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Unveiling the Transition from Traditional to Online Shopping: An Extended UTAUT2 Framework in a Vietnamese Regional Hub

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ABSTRACT

This study investigates the transition from traditional to online shopping in Can Tho, a mid-sized regional city in Vietnam undergoing rapid digital transformation. Moving beyond adoption-focused research, the study examines the behavioral switching process in the post-pandemic context using an extended UTAUT2 framework. Based on survey data from 424 consumers and structural equation modeling, the findings indicate that facilitating conditions and social influence are the most influential determinants of attitudes toward online shopping, highlighting the central role of infrastructure readiness, logistics systems, and collective social norms in a collectivist cultural setting. Performance expectancy and price value exert secondary effects, while effort expectancy, hedonic motivation, trust, and perceived risk are not significant, suggesting a mature e-commerce environment where baseline trust and risk perceptions are largely stabilized. Attitude strongly drives switching intention, which in turn translates into actual online purchasing behavior. The model explains 64.1% of the variance in attitude and over 32% of both switching intention and behavior, demonstrating strong explanatory power and offering empirical insights into digital consumption transitions in emerging regional markets.

Keywords: Digital Economy, Consumer Behavior, UTAUT2, Switching Intention, Social Influence, Can Tho City
JEL Classifications: L83, O31

1. INTRODUCTION

The digital economy, driven by the Fourth Industrial Revolution, is reshaping global consumption patterns. Defined by the OECD (2020) as economic activities relying on digital technologies, including platforms, goods, services, and infrastructure, it has significantly altered how consumers search for information, evaluate options, and make purchasing decisions.

Vietnam has witnessed rapid growth in this sector. The national e-commerce market reached USD 25 billion in 2023, a 25% increase from the previous year, and is projected to reach USD 28 billion by 2025 (VCCI, 2025). The digital economy accounted for over 12% of GDP in 2023, positioning Vietnam among ASEAN's digital leaders (International Trade Administration, 2023). Notably, 96% of consumers use smartphones for shopping, indicating strong mobile commerce potential (Ministry of Industry and Trade, 2024).

The COVID-19 pandemic accelerated shifts in consumer behavior. According to Sheth (2020), global crises prompt lasting changes in consumption habits. Guthrie et al. (2021) proposed the "react-cope-adapt" framework to capture online shopping behaviors during lockdowns. Erjavec and Manfreda (2022) extended the UTAUT model by incorporating herd behavior, demonstrating that social influence played a critical role under distancing measures.

Can Tho, a centrally governed city and economic hub of the Mekong Delta, is actively pursuing digital transformation. By late

2024, the city had launched 1,097 level-4 online public services and initiated a smart city pilot (VietnamPlus, 2025). Nevertheless, e-commerce development remains limited compared to major urban centers, partly due to distinct local consumer behaviors and uneven technology access.

Technology acceptance models provide robust frameworks for examining online shopping behavior. The Technology Acceptance Model (TAM) emphasizes perceived usefulness and ease of use (Davis, 1989), while the Theory of Planned Behavior (TPB) introduces social norms and perceived behavioral control (Ajzen, 1991). The Unified Theory of Acceptance and Use of Technology 2 (UTAUT2) synthesizes prior models and adds constructs such as hedonic motivation, price value, and habit, explaining up to 74% of variance in behavioral intention (Venkatesh et al., 2012).

In the Vietnamese context, Nguyen Thi and Và Cộng (2022) identified satisfaction, trust, and perceived value as key drivers of continued online shopping during the pandemic. Cao (2025), applying UTAUT2 to Generation Z, found that performance expectancy ($\beta = 0.32$), habit ($\beta = 0.28$), and hedonic motivation ($\beta = 0.24$) significantly influenced usage intention.

Despite these contributions, several important research gaps persist. Existing studies have largely focused on major metropolitan areas, while comparatively little attention has been paid to mid-sized cities such as Can Tho, a key regional hub in the Mekong Delta that is currently experiencing rapid digital transformation. Moreover, the process through which consumers shift from traditional to digital modes of consumption remains insufficiently explored. Much of the literature is also anchored in pandemic era behavior, providing limited understanding of consumption patterns in the post pandemic context. Finally, relatively few empirical models adequately incorporate Vietnam's distinct cultural and technological characteristics.

This study addresses these gaps by employing a mixed-methods approach to investigate digital economy impacts on consumer behavior in Can Tho. An integrated model, based on UTAUT2 and extended with trust, perceived risk, and contextual variables, was tested using structural equation modeling (SEM) on survey data from 400 respondents across five districts and four rural areas. The findings aim to inform context-specific strategies for e-commerce development in the Mekong Delta.

2. THEORETICAL FRAMEWORK AND LITERATURE REVIEW

2.1. Theoretical Framework

2.1.1. Consumer behavior theory

Consumer behavior encompasses the activities involved in the process of searching for, selecting, purchasing, using, and evaluating products or services to satisfy personal needs (Solomon, 2020). In the context of digital transformation, this behavior is shifting as consumers increasingly move from traditional channels to online platforms. Sheth (2020) analyzed the impact of COVID-19 on consumption habits, emphasizing that global crises act as catalysts for behavioral change. When consumers were unable to shop in physical stores, they were compelled to adapt to new purchasing modes via digital platforms. Although some pre-pandemic habits may return, they are likely to be reshaped by new regulations and technological advancements (Sheth, 2020).

2.1.2. The technology acceptance model (TAM)

The technology acceptance model (TAM), developed by Davis (1989), is one of the most widely cited frameworks in information technology adoption research. Based on the Theory of Reasoned Action by Fishbein and Ajzen (1975), TAM focuses on two core constructs. Perceived Usefulness is defined as the degree to which an individual believes that using a system would enhance their job performance, while Perceived Ease of Use refers to the degree to which one believes that using the system would require minimal effort. Davis's original study demonstrated that perceived usefulness had a stronger influence on actual system use ($r = 0.63$) than perceived ease of use ($r = 0.45$). The model posits that perceived ease of use directly affects perceived usefulness, and both influence attitude and behavioral intention, which ultimately lead to actual system use (Davis, 1989).

