Key drivers affecting e-commerce adoption in individual business households in Vietnam

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Abstract

This research investigates the factors that impact the adoption of e-commerce by individual business households in Vietnam. Data was gathered from a survey of 525 business households across the country. The methodology involved using Exploratory Factor Analysis (EFA) to determine the key factors influencing e-commerce use. Subsequently, regression analysis was applied to assess how these identified factors relate to the ability of these business households to utilize e-commerce.

The article's result shows five key determinants that affect individual business households' intention to participate in e-commerce: Government regulations, perception, technological infrastructure, business environment, and resources. The finding exposes that all five factors above have a significant impact on the decision-making process to use e-commerce for online business of individual businesses household in Vietnam.

Keywords: *E-commerce adoption, Individual business households, Influencing factors Vietnam.*

INTRODUCTION

Vietnam's e-commerce sector is on a strong trajectory, boasting an impressive 27% growth rate in 2024 and pushing the online retail market to a significant US$32 billion (VECOM, 2025). These figures clearly demonstrate the explosive growth and vast potential within Vietnam's e-commerce landscape. Building on this solid foundation, and with a wave of key policies and legal frameworks set to take effect or be introduced in 2025, the Vietnam E-commerce Association (VECOM) anticipates that the country's e-commerce is about to enter its fourth phase. This period is expected to bring about rapid and sustainable development, opening up numerous new opportunities for all market participants.

The rapid growth of e-commerce is significantly changing the intentions and behaviors of economic entities, especially individual business households. This type of business is prevalent in Vietnam; statistical data indicates that as of December 2024, there are approximately 3.6 million household and individual businesses nationwide. However, these businesses still face numerous challenges in adopting e-commerce. Limitations in resources, the

influence of the business environment, their understanding of e-commerce, information technology (IT) infrastructure, and relevant legal frameworks have considerably impacted their decisions to integrate e-commerce into their operations.

In reality, studies on e-commerce adoption behavior among economic entities have been conducted. However, these studies have primarily focused on enterprises or individual consumers. Research specifically addressing e-commerce adoption by individual business households remains limited. Therefore, investigating and identifying factors influencing individual business households' decisions to conduct business on e-commerce platforms is crucial for both academic understanding and practical application. This paper develops a research model and identifies factors affecting the decision to adopt e-commerce by individual business households nationwide. This will provide a basis for developing measures to enhance the effectiveness of this business method.

LITERATURE REVIEW
E-commerce
The term e-commerce emerged in the 1980s, following the advent of online business models (Kling and Wigand, 1997). Despite numerous studies on the subject, scholars largely concur on its definition (Kling and Wigand, 1997; Maamar, 2003; Gupta, 2014). Accordingly, e-commerce encompasses all business activities conducted via electronic connections, particularly through the internet. Laudon and Traver (2021) characterize e-commerce as the utilization of digital platforms, notably the internet, for the purpose of commercial transactions involving goods or the exchange of information. Conversely, Kedah (2023) posits that e-commerce represents an online business paradigm that relies on information technology infrastructure and internet connectivity to execute online procurements, sales, exchanges, and financial settlements. E-commerce encompasses diverse models, including B2B, B2C, C2C, and C2B (Orzol, 2023).

E-commerce offers numerous growth avenues for enterprises by streamlining transaction processes and enabling the provision of comprehensive service packages to customers (Koe and Sakir, 2020). Empirical evidence further confirms that leveraging electronic tools and adopting digital functions such as e-marketing (Chong et al., 2018) and e-business (Soto-Acosta et al., 2016) can positively influence business performance. For instance, e-commerce demonstrably enhances efficiency by reducing information search costs, transactional expenses, and the overall duration of business processes (Astuti & Nasution, 2014).

Individual business households
An individual business household is a commercial entity founded by a single person or a group of family members. Those involved bear unlimited liability for the household's operations, using their personal assets. Should there be multiple members, one will be designated to act as the authorized representative of the business household (Enterprise Law, 2020; Government Decree, 2021).

These business households are a prevalent organizational structure in Vietnam, specifically tailored for small-scale, family-run, or individually operated ventures. They are instrumental in stimulating local economies and fall under particular legal frameworks. Individual business households are categorized into three distinct types according to their founders: (1) those with an individual owner, (2) those with group ownership, and (3) those that are family-owned.

Factors affecting the adoption of e-commerce
Numerous studies have explored the factors that motivate economic actors to adopt e-commerce. Research by Bordonaba-Juste, Lucia-Palacios, and Polo-Redondo (2012) indicates that business size is a key determinant of e-commerce adoption in business processes. They found that large and medium-sized enterprises show similar levels of e-commerce engagement, while small and micro-enterprises exhibit significantly lower adoption rates. Bordonaba-Juste, Lucia-Palacios, and Polo-Redondo (2012) also observed that small businesses often resort to outsourcing their e-commerce implementation due to a lack of in-house technological expertise. This reliance on external resources can slow down their adoption speed and lower their overall level of e-commerce integration.

Other research indicates that perceived usefulness, perceived ease of use, and vendor partner support are crucial factors influencing how technology readiness impacts e-commerce adoption (Ahmad, Abu Bakar, Faziharudean, and Mohamad Zaki, 2015; Rana, Barnard, Baabdullah, Rees, and Roderick, 2019; Susanty et al., 2020; Nguyen and Luu, 2020).

According to Tran and Dao (2023), 12 factors influence businesses' intention to participate in e-commerce: government regulations, available platform selection, competitive advantage requirements, internet infrastructure, customer readiness, cognition, capability, culture of innovation, internal regulations, participation model, infrastructure, and technology background. A study by Tran and Nguyen (2025) highlights that five key elements positively drive the intent to embrace e-commerce: perceived relative advantage, perceived compatibility, organizational readiness, knowledge and experience, and organizational innovativeness. Conversely, other factors like external pressure and external support were found to have no significant influence on e-commerce adoption intentions, for various reasons.

