance Inflation Factor (VIF) is within an acceptable range of 5. The demographic characteristics of the respondents, including gender (GEN), age (AGE), region of residence (REG), occupation (OCC), and income group (IG), do not have a significant impact on the dependent variables, as shown in Table 5.

Table 5. Regression analysis model (OLS)

	Panel A	Panel B	Panel C (ICI)			Panel D (DCI)			Panel E (RECB)
	PCCB	IOSP	ESTI	DUGO	EXES	ESTI	DUGO	EXES	DEDE
	(1)	(2)	(3)	(4)	(5)	(6)	(7)-	(8)	(9)
IFCV	.229(4.92)***	0.134 (2.14)	0.252(6.61)***	0.223(3.14)***	0.033(5.14)	−.066 (−1.13)	−.031 (−.413)	0.150 (1.138)	0.210 (2.398)
Sex	.016(.287)	.081(1.34)	.054(1.229)	.049(.646)	.062(1.66)	−.015 (−1.45)	−.033 (−.743)	.090(.222)	.025(0.128)
Age	.013(.227)	.025 (1.44)	.060 (.236)	.066(1.239)	.039(.666)	−.061 (−1.35)	−.033(−.833)	−.040 (−.622)	.051 (1.28)
Living area	.048(.171)	−.031 (−.290)	.019(0.211)	−1.57(.056)	−.011(.024)	.104(2.21)	.131(.736)	−.014 (−.566)	−.025 (−.138)
Job	.151(2.332)	−.049 (−.602)	.024 (.203)	.048(1.233)	−.052(.562)	.157(1.43)	−.168(−2.02)	.119 (.360)	.065(.628)
Income	−.022 (−1.164)	.139 (1.075)	.018 (1.034)	−.044 (−.951)	.045(.967)	.012(.494)	−.011(−.104)	.043(.240)	.136(.041)
Constant	1.66(5.48)***	0.697 (4.07)***	1.56(5.01)***	1.51(3.68)***	2.31 (9.66)***	1.133(3.80)***	1.67(7.69)***	1.13(11.05)***	1.56(1.349)***
Radj.	0.048	0.011	0.059	0.062	0.013	0.028	0.015	0.009	0.001
D-W	2.93	1.08	1.46	2.46	2.43	2.25	2.04	2.02	2.06
F-Stat	4.31***	2.04	5.00***	6.28***	4.37	2.54	2.39	8.05***	1.08
VIF(Mx/Mn)	1.01/1.00	1.02/1.00	1.01/1.00	1.01/1.00	1.01/1.00	1.01/1.00	1.01/1.00	1.01/1.00	1.01/1.00
Valid N	513	513	513	513	513	513	513	513	513

Source: Author's calculation

4.4. Additional diagnostics tests

To ensure the reliability of the results, several additional diagnostic tests were conducted (results not shown for brevity). A two-stage least squares regression analysis was employed to ensure that there was no threat to endogeneity due to omitted variable bias. The unstandardized beta coefficients and predicted values showed similar results in both stages. Demographic characteristics, namely gender, age, region of residence, and income group were significant for the VAT reduction information. To further test for heteroscedasticity, the Breusch-Pagan test was conducted. The chi-squared test statistic and corresponding p-value indicated no sufficient evidence to conclude the presence of heteroscedasticity. To test for autocorrelation, the Durbin-Watson test was performed. The results did not suggest the presence of autocorrelation in the model as the Durbin-Watson statistic (1.9) was close to 2 and fell within the acceptable range.

5. CONCLUSIONS

This study experimentally investigates the impact of VAT changes on consumer behavior and explores the potential reasons behind such behavioral changes in the context of Vietnam. The results show that the awareness of tax information among the population is still limited, with the highest proportion being among the workers out of the three surveyed groups. The study also emphasizes that the reduction of VAT from 10% to 8% has significant effects on changing consumer behavior. Specifically, it is expected that there will be an increase in consumption of daily necessities and durable goods while spending on entertainment services will decrease. Therefore, it can be seen that the VAT reduction has played a positive role in increasing the consumption of certain products, thereby stimulating consumer demand and production, and helping to significantly restore the economy after the impact of the Covid-19 pandemic. In addition, the study also identifies the main reasons why people change their consumption behavior, including (1) changes in income; (2) anticipation of price reductions for most goods; (3) anticipation of price increases for most goods in the future; and (4) perception of VAT changes.

6. LIMITATIONS AND FUTURE RESEARCH

This study is limited in terms of its context, scope, and timeframe. On the one hand, the study is limited to examining the impact of VAT on consumer behavior. On the other hand, the study is limited in terms of the research participants, although they represent the three main income groups in Vietnamese society at present. Additionally, the products and services surveyed regarding the increase or decrease in purchasing power are also limited, as the Vietnamese government has limited the items eligible for VAT reduction from 10% to 8%. Therefore, future studies can expand the scope of taxes and the research participants to more accurately and closely assess the impact of tax changes on consumer behavior.

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