2.1.3. The theory of planned behavior (TPB)

Ajzen (1991) extended the Theory of Reasoned Action by introducing the construct of perceived behavioral control, thereby formulating the Theory of Planned Behavior (TPB). According to TPB, behavioral intention is determined by three factors: Attitude toward the behavior, referring to an individual's positive or negative evaluation of performing the behavior; subjective norms, indicating perceived social pressure from significant others; and perceived behavioral control, reflecting the perceived ease or difficulty of performing the behavior, influenced by available resources and opportunities. TPB has been widely employed in studies on online shopping intention, underscoring the importance of social norms and control perceptions in digital environments (Ajzen, 1991).

2.1.4. The UTAUT and UTAUT2 model

Venkatesh et al. (2003) developed the Unified Theory of Acceptance and Use of Technology (UTAUT) by integrating eight prior models, including TAM, TPB, and TRA. The model identifies four key factors influencing behavioral intention and usage: Performance expectancy, effort expectancy, social influence, and facilitating conditions, moderated by gender, age, experience, and voluntariness.

Later, Venkatesh et al. (2012) proposed UTAUT2 for consumer contexts, adding hedonic motivation, price value, and habit. UTAUT2 explains 74% of the variance in behavioral intention, outperforming the original model.

During the COVID-19 pandemic, Erjavec and Manfreda (2022) extended UTAUT by introducing herd behavior. In a study of 420 participants aged 60+, performance expectancy remained the strongest predictor, while social influence became insignificant. Herd behavior significantly influenced online shopping intention ($\beta = 0.31$, $P < 0.001$).

2.1.5. Concept of digital economy and E-commerce

The digital economy refers to the segment of the economy primarily based on digital technologies, encompassing digital goods and services, digital platforms, and infrastructure (OECD, 2020). It extends beyond the ICT sector, influencing all industries through digital transformation. In Vietnam, the digital economy reached approximately USD 30 billion in 2023, up 19% from 2022 (UOB, 2023). The government aims for it to contribute 20% of GDP by 2025 and 30% by 2030.

E-commerce involves the buying and selling of goods and services through electronic platforms such as websites, mobile apps, and social media. It includes several models: B_2C (business-to-consumer), B_2B (business-to-business), C_2C (consumer-to-consumer via intermediaries), and O_2O (online-to-offline integration). Ballerini et al. (2023) found that in small and medium-sized enterprises, commitment and the level of digital platform adoption significantly impact online business performance.

2.2. Literature Review

Recent international studies reveal substantial changes in consumer behavior driven by digital technologies, particularly during and after the COVID-19 pandemic. Consumers not only shifted to online shopping channels but also altered their shopping frequency, product preferences, and decision-making patterns (Guthrie et al., 2021). Theoretical frameworks such as "react–cope–adapt" and the stimulus–organism–response (S-O-R) model have been widely used to explain how individuals adjust to digital consumption under external shocks (Deng et al., 2023).

Artificial intelligence, especially chatbot technologies, plays a critical role in enhancing user experience and personalization. Patent analyses highlight increasing developments in natural language processing and adaptive consumer interactions (Pantano and Pizzi, 2020). Studies have consistently shown that information quality, system quality, service quality, and online reviews positively influence e-satisfaction and continued usage (Alalwan, 2020). In live streaming commerce, social presence, interactivity, and trust in sellers are key drivers of consumer engagement (Deng et al., 2023).

Emerging platforms such as the metaverse are reshaping digital interactions, especially among Generation Z, who demonstrate curiosity and active participation despite initial barriers (Kaur et al., 2024). Literature reviews also confirm the continued relevance of classical models such as TAM, TPB, and UTAUT, though these models increasingly require contextual adaptation to reflect evolving digital formats and behaviors (Halibas et al., 2023; Yao et al., 2022; Dwivedi et al., 2023).

In Vietnam, despite global economic challenges, e-commerce has maintained strong growth. The B2C market reached USD 25 billion in 2023 and is expected to grow to USD 28 billion by 2025 (Ministry of Industry and Trade, 2024; VCCI, 2025). Major platforms such as Shopee, Lazada, Tiki, and Sendo dominate, especially in categories such as fashion, electronics, beauty, and food.

Empirical research highlights satisfaction, trust, and perceived value as critical factors influencing continued online shopping, particularly during the pandemic (Nguyen Thi and Và Cộng, 2022). COVID-19 acted as a behavioral catalyst, accelerating the shift from offline to online consumption. Using the S-O-R framework, Vo et al. (2022) demonstrated that website quality—including information, system, and service dimensions—affects purchase intention through perceived value and trust, with trust serving as a key mediating factor.

Among younger consumers, especially Gen Z, performance expectancy, habit, and hedonic motivation have the strongest influence on e-commerce behavior. Cao (2025) found that performance expectancy ($\beta = 0.32$), habit ($\beta = 0.28$), and hedonic motivation ($\beta = 0.24$) were the most significant predictors, while age and digital experience played important moderating roles.

2.2.1. Factors influencing online purchase decisions

Based on the literature review, factors influencing online purchase intention and behavior can be categorized into four main groups:

Technological factors include perceived usefulness and perceived ease of use, two core constructs from the TAM model. Facilitating conditions refer to stable internet infrastructure, access to connected devices, and technical support. In the Vietnamese context, Vo et al. (2022) found that system quality and service quality directly affect consumer satisfaction and purchase intention.