Proposed Research Model and Hypotheses
Based on literature review, we fomulate a research model with five independent variables and one dependent variable.

According to numerous researchers, including Shemi and Procter (2013), Awiagah et al. (2016), and Nazir and Zhu (2018), governmental involvement in establishing information and communication technology (ICT) infrastructure has substantially boosted e-commerce adoption and utilization within developed economies.

A study by Lawrence and Tar (2010) highlights that government policy is crucial for e-commerce adoption, particularly in developing nations. Early hurdles often arise from poor telecommunications infrastructure and absent ICT and e-commerce policies. To overcome these, governments need to invest in infrastructure, create strong legal systems, encourage competition in the telecom sector, and lower trade barriers. When governments actively commit to and support a favorable legal environment and affordable technology, costs drop, internet access improves, and e-commerce adoption expands. Conversely, without thorough policies and active government involvement, e-commerce growth will struggle.

Vietnam's e-commerce landscape is underpinned by a comprehensive, though often complex, legal framework. The foundational legal basis was laid in 2005 with the National Assembly's approval of three key laws: the Commercial Law, Civil Code, and Law on E-Transactions. This was further supplemented

by several other crucial pieces of legislation, including the Law on Information Technology (2006), Telecommunications Law (2009), Penal Code (1999, amended and supplemented in 2009), Law on Consumer Protection (2010), Advertising Law (2012), Investment Law (2014), and Enterprise Law (2014).

Despite this extensive regulatory foundation, with e-commerce operations specifically governed by Decree No. 52/2013/ND-CP and Circular 47/2014/TT-BCT under the direct oversight of the Ministry of Industry and Trade, entrepreneurs in Vietnam often encounter significant bureaucratic hurdles. The nation's unique political-economic system has resulted in an overwhelming "forest of regulations," comprising over 5,700 administrative conditions from various governmental bodies. The lengthy administrative procedures required to obtain necessary business licenses undoubtedly impede e-commerce promotion (Dang and Chen, 2020).

We formulate the following hypothesis regarding the relationship between the government regulations and individual business households' adoption of E-commerce.

H1: Supportive and clear government regulations will motivate individual business households to accept participation in E-commerce.

The perceived usefulness of e-commerce is a key driver for household businesses to adopt this platform (Nguyen, 2019), offering benefits like reduced time, costs, and human resources (Susanty et al., 2020). Rahayu and Day (2015) additionally found that perceived usefulness, alongside compatibility and e-business costs, influenced e-commerce technology implementation. Ultimately, this perceived utility, representing an organization's acceptance of digital trading advantages, is posited to positively impact its technological readiness (Kabango & Asa, 2015; Rana et al., 2019).

Davis (1989) defined perceived ease-of-use as "the degree to which a person believes that using a particular system would be free from effort". This perception of ease is subsequently linked to how straightforward it is to access a technology system and navigate its interface. Consequently, new technologies needed to be readily adaptable for performing specific jobs or tasks (Aryani, Herwanti, & Basuki, 2018; Nguyen & Luu, 2020). As noted by Saffu, Walker, and Mazurek (2012), the preparedness for and adoption of online commerce are influenced by both its perceived ease of use and its usefulness. Therefore, the hypothesis proposed is:

H2: A household's accurate perception positively influences their e-commerce adoption

Technological factors encompass the elements of infrastructure required to support e-commerce implementation in developing nations. These factors are often seen as the most crucial technological components because, in the absence of essential infrastructure, other elements such as internet connectivity (Mthembu et al., 2018) and digital payment systems (Kabir et al., 2020; Mthembu et al., 2018; UNCTAD, 2019) cannot operate effectively. This presents an ongoing challenge for developing countries, where infrastructure is frequently underdeveloped and insufficient to support e-commerce activities (Alyoubi, 2015; UNCTAD, 2019).

The three primary technological and infrastructural obstacles to e-commerce adoption in these regions include: unreliable internet access characterized by poor quality and slow speeds, coupled with high internet costs (Ahmed & Hasan, 2016; Alyoubi, 2015; Mthembu et al., 2018; UNCTAD, 2019); a lack of adequate and dependable logistics networks (Ahmed & Hasan, 2016; Alyoubi, 2015; Oluwaseun, 2016; UNCTAD, 2019); and the high financial burden associated with implementing e-commerce solutions. This latter issue is largely due to the limited financial capacity of many developing nations to invest in necessary technological infrastructure (Mohtaramzadeh et al., 2018; Rahayu & Day, 2017; UNCTAD, 2019). Therefore, it is possible to make the research hypothesis:

H3: Technological infrastructure has a positive impact on the adoption of e-commerce in individual business households

Environmental factors encompass political, economic, legal, and market elements, originating from both internal and external contexts within a developing nation. There are numerous studies indicating that external pressure plays a significant role in driving the adoption of digital technology (Shahadat et al., 2023; Scupola, 2009; Saffu et al., 2012). In today's digitally competitive landscape, e-commerce serves as a source of competitive advantage, aiding in the enhancement of a company's market standing (Lim et al., 2018). Furthermore, it is deemed essential for the very survival and continued growth of a business (Sila, 2019). Aljowaidi (2015) shows that the adoption of e-commerce by competitors places similar pressure on other enterprises.

In addition, Paun et al. (2024) also demonstrate that the ability to consume directly affects the uptake of e-commerce. According to Statista (2025) and Oberla (2025), global internet access and adoption are rapidly increasing, with over five billion internet users worldwide. Consequently, the number of people making purchases online is continuously growing. As of 2024, there are 2.71 billion digital buyers. This figure represents a 2.7% year-over-year increase, with 70 million more online shoppers compared to the previous year. The number of online shoppers is set to continue increasing, rising to 2.77 billion in 2025. This is considered an opportunity for businesses to apply e-commerce in their business process.