Psychosocial factors encompass trust, which is considered a critical determinant in e-commerce environments. Nguyen Thi and Và Cộng (2022) identified trust as a key mediating factor influencing online purchasing decisions. Perceived risk involves concerns about product quality, financial security, and delivery reliability. Social influence includes recommendations from friends and family, user reviews, and broader shopping trends. Erjavec and Manfreda (2022) introduced herd behavior as an additional variable, suggesting that consumers tend to follow majority behaviors during times of uncertainty.

Economic factors include price value, reflecting consumer comparisons between online and offline pricing, delivery costs, and promotional offers. Studies show that Vietnamese consumers are highly price-sensitive and responsive to discounts and deals.

Contextual factors refer to the impact of the COVID-19 pandemic, which limited in-person shopping and accelerated the shift to digital channels. Both Guthrie et al. (2021) and Erjavec and Manfreda (2022) reported a surge in e-commerce adoption during the pandemic. In the specific case of Can Tho, local factors such as socio-economic development, internet and smartphone penetration, and the maturity of logistics and delivery services also influence online purchasing behavior.

2.2.2. Research gaps

Despite growing interest in consumer behavior within e-commerce, several key research gaps remain: First, existing studies in Vietnam tend to focus on major cities such as Hanoi and Ho Chi Minh City, while relatively little attention has been given to rapidly developing

cities like Can Tho; Second, prior research tends to compare users and non-users of e-commerce, but rarely explores the transition process from traditional to online shopping, including its stages, barriers, and driving factors; Third, most COVID-19-related studies were conducted during the peak of the pandemic; further research is needed to assess the long-term sustainability of new digital habits; Fourth, there is a lack of integrated models that incorporate Vietnam-specific cultural, economic, and technological factors, as well as local conditions such as logistics infrastructure, payment systems, and regional consumer culture; and Finally, while studies have examined Gen Z (Cao, 2025) and older adults (Erjavec and Manfreda, 2022), comparative research across generational cohorts, particularly middle-aged consumers, remains limited.

2.3. Research Model

Drawing upon theoretical foundations and prior empirical studies, this study proposes an integrated model derived from UTAUT2, extended with TAM components and local contextual factors relevant to Can Tho, to explain consumers' intention to shift from traditional to online shopping. The model includes the following variable groups:

- Independent variables: Performance expectancy (PE), effort expectancy (EE), social influence (SI), facilitating conditions (FC), hedonic motivation (HM), price value (PV), trust (TR), and perceived risk (PR)
- Mediating variable: Attitude toward online shopping (ATO)
- Dependent variables: Intention to switch to online shopping (ITOS) and actual online buying behavior (AOB)
- Moderating variables: Age, gender, income, and internet experience.

This framework builds on the robustness of UTAUT2, which has demonstrated the ability to explain 74% of the variance in behavioral intention (Venkatesh et al., 2012). Cao (2025) confirmed its applicability to Vietnamese consumers, particularly Generation Z. Trust and perceived risk are incorporated based on Nguyen Thi and Và Cộng (2022), who emphasized their significance in Vietnam's online retail environment.

2.3.1. Group 1: UTAUT2 variables influencing attitude

Perceived usefulness and ease of use have long been established as core predictors of consumer attitudes in TAM and UTAUT2. In the Vietnamese context, Cao (2025) found PE to have the strongest effect ($\beta = 0.32$) on e-commerce usage intention.

- H_{1a}: Performance expectancy (PE) positively influences attitude toward online shopping
- H_{1b}: Effort expectancy (EE) positively influences attitude toward online shopping
- H_{1c}: Social influence (SI) positively influences attitude toward online shopping, in line with TPB and UTAUT2, which emphasize the role of social norms
- H_{1d}: Facilitating conditions (FC) positively influence attitude toward online shopping
- H_{1e}: Hedonic motivation (HM) positively influences attitude toward online shopping. Cao (2025) reported a significant effect of HM ($\beta = 0.24$) among Vietnamese Gen Z
- H_{1f}: Price value (PV) positively influences attitude toward online shopping, as identified by UTAUT2 in price-sensitive consumer contexts.

2.3.2. Group 2: Trust and perceived risk influencing attitude

Nguyen Thi and Và Cộng (2022) identified trust as a key mediator in Vietnam's online shopping behavior, while Vo et al. (2022) emphasized its mediating role between website quality and purchase intention. Conversely, perceived risk remains a major barrier due to concerns over privacy and product quality.

- H_{2a}: Trust (TR) positively influences attitude toward online shopping
- H_{2b}: Perceived risk (PR) negatively influences attitude toward online shopping.

2.3.3. Group 3: Attitude as a mediator

TPB and TRA posit that attitude is a direct antecedent of behavioral intention. Thus:

- H_3: Attitude toward online shopping (ATO) positively influences intention to switch to online shopping (ITOS).

2.3.4. Group 4: Direct effects on intention to switch

Some UTAUT2 constructs may exert direct effects on intention without being mediated by attitude. PE, for example, has been shown to act independently in certain contexts (Erjavec and Manfreda, 2022).

- H_{4a}: Performance expectancy (PE) directly and positively influences intention to switch to online shopping (ITOS)
- H_{4b}: Facilitating conditions (FC) directly and positively influence intention to switch to online shopping (ITOS).

2.3.5. Group 5: Intention–behavior relationship

TRA, TPB, and UTAUT2 all highlight behavioral intention as the most immediate predictor of actual behavior.

- H_5: Intention to switch to online shopping (ITOS) positively influences actual online buying behavior (AOB).

2.3.6. Group 6: Moderating effects of demographic and contextual variables

According to UTAUT2, demographic factors such as age, gender, and experience may moderate the relationships between predictors and outcome variables. Erjavec and Manfreda (2022) found that older adults exhibit distinct patterns in technology adoption.

- H_{6a}: Age moderates the relationships between PE, EE, and attitude
- H_{6b}: Gender moderates the relationship between social influence (SI) and attitude
- H_{6c}: Income moderates the relationship between price value (PV) and attitude, as low-income consumers are generally more price-sensitive
- H_{6d}: Internet experience moderates the relationship between effort expectancy (EE) and attitude. Cao (2025) highlighted the moderating role of user experience in the UTAUT2–intention relationship in Vietnam.