The critical role of customer trust in facilitating successful e-commerce adoption has been well-established (Mthembu et al., 2018). This perspective is further substantiated by a study from Makame et al. (2014), which revealed trust to be an indispensable factor for drawing customers into e-commerce transactions. Alyoubi (2015) identified customer readiness as a challenge to e-commerce adoption. Other significant impediments linked to consumer trust involve a lack of confidence in the quality of goods acquired online (Oluwaseun, 2016; Chawla & Kumar, 2021). Additionally, apprehension exists regarding the integrity and security of online transactions, driven by customer fears of credit card fraud (Agarwal & Wu, 2015; Mthembu et al., 2018). Agarwal and Wu (2015) explicitly state that a higher degree of distrust in online transactions inhibits the pace of e-commerce adoption. Therefore, the following hypothesis is proposed:

H4: Business environment positively impact the adoption of e-commerce in individual business households

The adoption of electronic commerce is often more prevalent among larger firms, a trend Kuan and Chau (2001) attribute to their superior financial resources, IT knowledge, robust infrastructure, and qualified human capital. This underscores that robust human, financial, and technological resources are fundamental for organizational readiness and effective e-commerce implementation

across businesses (Teo & Tan, 1998; Rana et al., 2019). For small and medium enterprises (SMEs), the importance of available resources for online trading platform readiness is even more pronounced (Lim and Trakulmaykee, 2018). Given their inherently smaller scale, resources become a particularly vital factor for household businesses seeking to apply e-commerce. Within Vietnam, Rowe, Truex, and Huynh (2012) contend that business knowledge, accessible resources, and management's positive technological outlook are the paramount drivers for e-commerce adoption. From this argument, the study hypothesizes:

H5: Resources positively impact the adoption of e-commerce in household businesses

Figure 1 presents the proposed research model, which delineates the hypothesized relationships connecting the five independent variables (Government Regulation - GR, Perception - PE, Technology Infrastructure - TI, Business Environment - BE, and Resources - RE) with the dependent variable (E-commerce Adoption - EA).
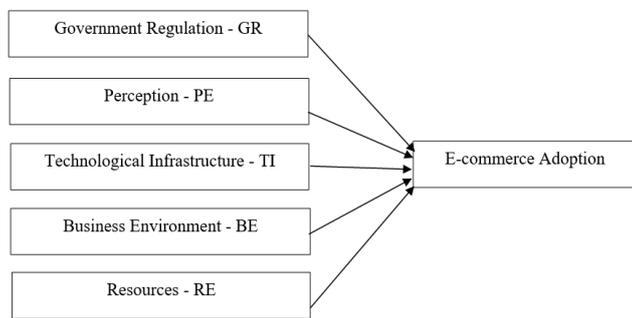

Figure 1: Proposed research model

METHODS AND MATERIALS

This study employed a quantitative research approach to identify key factors influencing the adoption of e-commerce by individual business households in Vietnam. Primary data were collected through a questionnaire survey from June to September 2025.

The questionnaire was designed to gather diverse information, including demographic data (such as the age of the household business, business industry, number of employees, and revenue). The research variables, comprising the dependent variable (Decision to adopt E-commerce) and five main independent variables, were measured using closed-ended questions with a 5-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree). Additionally, the questionnaire incorporated open-ended questions to elicit more detailed qualitative feedback from respondents. The entire questionnaire was developed in Vietnamese, and subsequently, the collected data underwent a translation process into English for analysis purposes.

Regarding the sampling strategy, a stratified random sampling technique was applied. Strata were defined based on the business industry of the households and three main geographical regions in Vietnam (Northern, Middle, and Southern regions). Within each stratum, a simple random sample was drawn, with the sample size proportional to the stratum's representation in the total population, based on data from the General Statistics Office. Accordingly, the final sample size was determined to be 550 business households.

Based on this sample size, a pilot survey was conducted with 10 individual business households in Hanoi city. The purpose of the pilot survey was to assess the feasibility of the research method,

identify questionnaire design errors (e.g., ambiguous questions, logical errors), and obtain preliminary estimates of parameters (variance, standard deviation) to ensure the accuracy of the final sample size calculation. Following necessary adjustments based on the pilot survey results, the questionnaire was revised to include a total of 25 observation variables designed to measure the five independent variables, and 5 observation variables for the single dependent variable. The official survey was then deployed through two channels: an online survey (using Google Forms) and a direct survey (using paper questionnaires). As a result, 525 valid questionnaires were collected, qualifying them for formal data analysis.

Data collected during the study will undergo statistical analysis utilizing SPSS (version 26.0) software. The analytical procedures planned include:

Descriptive statistics: Employed for summarizing and illustrating the fundamental characteristics of the sample population and the distribution patterns of the variables.

Reliability assessment: Conducted to ascertain the internal consistency and stability of the measurement instruments employed in the survey questionnaire. Cronbach's Alpha coefficient will be the primary metric for assessing scale reliability.

EFA: Applied to uncover the underlying latent constructs that account for the observed correlations among the measured variables. EFA's role will be to facilitate variable reduction and pinpoint the essential dimensions of the theoretical constructs under investigation.

Ordinary Least Squares (OLS) multiple regression analysis: Utilized to investigate the empirical relationships between the independent variables and the dependent variable. This technique will specifically determine the degree to which each independent variable contributes to the variance observed in the dependent variable. The OLS regression model was:

E-commerce Adoption = β_1(Government Regulations) + β_2(Perception) + β_3(Technology Infrastructure) + β_4(Business Environment) + β_5(Resources) + ε

Standardized coefficients (Betas) will be reported. Variance Inflation Factors (VIFs) were used to assess multicollinearity (Hair et al., 2010).

Table 1: Characteristics of the Survey Data

Indicators	Classify	Frequency	Propotion (%)
Gender	Male	138	26,29
	Female	387	73,71
Age	Under 30 years old	214	40,76
	30-49 years old	273	52,00
	Over 50 years old	38	7,24
Business Industry	Fashion, Cosmetics, and Beauty	162	30,86
	Electronics and Technology	125	23,81
	Household Appliances	107	20,38

	Food Products	75	14,29
	Books, Office Supplies, and Gifts	56	10,67
Revenue	≤ 100 billion VND/year	176	33,52
	100 - 300 billion VND/year	254	48,38
	300 - 500 billion VND/year	64	12,19
	≥ 500 billion VND/year	31	5,90
Workforce Size	1-3 employees	299	56,95
	3-5 employees	102	19,43
	5-10 employees	76	14,48
	More than 10 employees	48	9,14
Educational attainment	High School	65	12,38
	College/University	368	70,10
	Postgraduate	92	17,52

Source: Data source processed by the researcher (2025)

RESULTS

The characteristics of the statistical sample are presented in Table 1, where descriptive statistics are summarized:

Regarding gender, women accounted for 60.76% (319 individuals) of the total 525 observations. This aligns with the reality that the majority of business owners in these households are female.

In terms of age and educational attainment, the 30-40 age group constituted the largest proportion, at 52.00%, followed by the under-30 age group at 40.76%. The over-50 group represented a minority, at only 7.24%. This distribution indicates that business households participating in e-commerce tend to be younger, more adaptive, and more capable of accessing and adopting technological advancements. Education also emerged as a positive factor, with 70.10% of the households involved in e-commerce having completed a college or university education and 17.52% having obtained a postgraduate degree.

Concerning workforce size, the surveyed households were predominantly small, with 56.95% utilizing 1-3 employees, who are often family members. Households with 3-5 employees accounted for 19.43% of the sample.

In terms of revenue, the largest proportion of business households (48.38%) reported annual sales between 100 and 300 billion VND. This was followed by households with revenue below 100 billion VND per year, which accounted for 33.52%. A total of 18.1% of the surveyed households generated revenue exceeding 300 billion VND per year.

Regarding the business sector, among the 525 surveyed households, the most dominant sector was Fashion, Cosmetics, and Beauty, accounting for 30.86% of the sample. This was followed

by the Electronics and Technology sector, which comprised 23.81%, and the Household Appliances sector, which had 107 responses representing 20.38%. Following these were the Food products sector and the Books, Office Supplies, and Gifts sector, accounting for 14.29% and 10.67% of the sample, respectively.

Results of testing the reliability of the scale

Cronbach's Alpha was used to assess the reliability of the measurement scales. The findings demonstrated that all measurement scales possessed sufficient reliability, as evidenced by Cronbach's Alpha coefficients exceeding the 0.7 threshold. This validates the internal consistency of the scales, confirming their ability to measure the underlying constructs in a reliable manner. Thus, the 6 scales in the survey ensure reliability and continue to be included in exploratory factor analysis.

Table 2: Results of scale reliability analysis

Factors	N	Cronbach's Alpha
Government regulation (GR)	5	0.825
Perception (PE)	6	0.874
Technological infrastructue(TI)	5	0.891
Business environment (BE)	5	0.903
Resources (RE)	4	0.908
E-commerce Adoption (EA)	5	0.899

Source: Data source processed by the researcher (2025)

Exploratory factor analysis for independent variables

The construct validity of the measurement scales in this study was evaluated using Exploratory Factor Analysis (EFA). The analysis aimed to confirm both the convergence and discriminant validity of the items. For the scales to be considered valid, several conditions were applied: the Kaiser-Meyer-Olkin (KMO) value needed to be within the acceptable range of 0.6 to 1, Bartlett's Test of Sphericity had to yield a significance level below 0.05, and factors were retained based on an Eigenvalue of 1 or more. Furthermore, the extracted factors were required to cumulatively explain at least 50% of the total variance, with individual factor loadings exceeding a threshold of 0.5.

The findings from the exploratory factor analysis, presented in Table 3, demonstrate that the chosen method is appropriate for the study's data. With a KMO value = 0.798 and a statistically significant Bartlett's test ($p < 0.001$), the analysis was well-supported. The extraction of five factors from 25 observed variables successfully explained 69.846% of the variance. Furthermore, all factor loadings were greater than 0.5, confirming the scales' internal consistency and their ability to ensure both convergent and discriminant validity.

The findings from the exploratory factor analysis for the independent variable scales are detailed in Table 3. KMO coefficient =0.798, Bartlett's Test of Sphericity was statistically significant ($p < 0.001$); Eigenvalue = 2.931> 1; Total variance extracted = 69.846% > 50%; The lowest factor loading observed was 0.521> 0.5. Based on these robust findings, it is concluded that the factor analysis method is appropriate, as five factors were successfully extracted from the 25 observed variables, collectively explaining 69.846% of the total variance.

Table 3: Exploratory Factor Analysis Results

Item	Factor 1(GR)	Factor 2(PE)	Factor 3(TI)	Factor 4 (BE)	Factor 5 (RE)
PE6	.961				
PE4	.893				
PE3	.849				
PE5	.773				
PE2	.771				
PE1	.521				
BE5		.952			
BE3		.902			
BE2		.862			
BE4		.807			
BE1		.745	.108		
TI5			.944		
TI3			.896		
TI2			.852		
TI4			.774		
TI1			.742		
RE4				.932	
RE2				.917	
RE1				.874	
RE3				.829	
GR4					.893
GR3					.866
GR5			-.129		.791
GR2					.750
GR1					.557

Kaiser-Meyer-Olkin Measure of Sampling Adequacy					0.798
Bartlett's Test		Approx.Chi-Square			8867.328
		df			300
		Sig			0.000
Total Variance Explained		The number of forming factors			5
		Eigenvalue			2.931
		Total % variance extracted			69.846

Source: Data source processed by the researcher (2025)

Results of EFA analysis for dependent variable

As detailed in Table 4, the EFA for the dependent variable confirmed the scale's validity. The analysis yielded a KMO value of 0.761 and a statistically significant Bartlett's Test ($p < 0.001$), indicating the data's suitability for factor analysis. From the observed variables, a single factor was extracted with an Eigenvalue of 3.566. This factor explained a robust 71.318% of the total variance, with all items exhibiting factor loadings greater than 0.5 and no variables being removed from the scale. These robust results confirm the scale's excellent convergence and its appropriateness for subsequent analysis.