The proposed research model is illustrated in Figure 1.

3. METHODS

3.1. Measurement Scales

Measurement scales for the constructs in the research model

were adapted from well-established studies and adjusted to fit the context of consumers' transition from traditional to online shopping in Can Tho. All constructs were measured using a 5-point Likert scale (1 = strongly disagree, 5 = strongly agree). The questionnaire included items measuring performance expectancy, effort expectancy, social influence, facilitating conditions, hedonic motivation, price value, trust, perceived risk, attitude, intention to switch, and actual online shopping behavior. Insights from the qualitative phase were used to refine the wording and ensure contextual relevance of the scales.

3.2. Data Collection

Data were collected through a structured survey targeting residents of Can Tho aged 18 and above with internet access. A stratified random sampling approach was employed based on geographic area, age group, and level of e-commerce usage. Data collection was conducted across both urban and rural districts over a 3-4 month period. Following Hair et al. (2019), 400 valid responses were obtained, satisfying the recommended sample size for structural equation modeling. The survey focused on online shopping behavior for common consumer goods across major e-commerce platforms.

3.3. Data Analysis

Quantitative data were analyzed using a stepwise procedure. Descriptive statistics were first conducted to summarize sample characteristics. Reliability and validity of measurement scales were assessed using Cronbach's alpha, exploratory factor analysis (EFA), and confirmatory factor analysis (CFA). The proposed research model and hypotheses were tested using structural equation modeling (SEM). Mediation effects were examined through bootstrapping, while moderation effects were analyzed using multi-group analysis or interaction terms.

Table 1: Demographic characteristics

Characteristic	Types	Number	Percentage
Gender	Male	205	48.3
	Female	205	48.3
	Other	14	3.3
Age	18-30	202	47.6
	31-45	114	26.9
	46-60	74	17.5
	Above 60	34	8.0
Educational background	High school	73	17.2
	College	105	24.8
	Bachelor's degree	199	46.9
	Postgraduate degree	47	11.1
Occupation	Office staff	135	31.8
	Student	81	19.1
	Worker/Manual laborer	81	19.1
	Public servant/Civil servant	41	9.7
	Business owner/ Self-employed	40	9.4
	Homemaker	22	5.2
	Retired	18	4.2
	Other	6	1.4
Income	Below 5 million VND	104	24.5
	5-10 million VND	129	30.4
	10-20 million VND	113	26.7
	20-30 million VND	54	12.7
	Above 30 million VND	24	5.7
Residential area	Co Do District	63	14.9
	Ninh Kieu District	53	12.5
	Binh Thuy District	47	11.1
	Thot Not District	47	11.1
	Vinh Thanh District	47	11.1
	Thoi Lai District	46	10.8
	Cai Rang District	45	10.6
	Phong Dien District	45	10.6
	O Mon District	31	7.3

Source: Author's survey data

4. RESULTS

4.1. Demographic Characteristics

A total of 424 valid responses were collected from consumers in Can Tho between June and September 2024. Overall, the sample was balanced in gender, diverse in age and occupation, with a concentration in well-educated, middle-income groups, aligning with the target population of digital consumers in Can Tho. Descriptive statistics of the demographic variables are presented in Table 1.

4.2. Scale Assessment

The measurement scales were evaluated through three main steps: Cronbach's alpha for internal consistency, exploratory factor analysis (EFA) for construct validity, and confirmatory factor analysis (CFA) for model validation. A summary of the results is presented in Table 2.

The results of Cronbach's Alpha analysis indicate that all 11 constructs demonstrate good internal consistency, with α values ranging from 0.795 to 0.862, exceeding the recommended threshold of 0.70 (Nunnally and Bernstein, 1994). The ITOS scale had the highest reliability (α = 0.862), while ATO had the lowest (α = 0.795) but remained acceptable. All item-total correlations exceeded 0.30, ranging from 0.557 to 0.713, confirming each item's contribution to its corresponding construct.

Exploratory factor analysis (EFA) was conducted on 50 observed variables. The KMO value was 0.848 and Bartlett's test was significant (χ^2 = 9929.791, P < 0.001), indicating sampling adequacy. Eleven factors were extracted with cumulative variance explained of 55.36%, exceeding the 50% threshold. All factor loadings exceeded 0.50, except ATO1 (0.367), which was retained for its conceptual relevance.

Confirmatory factor analysis (CFA) supported the measurement model, with acceptable fit indices: χ^2/df = 1.795, CFI = 0.903, TLI = 0.893, RMSEA = 0.043, GFI = 0.847, and AGFI = 0.826. All constructs demonstrated strong composite reliability (CR = 0.801-0.863) and average variance extracted (AVE = 0.500-0.592), confirming convergent validity.

Discriminant validity was confirmed using the Fornell-Larcker criterion, with the square roots of AVE exceeding inter-construct correlations. For example, $\sqrt{}$AVE of FC was 0.718, higher than its highest correlation with ATO (0.674), indicating clear conceptual distinction among constructs.

Overall, the measurement model exhibits satisfactory reliability, convergent, and discriminant validity, supporting its suitability for structural model analysis using SEM.

4.3. Hypothesis Testing

After confirming the reliability and validity of the measurement model, Structural Equation Modeling (SEM) was conducted to test the proposed hypotheses. The results of direct path coefficients and hypothesis testing are summarized in Table 3.

Hypothesis H_{1a} was supported ($\beta = 0.292$, $P < 0.001$), confirming that performance expectancy positively influences consumers' attitudes toward online shopping. While this aligns with Cao (2025), who identified PE as the strongest predictor in Vietnam, the lower effect size in this study may reflect local characteristics specific to Can Tho.