Table 4: Results of EFA analysis for dependent variable

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.761
Bartlett's Test	Approx.Chi-Square	2833.221
	df	10
	Sig	0.000
Total Variance Explained	The number of forming factors	1
	Eigenvalue	3.566
	Total % variance extracted	71.318

Source: Data source processed by the researcher (2025)

Regression Analysis

Multiple linear regression analysis was conducted to assess the relationship between five independent variables and household businesses' decision to adopt e-commerce. The regression model revealed that the five independent variables successfully explained a substantial 62.9% of the variance in e-commerce adoption, as evidenced by an adjusted R-squared of 0.629. The remaining 37.1% of the variation can be attributed to unobserved factors not captured by the current model (Table 5).

Table 5: Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.795[a]	.633	.629	.33461	2.032

a. Predictors: (Constant), RE, PE, GR, BE, TI

b. Dependent Variable: EA

Source: Data source processed by the researcher (2025)

The regression model was found to be statistically significant, as indicated by a robust F-statistic of 178.674 ($p < 0.001$). Furthermore, the model satisfied key assumptions of linear regression: There was no evidence of multicollinearity, with the Variance Inflation Factor (VIF) for all independent variables being less than 2. Additionally, the Durbin-Watson value of 2.032 is in the range (dU; 4-dU), confirming the absence of autocorrelation among the residuals.

Table 6: Results of OLS Regression Analysis

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	.183	.131		1.398	.163		
	GR	.150	.017	.230	8.636	.000	.997	1.003
	PE	.373	.018	.562	21.060	.000	.995	1.005
	TI	.088	.017	.135	5.054	.000	.989	1.012
	BE	.046	.017	.074	2.781	.006	.996	1.004
	RE	.303	.017	.485	18.157	.000	.994	1.006

a. Dependent Variable: EA

Source: Data source processed by the researcher (2025)

The regression equation is as follows:

E-commerce Adoption = 0.230 (Government regulation) + 0.562 (Perception) + 0.135 (Technology infrastructure) + 0.074 (Business environment) + 0.485 (Resources) + ε.

The standardized beta coefficients are used to determine the relative importance of each independent variable in predicting the e-commerce adoption of individual business households. In this model, all independent variables (GR, PE, TI, BE, and RE) were found to be statistically significant, as their regression coefficients had p-values less than 0.05, indicating a significant impact on the dependent variable.

Among the five independent variables, Perception showed the strongest positive impact on e-commerce adoption ($\beta = 0.562$), followed by Resources ($\beta = 0.485$). Government regulation ($\beta = 0.230$) and Technological infrastructure ($\beta = 0.135$) also had statistically significant positive effects. Business environment ($\beta = 0.074$) showed the smallest but still significant positive effect. These findings indicate that all five factors play a significant role

in fostering e-commerce adoption among individual business households in Vietnam.

DISCUSSION

Our study investigates the key factors influencing the e-commerce adoption trend of individual business households in Vietnam. E-commerce is not a new topic, however, there are not many studies on individual business households. The findings provide strong empirical support for the importance of all five factors in studying the determinants of e-commerce adoption by individual business households.

The significant positive impact of perception ($\beta = 0.562$) on e-commerce adoption among individual business households aligns directly with foundational theories such as the Technology Acceptance Model (TAM), which emphasizes the crucial roles of perceived usefulness and perceived ease of use. This robust positive relationship indicates that the subjective assessment of benefits and simplicity fundamentally drives their decisions. For Vietnamese individual business households, perceived usefulness translates into tangible advantages, including the ability to expand customer reach beyond traditional local markets, enhance sales efficiency, and achieve significant cost reductions (e.g., lower rental expenses, streamlined operations). These economic and operational efficiencies are particularly vital for enterprises with limited resources. Concurrently, the perceived ease of use, characterized by the user-friendliness of prominent e-commerce platforms (such as Shopee, TikTok Shop or Lazada) and the availability of simplified management tools, plays a critical role in lowering technical and psychological barriers to entry. This comprehensive positive perception, encompassing both the practical advantages and the operational simplicity of e-commerce, thus emerges as a pivotal determinant shaping the willingness and decision of individual business households in Vietnam to integrate digital commerce into their operations.

Household resources emerged as the second strongest predictor of e-commerce adoption by sole proprietorships ($\beta = 0.485$). This finding aligns with established literature emphasizing robust human, financial, and technological resources as foundational for organizational readiness and effective e-commerce implementation across various business scales. For individual business households in Vietnam, this significant positive correlation indicates that the availability of internal resources directly facilitates their transition to and sustained engagement with e-commerce platforms. Specifically, adequate financial resources are pivotal, enabling initial investments in platform fees, digital marketing, and essential technological equipment. This significantly mitigates the perceived financial risks associated with online operations. Furthermore, robust human capital, encompassing essential business knowledge, requisite IT and digital skills, and a positive technological outlook among household members or managers, empowers these entities to efficiently manage online operations, troubleshoot issues, and adapt to evolving digital trends. Lastly, the availability of appropriate technological infrastructure (e.g., reliable internet access, smartphones, computers, printers, and sales management software applications) serves as a foundational element. This infrastructure provides the basic tools necessary for accessing and fully leveraging e-commerce platforms. For these inherently small, family-run enterprises in the Vietnamese context, adequate internal resources are not merely supportive; they are critical in overcoming common barriers such as limited initial capital, absence of specialized IT personnel, and general apprehension

towards digital transformation. Consequently, well-resourced households are empowered to confidently exploit e-commerce, aiming for sustainable business growth.

Government regulations also demonstrated a significant positive relationship with individual business households' e-commerce adoption ($\beta = 0.230$). This underscores the critical role of governmental policies and a robust legal framework in fostering a conducive environment for digital commerce, particularly in developing economies where initial infrastructure and policy hurdles often impede widespread adoption.

In Vietnam, the e-commerce landscape is underpinned by an evolving and increasingly comprehensive legal framework. This builds upon foundational laws, such as the Commercial Law, Civil Code, and Law on E-Transactions (2005), and has been subsequently amended by decrees, including Decree No. 85/2021/ND-CP, which refined aspects of Decree No. 52/2013/ND-CP concerning e-commerce. Recent legislative and policy developments directly impact how individual business households engage with e-commerce.

Tax Policies: Effective July 1, 2025, Decree No. 117/2025/ND-CP marks a significant shift in tax management for online businesses. This decree mandates that e-commerce platforms with payment functions (e.g., Shopee, Lazada) deduct and remit Value Added Tax (VAT) and Personal Income Tax (PIT) on behalf of individual sellers. Specifically, for goods, a combined rate of 1% VAT and 0.5% PIT (total 1.5% on revenue) applies for annual revenues exceeding 100 million VND, aiming to simplify compliance for many small-scale sellers. Furthermore, Decree No. 70/2025/ND-CP, effective June 1, 2025, stipulates that individual business households with annual revenues from 1 billion VND must issue e-invoices generated directly from cash registers and connected to the tax authorities. This measure will gradually phase out the traditional lump-sum tax method for larger online operators.

Administrative Modernization: From July 1, 2025, the personal identification number will replace the personal tax code for tax-related transactions (Circular No. 86/2024/TT-BTC). This change aims to streamline administrative procedures and enhance data synchronization, thereby making interactions with tax authorities more efficient for both individuals and business households alike.

While these regulatory refinements - which include the shifting of tax declaration burdens to platforms and and the modernization of invoicing and identification systems - aim to create a clearer and more efficient operational environment, they simultaneously introduce new compliance requirements. For small, family-run entities, navigating this "forest of regulations" and adapting to rapid policy changes can still present significant bureaucratic hurdles and demand greater digital literacy. Nevertheless, a transparent, supportive, and continuously updated regulatory framework, particularly concerning taxation and administrative simplification, remains crucial for fostering broader and more confident e-commerce adoption among Vietnamese individual business households.

Technological infrastructure (TI): Technological infrastructure shows a positive and significant, albeit relatively smaller, impact on e-commerce adoption by individual business households in Vietnam ($\beta = 0.135$). This finding underscores that while a foundational level of technological infrastructure is a prerequisite for any e-commerce activity, its pervasive availability across Vietnam might lead to a comparatively lower differentiating effect

on adoption decisions compared to more subjective factors like perception or immediate internal resources.

For individual business households, essential technological infrastructure primarily comprises reliable internet connectivity, accessible digital payment systems, and efficient logistics networks. In Vietnam, internet penetration has increased significantly, with the widespread availability of mobile internet and affordable broadband. However, the sustained quality, speed, and cost-effectiveness of this connectivity remain critical for small-scale operations that rely on real-time order management and a consistent online presence.

The proliferation of digital payment systems, including mobile banking applications, e-wallets (e.g., MoMo, ZaloPay), and QR code payments, has substantially lowered transaction barriers for both sellers and consumers, thereby enhancing online commerce accessibility. Furthermore, the development of a robust logistics infrastructure and a competitive network of delivery services (such as Shopee Express, VnPost, and Viettel Post) directly empowers individual households to efficiently fulfill online orders across broader geographical areas, extending their market reach beyond traditional local confines.

Therefore, while a basic technological foundation is now widely accessible, the quality, reliability, and affordability of these services and networks are crucial for facilitating not just initial adoption but also the sustained growth and effective utilization of e-commerce by Vietnamese individual business households.

The business environment demonstrated a significant but small positive impact on e-commerce adoption by individual business households ($\beta = 0.074$). This suggests that while external market dynamics and competitive pressures do play a role, their direct influence on the initial adoption decision for these small-scale entities may be less pronounced compared to other factors.

In Vietnam, the evolving business environment presents both compelling opportunities and distinct challenges for individual business households. The escalating digital competitiveness, spurred by the online migration of larger firms and even individual enterprises, generates substantial external pressure. E-commerce is now recognized as a vital source of competitive advantage, frequently regarded as essential for business survival and sustained growth, compelling households to strategically consider online channels to preserve their relevance and market share. Concurrently, a significant market opportunity is manifest in the rapidly increasing number of digital buyers across Vietnam, a trend consistent with global patterns. This burgeoning online consumer base acts as a potent pull factor, signaling considerable potential for enhanced sales volumes and expanded customer outreach for households adopting e-commerce.

A crucial element within the broader business environment that directly affects e-commerce adoption is customer trust. Even with many opportunities in the market, individual business households in Vietnam often deal with customer doubts. People worry about how safe and honest their online payments are. They also question whether the products they buy online will be of good quality.

For small sellers who might not be well-known, building this essential trust in Vietnam's very competitive online market is a major hurdle. So, while the overall market clearly encourages businesses to join e-commerce, the real situation with customer trust in Vietnam's fast-moving online sector is quite complex. This means that even though the business environment does help businesses start using e-commerce, it isn't enough on its own. Other important factors also need to be addressed to make an online business truly successful and ensure its long-term viability for these households.

E-commerce adoption among individual business households in Vietnam is profoundly influenced by the combined positive effects of five distinct factors: Perception, Household Resources, Government Regulations, Technological Infrastructure, and the Business Environment. This outcome underscores that an isolated focus on any single element is insufficient; instead, a multi-faceted strategy recognizing their deep interdependence is essential for successful digital integration.