In contrast, H_{1b} was not supported ($\beta = 0.060$, $P = 0.218$), indicating that effort expectancy does not significantly impact attitude. This divergence from the original TAM model (Davis, 1989) can be explained by the increasing usability of e-commerce platforms, which reduces perceived effort as a decision factor.

H_{1c} was supported ($\beta = 0.301$, $P < 0.001$), highlighting the strong role of social influence—the most influential variable in the model. This underscores how consumer attitudes in Can Tho are shaped by collective norms, reflecting Vietnam's collectivist culture where community opinions, especially from family and friends, play a central role.

H_{1d} also showed a significant effect ($\beta = 0.332$, $P < 0.001$), suggesting that facilitating conditions—particularly technological infrastructure and delivery services—substantially affect consumer attitudes, emphasizing their relevance in regional contexts such as Can Tho.

H_{1e} was not supported ($\beta = 0.049$, $P = 0.262$), indicating that hedonic motivation does not significantly influence attitude. This contradicts Cao (2025), whose research on Gen Z revealed a stronger role for enjoyment; the discrepancy may stem from this study's more diverse sample in terms of age and demographics.

Table 2: Summary of measurement scale assessment

Variables	Items	Cronbach's alpha	Corrected item-total correlation	Factor loading	CR	AVE	Conclusion
ITOS	5	0.862	0.603	0.657	0.863	0.558	Accept
AOB	4	0.808	0.564	0.641	0.814	0.525	Accept
PE	5	0.837	0.595	0.667	0.837	0.508	Accept
EE	5	0.837	0.597	0.673	0.840	0.513	Accept
SI	4	0.826	0.640	0.729	0.826	0.542	Accept
FC	5	0.841	0.622	0.695	0.842	0.516	Accept
HM	4	0.816	0.598	0.679	0.817	0.528	Accept
PV	4	0.851	0.649	0.716	0.853	0.592	Accept
ATO	4	0.795	0.557	0.677	0.801	0.503	Accept
TR	5	0.841	0.622	0.690	0.841	0.515	Accept
PR	5	0.833	0.610	0.687	0.833	0.500	Accept
EFA results							
KMO			0.848				Accept
Sig. Bartlett's test			0.000				Accept
Total variance explained			55.360%				Accept
CFA results							
Chi-square/df			1.795				Accept
CFI			0.903				Accept
TLI			0.893				Accept
RMSEA			0.043				Accept
GFI			0.847				Accept
AGFI			0.826				Accept

Source: Data analysis results from SPSS and AMOS

Table 3: Direct effect hypothesis testing results

Hypothesis	Relationship	β	Standard error	Critical ratio	P-value	Conclusion
H_{1a}	PE→ATO	0.292	0.077	4.991	***	Accept
H_{1b}	EE→ATO	0.060	0.065	1.232	0.218	Reject
H_{1c}	SI→ATO	0.301	0.075	4.665	***	Accept
H_{1d}	FC→ATO	0.332	0.078	4.869	***	Accept
H_{1e}	HM→ATO	0.049	0.049	1.121	0.262	Reject
H_{1f}	PV→ATO	0.119	0.048	2.733	0.006	Accept
H_{2a}	TR→ATO	−0.029	0.048	−0.682	0.495	Reject
H_{2b}	PR→ATO	−0.013	0.049	−0.294	0.769	Reject
H_{3}	ATO→ITOS	0.573	0.083	5.887	***	Accept
H_{4a}	PE→ITOS	0.125	0.080	1.745	0.081	Reject
H_{4b}	FC→ITOS	−0.135	0.076	−1.722	0.085	Reject
H_{5}	ITOS→AOB	0.569	0.064	9.768	***	Accept

***P<0.001, **P<0.01, *P<0.05. Source: Data analysis results from AMOS

H_{1f} was supported (β = 0.119, P = 0.006), confirming that price value exerts a positive, albeit modest, effect. The statistical significance reflects consumers' sensitivity to price, which remains a critical factor in Can Tho.

Hypothesis H_{2a} was not supported (β = −0.029, P = 0.495), suggesting that trust has no significant effect on attitude in this context. This finding, inconsistent with prior research (e.g., Nguyen Thi and Và Cộng 2022; Vo et al., 2022), may be attributed to three key factors. First, the ceiling effect reduces trust's explanatory power as most respondents already perceive major platforms like Shopee and Lazada as highly trustworthy due to their strong reputations, buyer protection policies, and dispute resolution systems. Second, regional cultural traits may reduce the need for institutional trust. In the Mekong Delta, trust is often derived from social networks, with consumers placing more weight on peer recommendations than platform assurances. Third, the timing of this study—conducted post-COVID—means that users are more experienced with online platforms, and trust levels have become more stable, reducing its role as a differentiating factor in attitude formation.

Similarly, H_{2b} was rejected (β = −0.013, P = 0.769), indicating no significant relationship between perceived risk and attitude. This may result from consumers' familiarity with online shopping, which reduces sensitivity to potential risk through a desensitization effect. The existence of robust consumer protection policies further lowers actual and perceived risk, while the prevalence of cash-on-delivery (COD) helps mitigate financial concerns, particularly in cases where product quality might deviate from expectations.

Together, these findings suggest that in a matured e-commerce environment with established platform trust, traditional constructs like trust and perceived risk may lose their discriminant power. Instead, social influence emerges as a more dominant factor in shaping attitudes, particularly in collectivist societies. From a theoretical perspective, trust may be better conceptualized as a threshold or moderating variable, rather than a direct linear predictor. Additionally, perceived risk should be contextually defined and measured to accurately reflect local consumer concerns.

H3 was supported (β = 0.573, P < 0.001), affirming that attitude strongly influences switching intention. This was the most robust relationship in the model, in line with the Theory of Planned Behavior (Ajzen, 1991).

H_{4a} and H_{4b} were both rejected (β = 0.125, P = 0.081; β = −0.135, P = 0.085, respectively), indicating that neither performance expectancy nor facilitating conditions have a significant direct effect on switching intention. However, the near-significant P-values suggest possible indirect effects or multicollinearity, indicating a need for further mediation analysis.

Finally, H_5 was supported (β = 0.569, P < 0.001), confirming that switching intention has a strong and direct impact on actual online shopping behavior, in line with both the Theory of Reasoned Action and the Theory of Planned Behavior.

Bootstrap analysis revealed 9 significant indirect effects (Table 4). The strongest was from FC → ATO → ITOS (β = 0.190, 95% CI [0.110, 0.305]). Indirect effects were also found for SI (β = 0.172), PE (β = 0.167), and PV (β = 0.068, P = 0.019), all mediated by ATO. ATO itself had a strong indirect effect on AOB via ITOS (β = 0.326).

Paths from FC, PE, SI, and PV to AOB through ATO and ITOS were statistically significant, confirming the mediating roles of attitude and switching intention (Table 5). In contrast, TR, PR, EE, and HM showed no significant indirect effects due to their non-significant influence on ATO in earlier steps.

Multi-group analysis by age revealed significant differences in the effects of performance expectancy (PE) and effort expectancy (EE) on attitude across age groups. In the 18-30 group, both PE (β = 0.469) and EE (β = 0.217) had significant impacts. For the 31-45 group, only PE was significant (β = 0.457), while EE was not. In the 46-60 group, both factors were significant, with PE (β = 0.500) and EE (β = 0.268). Among those over 60, only PE showed a significant effect (β = 0.472). These results support Hypothesis H_{6a}, confirming the moderating role of age in the relationships between PE, EE, and attitude.

Table 4: Results of indirect effect testing via bootstrapping

Indirect effect path	β	Lower	Upper	P-value	Conclusion
FC → ATO → ITOS	0.190	0.110	0.305	0.001	Significant
FC → ATO → ITOS → AOB	0.190	0.067	0.194	0.001	Significant
PE → ATO → ITOS	0.167	0.110	0.309	0.001	Significant
PE → ATO → ITOS → AOB	0.167	0.066	0.199	0.001	Significant
SI → ATO → ITOS	0.172	0.091	0.275	0.001	Significant
SI → ATO → ITOS → AOB	0.172	0.058	0.173	0.001	Significant
PV → ATO → ITOS	0.068	0.021	0.116	0.019	Significant
PV → ATO → ITOS → AOB	0.068	0.014	0.077	0.017	Significant
ATO → ITOS → AOB	0.326	0.202	0.438	0.001	Significant
FC → ITOS → AOB	−0.077	−0.164	−0.006	0.082	Insignificant
PE → ITOS → AOB	0.071	−0.008	0.202	0.126	Insignificant
TR → ATO → ITOS	−0.017	−0.059	0.021	0.454	Insignificant
PR → ATO → ITOS	−0.007	−0.051	0.033	0.739	Insignificant
EE → ATO → ITOS	0.034	−0.020	0.102	0.268	Insignificant
HM → ATO → ITOS	0.028	−0.010	0.074	0.231	Insignificant

95% confidence interval estimated using Bootstrapping with 5,000 resamples. Source: Data analysis results from AMOS

Multi-group analysis by gender revealed that the effect of social influence (SI) on attitude differs between male and female consumers (Table 6). For females, SI had a strong impact (β = 0.629), explaining 39.5% of the variance in attitude. In contrast, among males, the effect was weaker (β = 0.411) with an R^2 of only 16.9%. The "other" group was excluded from statistical interpretation due to small sample size. These findings support Hypothesis H_{6b}, confirming the moderating role of gender in the relationship between social influence and attitude.

Multi-group analysis by income showed that price value (PV) had a significant effect only in the 10-20 million VND income group

Table 5: Results of moderation analysis by age

Age group	Relationship	β	Standard error	Critical ratio	P-value	R^2 (ATO)
18-30 (n=202)	PE→ATO	0.469	0.067	7.729	***	0.322
	EE→ATO	0.217	0.066	3.582	***	
31-45 (n=114)	PE→ATO	0.457	0.099	5.329	***	0.246
	EE→ATO	0.104	0.109	1.218	0.226	
46-60 (n=74)	PE→ATO	0.500	0.103	5.209	***	0.357
	EE→ATO	0.268	0.113	2.795	0.007	
Above 60 (n=34)	PE→ATO	0.472	0.164	2.926	0.006	0.231
	EE→ATO	0.236	0.180	1.466	0.153	

***P<0.001, **P<0.01, *P<0.05. Source: Data analysis results from SPSS

Table 6: Results of moderation analysis by gender

Gender	Relationship	β	Standard error	Critical ratio	P-value	R^2 (ATO)
Male (n=205)	SI→ATO	0.411	0.066	6.430	***	0.169
Female (n=205)	SI→ATO	0.629	0.056	11.521	***	0.395
Khác (n=14)	SI→ATO	0.373	0.209	1.394	0.189	0.139