For instance, an optimistic perception of e-commerce benefits can powerfully incentivize households to allocate their financial and human capital toward online operations. This commitment receives further impetus from supportive government regulations that simplify administrative procedures and provide tax clarity, alongside a business environment marked by increasing digital consumer demand and competitive pressures. Simultaneously, advancements in and improved accessibility to technological infrastructure, such as dependable internet and robust digital payment systems, not only facilitate initial adoption but also reinforce a favorable perception among potential users, thereby making e-commerce both more attractive and feasible.

The high R-squared value (0.633) indicates that these five factors collectively account for a significant proportion of the variance in e-commerce adoption by Vietnamese individual business households, thereby validating the proposed conceptual framework's utility and predictive capacity.

Comparison with Existing Literature

The findings of this study largely align with existing academic literature on technology adoption and digital economy development, while also offering specific insights derived from the context of individual business households in Vietnam.

Our research strongly affirms the pivotal role of Perception in driving e-commerce adoption. This outcome is consistent with established perspectives that identify perceived usefulness and perceived ease of use as key determinants of platform acceptance (Nguyen, 2019; Saffu, Walker, and Mazurek, 2012; Davis, 1989). Similarly, the significant influence of Household Resources corroborates existing literature, which emphasizes the critical importance of robust human, financial, and technological resources for effective e-commerce implementation across various business scales (Kuan & Chau, 2001; Rowe et al., 2012).

The positive impact of Government Regulations aligns with studies highlighting the necessity of a supportive policy environment (Lawrence & Tar, 2010). However, our findings also reflect the complexities and administrative hurdles within Vietnam that may temper the full potential of such regulatory support (Dang and Chen, 2020).

Regarding Technological Infrastructure, while broadly acknowledged as foundational (Mthembu et al., 2018), its relatively smaller impact in our study suggests that basic access has become widespread in Vietnam. This may indicate a shift in its role from a primary initial barrier to an enabler for enhancing the quality and sophistication of e-commerce operations (Alyoubi, 2015).

Finally, the Business Environment showed a positive but modest impact. While external pressures, competition, and market opportunities generally incentivize adoption (Lim et al., 2018), its limited influence may stem from persistent challenges in building customer trust among small-scale sellers in Vietnam (Agarwal & Wu, 2015).

Overall, our study not only validates the proposed conceptual framework's relevance within the specific context of Vietnamese individual business households but also provides empirical nuances regarding the relative importance and interplay of these diverse factors in a rapidly digitalizing emerging economy.

Implications of the Findings
The findings of this study carry significant theoretical and practical implications for understanding and promoting e-commerce adoption among individual business households in Vietnam.

Theoretical Implications
Our study reinforces existing models of technology acceptance by empirically confirming that perception and household resources remain primary drivers of digital transformation, even for micro-enterprises like individual business households in Vietnam. Specifically, we clarify the evolving role of technological infrastructure: in more digitally mature environments, it shifts from being a primary barrier to a foundational enabler. Furthermore, the research indicates that the influence of the business environment can be moderated by specific challenges related to customer trust. These insights contribute to a deeper theoretical understanding of e-commerce adoption dynamics in emerging economies.

Practical Implications
Practically, the findings offer clear and actionable guidance for policymakers, platform providers, and support organizations aiming to enhance e-commerce participation among individual business households in Vietnam:

Leveraging Perception: Given the paramount influence of perception, efforts should focus on clear and compelling communication campaigns that highlight the tangible benefits of e-commerce (e.g., expanded market reach, cost savings, efficiency gains) and demonstrate the simplicity of platform usage. Platform providers should prioritize intuitive user interfaces and offer readily accessible tutorials to lower perceived complexity and psychological barriers.

Empowering with Resources**:** The significant impact of household resources calls for targeted support to enhance their internal capabilities. This includes facilitating access to affordable micro-finance for digital investments, providing practical digital literacy and e-commerce management skills training for household members, and supporting the acquisition of essential technological tools (e.g., reliable internet, basic hardware, sales management software).

Streamlining Government Regulations: While governmental support is crucial, continuous efforts are needed to simplify the administrative procedures associated with e-commerce, particularly regarding taxation and business registration. Policies should aim for clarity and ease of compliance, minimizing bureaucratic hurdles and leveraging digital identification systems to reduce complexities for small-scale operators.

Enhancing Technological Infrastructure Quality: Beyond basic access, focus should shift towards improving the quality, reliability, and affordability of internet connectivity, digital

payment systems, and logistics networks. Investments in last-mile delivery solutions and secure, user-friendly payment gateways are essential to facilitate not just initial adoption but also sustained and effective utilization of e-commerce.

Building Business Environment Trust: The modest yet significant impact of the business environment, particularly concerning customer trust, necessitates strategic interventions. E-commerce platforms and regulatory bodies should implement robust mechanisms for buyer protection, dispute resolution, and seller verification to enhance consumer confidence. Promoting transparency in product information and encouraging genuine customer reviews can also help individual households build reputation and overcome initial trust deficits.

CONCLUSION AND RECOMMENDATIONS
This study empirically investigated the key factors influencing e-commerce adoption among individual business households in Vietnam. Utilizing quantitative analysis of survey data, the research found that all five hypothesized factors - Perception, Household Resources, Government Regulations, Technological Infrastructure, and Business Environment - exert a statistically significant and positive influence on the adoption of e-commerce.

Specifically, Perception emerged as the most impactful driver, closely followed by Household Resources. These findings underscore the critical role of individual beliefs in e-commerce benefits and the availability of internal capabilities (financial, human, and technological) in facilitating digital integration. While Government Regulations, Technological Infrastructure, and the Business Environment also demonstrated positive impacts, their relative influence highlights the complex interplay between internal readiness and the external enabling ecosystem.

Overall, the findings underscore the multi-faceted nature of e-commerce adoption among individual business households in the specific context of Vietnam. Success in digital transformation for these micro-enterprises hinges on a comprehensive approach that addresses both their internal attributes and the broader supportive environment.

Policy Recommendations
The empirical findings of this study provide a strong foundation for developing targeted and effective policies aimed at enhancing e-commerce adoption among individual business households in Vietnam. These recommendations are directed at governmental bodies, e-commerce platform providers, and supporting organizations to foster a more conducive digital environment for micro-enterprises.

Enhancing Perception and Digital Literacy:
Public Awareness Campaigns: Government agencies (e.g., Ministry of Industry and Trade, local trade promotion centers) should collaborate with e-commerce platforms to launch nationwide and localized awareness campaigns. These campaigns should vividly demonstrate the practical benefits of e-commerce (e.g., broader market access, cost savings, increased efficiency) and highlight the simplicity of platform usage through relatable success stories and practical workshops.

Accessible Digital Skills Training: Policymakers should invest in and promote accessible, often subsidized or free, digital literacy and e-commerce management training programs. These programs, delivered through vocational schools, community centers, or online platforms, should equip household members with essential skills,

including online marketing, order fulfillment, customer service, and basic cybersecurity.

Strengthening Household Resources:
Micro-finance for Digital Investments: Financial institutions, supported by government incentives, should develop tailored micro-finance programs. These programs should provide individual business households with accessible credit lines for initial e-commerce investments, such as platform fees, digital marketing, and essential technological equipment (e.g., reliable internet subscriptions, smartphones, computers, basic sales software).

Affordable Technology Access: Governments could explore partnerships with technology providers to facilitate the provision of affordable hardware and software solutions specifically designed for small-scale online businesses, potentially through subsidies or bulk purchasing initiatives.

Optimizing Government Regulations and Administrative Procedures:
Simplified Tax Compliance: Accelerate and simplify the implementation of new tax policies, such as Decree No. 117/2025/ND-CP, ensuring clarity for individual sellers and e-commerce platforms regarding tax deduction and remittance processes. Comprehensive guidance and easy-to-use tools should be provided to minimize compliance burdens.

Streamlined Business Registration: Continue efforts to modernize and simplify business registration processes for online operations. Further leveraging digital identification (e.g., personal identification numbers replacing tax codes as per Circular No. 86/2024/TT-BTC) can reduce bureaucratic hurdles and enhance data synchronization for business households.

Clear Policy Communication: Ensure new regulations and policy changes are communicated effectively and proactively to individual business households through various accessible channels, including online portals, local workshops, and dedicated support hotlines.

Improving Technological Infrastructure Quality:
*Reliable Connectivity***:** Continue strategic investments in improving the quality, speed, and reliability of internet connectivity, especially in rural and remote areas, while ensuring affordability. This includes enhancing mobile internet coverage and upgrading broadband infrastructure.

Robust Digital Payment Ecosystem: Promote the adoption and interoperability of secure, user-friendly digital payment systems. Policymakers should encourage financial institutions and e-wallets to innovate with features that specifically cater to the needs and trust concerns of individual sellers and their customers.

Efficient Logistics Networks: Support the development of a more efficient and competitive logistics infrastructure that can effectively serve small-scale online sellers. This may involve incentivizing private sector investment in last-mile delivery services, promoting smart logistics solutions, and potentially establishing subsidized collection points for rural areas.

Fostering a Trustworthy Business Environment:
Enhanced Buyer Protection: E-commerce platforms, in collaboration with regulatory bodies, must establish and enforce robust mechanisms for buyer protection, including transparent return/refund policies, effective dispute resolution systems, and clear channels for consumer feedback.

Seller Verification and Quality Assurance: Implement clear guidelines and potentially a verification program for individual sellers to build credibility. Encourage and facilitate the disclosure of transparent product information, clear images, and genuine customer reviews to address concerns about product quality and authenticity.

Cybersecurity Awareness: Launch public awareness campaigns on cybersecurity best practices for both consumers and individual sellers to mitigate fears of online transaction fraud and enhance overall digital security literacy.

Limitations of the Study
Despite its valuable contributions, this study has several limitations that offer important avenues for future research.

First, our research utilized cross-sectional data, capturing e-commerce adoption patterns at a single point in time. While effective for identifying influencing factors, this approach inherently limits our ability to establish causality or observe the dynamic evolution of adoption behaviors and their determinants over a longer period. Future studies would benefit significantly from employing longitudinal designs to track these changes over time.

Second, the study relied on self-reported data collected through surveys. This method, while widely used, is susceptible to potential biases such as social desirability or recall bias, where respondents' perceptions might influence their answers. To gain a more comprehensive understanding, future research could consider a mixed-methods approach, integrating qualitative insights or utilizing objective data (e.g., direct analytics from e-commerce platforms or verified public records, if accessible) to triangulate and validate findings.

Finally, the scope of this study was specifically focused on individual business households in Vietnam. While this niche provides crucial insights into a significant economic segment, the findings might not be directly generalizable to other types of businesses, such as larger small and medium-sized enterprises (SMEs) or formal corporations, which operate with different structures and resource levels. Therefore, comparative studies across various business scales would be valuable to explore how these influencing factors might differ.

Suggestions for Future Research
Future research can significantly expand upon this study by exploring several novel avenues. Conducting longitudinal studies would be crucial to track the dynamic evolution and causality of e-commerce adoption over time. Researchers could also employ mixed-methods or integrate objective data to gain richer insights and mitigate self-report biases. Furthermore, it would be beneficial to investigate household businesses' adoption of emerging e-commerce models like social commerce or cross-border e-commerce. Assessing the impact of accessible digital tools (e.g., simple AI apps) and the integration of green practices in their online operations presents another promising area. Finally, analyzing platform-specific dynamics, examining how different e-commerce platforms influence adoption rates and success, will offer crucial insights for a more comprehensive understanding of digital transformation in Vietnam's micro-enterprise sector.

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