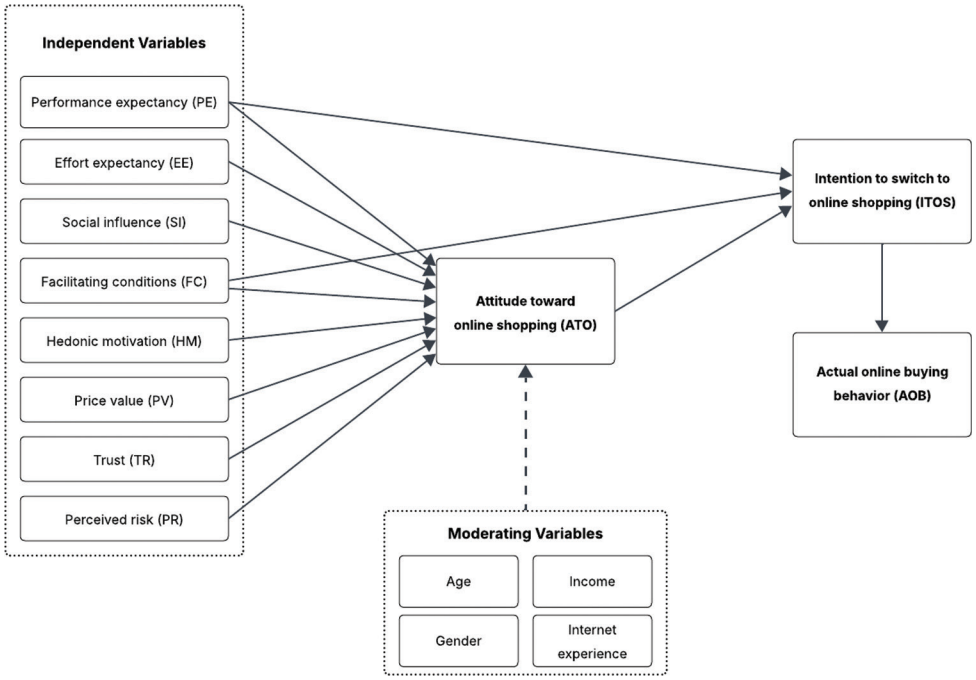
***P<0.001. Source: Data analysis results from SPSS

Table 7: Results of moderation analysis by income

Income	Relationship	β	Standard error	Critical ratio	P-value	R^2 (ATO)
Under 5 million VND (n=104)	PV→ATO	−0.024	0.105	−0.244	0.807	0.001
5-10 million VND (n=129)	PV→ATO	0.069	0.092	0.784	0.434	0.005
10-20 million VND (n=113)	PV→ATO	0.248	0.086	2.703	0.008	0.062
20-30 million VND (n=54)	PV→ATO	0.097	0.144	0.706	0.483	0.010
Above 30 million VND (n=24)	PV→ATO	0.130	0.260	0.616	0.544	0.017

**P<0.01. Source: Data analysis results from SPSS

Figure 1: Research model



Source: Author's compilation

Table 8: Results of moderation analysis by user experience

Experience	Relationship	β	S.E.	C.R.	P-value	R^2 (ATO)
Never (n=48)	PV→ATO	0.352	0.162	2.555	0.014	0.124
Purchased 1-2 times (n=126)	PV→ATO	−0.020	0.079	−0.217	0.828	0.000
Occasionally (n=159)	PV→ATO	0.224	0.080	2.885	0.004	0.050
Frequently (n=75)	PV→ATO	−0.004	0.135	−0.037	0.970	0.000
Very frequently (n=16)	PV→ATO	−0.204	0.321	−0.780	0.448	0.042

*P<0.05, **P<0.01. Source: Data analysis results from SPSS

(β = 0.248, P = 0.008) (Table 7). No significant effects were found in other income groups. This partially supports Hypothesis H_{6c}, though the result does not fully align with the initial expectation that lower-income groups would be more sensitive to price value.

Multi-group analysis by user experience indicated that the effect of price value (PV) varies across experience levels (Table 8). In the group that had never shopped online, PV had a significant effect (β = 0.352, P = 0.014), suggesting that price is a key factor for beginners. Among occasional users, the effect remained significant (β = 0.224, P = 0.004). No statistically significant effects were observed in other groups. These findings provide partial support for Hypothesis H_{6d}. In summary, the model explains 64.1% of the variance in attitude, 32.8% in switching intention, and 32.4% in actual online shopping behavior, indicating a relatively strong predictive power of consumer behavior in Can Tho.

5. CONCLUSION AND RECOMMENDATION

5.1. Conclusion

This study investigates the impact of the digital economy on consumer behavior in Can Tho, focusing on the shift from traditional to online shopping. Using an extended UTAUT2 model integrated with trust and perceived risk, data were collected from 424 consumers across 9 districts and analyzed via SEM.

Findings show that 6 out of 12 direct hypotheses were supported. Facilitating conditions had the strongest effect on attitude (β = 0.332), followed by social influence (β = 0.301) and performance expectancy (β = 0.292). Price value had a smaller but significant effect (β = 0.119). Attitude strongly influenced switching intention (β = 0.573), which in turn predicted actual behavior (β = 0.569).

Unexpectedly, effort expectancy, hedonic motivation, trust, and perceived risk had no significant impact on attitude—likely due to user familiarity with platforms, high baseline trust, and reduced perceived risk post-pandemic. PE and FC did not directly affect switching intention, but acted through attitude.

Indirect effects highlight attitude as a key mediator. FC, PE, SI, and PV influenced switching intention and behavior via attitude, while attitude affected behavior through intention (β = 0.326).

Multi-group analysis confirmed moderating effects of demographics. Age moderated the relationships between PE, EE, and attitude—young users were more influenced. Gender moderated the effect of SI, which was stronger among females. Income moderated the effect of PV, particularly among the 10-20 million VND group. User experience also moderated the PV–attitude link, with new users showing greater price sensitivity.

The model explained 64.1% of the variance in attitude, 32.8% in switching intention, and 32.4% in actual online behavior, indicating good predictive power in the context of Can Tho's digital economy.

The study met its objectives by identifying key drivers of behavioral transition, validating the mediating roles of attitude and intention, examining demographic moderators, and offering managerial implications. Key contributions include a focus on a mid-sized city (Can Tho), in-depth analysis of behavioral transition (not just adoption), post-pandemic context assessment, and incorporation of cultural and local factors into the UTAUT2 framework.

5.2. Reccommendations

The findings of this study suggest several actionable insights for stakeholders involved in accelerating the digital transformation of consumer behavior in Can Tho.

For e-commerce businesses, the prominence of facilitating conditions as the strongest predictor of consumer attitude highlights the necessity of improving logistics and technological infrastructure. Enhancing last-mile delivery, especially in suburban and rural districts, expanding coverage, and collaborating with local delivery partners can significantly improve user experience. In the early stages of market development, offering free shipping to consumers in underserved areas may help stimulate adoption and reduce perceived barriers.

The strong impact of social influence, particularly among female consumers, points to the strategic value of peer-driven marketing efforts. Businesses should prioritize customer reviews, social media engagement, and word-of-mouth mechanisms. Programs that reward both the referrer and the referred customer can amplify user participation and trust. Featuring localized user reviews prominently on product pages can also build credibility and foster community engagement.

Performance expectancy also plays a key role in shaping attitudes. Instead of emphasizing innovation for its own sake, marketing campaigns should highlight tangible benefits such as time efficiency, better price visibility, greater product variety, and convenience compared to traditional shopping. By aligning promotional content with consumers' everyday needs, businesses can better demonstrate the value proposition of online platforms.

Although price value showed a more moderate effect, it remains significant among middle-income consumers and new users. Maintaining competitive pricing structures, implementing seasonal promotions, and offering conditional free shipping can incentivize purchase behavior in these segments. This is particularly relevant for 1st-time online shoppers who are more price-sensitive during the evaluation stage.

While effort expectancy was not a significant predictor in the model, ensuring ease of use remains important, particularly for older users and those less familiar with technology. Designing user-friendly interfaces, providing clear guidance, and simplifying checkout processes can help reduce friction and enhance user confidence. Multichannel customer support, including chat, phone, and social media, can further improve accessibility.

Different consumer segments require tailored strategies. Younger users aged 18-30 tend to value both functionality and usability, and therefore respond well to smooth, modern, and intuitive experiences. The 31-45 age group shows stronger interest in practical efficiency and time-saving, which can be addressed through streamlined navigation and product comparisons. Older users aged 46-60 may need more guidance and reassurance during their shopping journey. Female consumers are more influenced by social recommendations, so marketing initiatives should incorporate community-driven content and interactive engagement through social media.

From the perspective of public policy, the study underscores the need to reduce the digital divide between urban and rural areas. Investment in broadband infrastructure, particularly in outlying districts, is essential to enable equitable access to e-commerce services. In parallel, government programs should focus on digital literacy training, especially for older adults and low-income groups. Workshops on smartphone usage, online shopping platforms, and digital payments can be delivered through community centers and local organizations.

Supporting traditional market vendors to transition online is another important initiative. Providing training and technical assistance will enable these sellers to maintain customer loyalty and participate in the growing digital economy. Even though trust and perceived risk were not significant factors in this study, ensuring a transparent and secure digital environment remains critical. Strengthening consumer protection, implementing efficient complaint mechanisms, and enforcing regulations against counterfeit products will help safeguard user trust in the long term.

Expanding access to digital payments is also essential. Partnerships with financial institutions can facilitate the availability of e-wallet services and promote financial inclusion in rural areas. Clear data protection policies and regulatory oversight can enhance trust in electronic transactions and reduce hesitation among less experienced users.

Strategic collaboration among governmental departments such as Industry and Trade, Information and Communications, and Science and Technology is necessary to formulate a comprehensive digital commerce roadmap for Can Tho. This roadmap should include measurable goals, such as increasing the share of e-commerce in total retail sales, and outline specific steps for implementation.

For traditional retailers, the shift to online shopping should be seen as an opportunity rather than a threat. The study shows that e-commerce has not entirely replaced offline channels, opening the door for hybrid models that integrate both physical and digital experiences. Approaches such as allowing customers to browse in-store and complete purchases online, or offering in-store pickup for online orders, can combine the strengths of both formats. Building an online presence through self-managed websites or participation in major e-commerce platforms will help traditional businesses expand their reach. Leveraging their existing reputation and customer relationships, along with offering fast delivery for essential goods, can create competitive advantages. Training staff in digital tools, order management, and customer care, as well as using social media platforms like Facebook and Zalo for promotion and livestream selling, can support this transition effectively.

5.3. Research Limitations and Future Directions

This study provides meaningful insights into the digital transformation of consumer behavior in Can Tho; however, several limitations should be acknowledged. The research was conducted solely in Can Tho, a city with distinct socio-economic conditions, which may limit the generalizability of the findings to other regions. The sampling method, combining stratified and convenience sampling, may introduce bias and underrepresent certain consumer groups, particularly those in remote areas or with lower levels of education. The cross-sectional nature of the data prevents tracking behavioral changes over time, which may vary due to seasonal factors, promotional activities, or broader economic conditions. Additionally, the use of self-reported data through surveys may lead to biases, such as social desirability or recall inaccuracies. The model also did not account for several potentially important factors, including product quality, customer service, return policies, and specific cultural characteristics, which may influence consumer behavior more deeply than captured here. Unexpected non-significant results, such as those for trust and perceived risk, also suggest the need for further exploration to uncover alternative explanations or mediating mechanisms.

Future research should consider longitudinal designs to capture behavioral shifts over time, allowing for a better understanding of how online shopping habits form and evolve. Expanding the study to other provinces within the Mekong Delta would enable regional comparisons and a more holistic view of consumer behavior in the context of Vietnam's digital economy. The integration of qualitative methods, such as in-depth interviews or ethnographic fieldwork, could provide richer insights into consumer motivations, perceived barriers, and decision-making processes. Further investigation into specific product categories, such as fresh food, fashion, electronics, or pharmaceuticals, may reveal differentiated behavioral patterns across industries. Researchers should also examine emerging e-commerce phenomena, including livestream selling, influencer marketing, and immersive technologies like virtual or augmented reality, which are increasingly shaping consumer experiences. Evaluating the effectiveness of policy interventions, such as digital skill training programs, infrastructure investment, or fiscal

incentives for e-commerce adoption, could support evidence-based policymaking. In addition, generational differences in digital engagement warrant deeper analysis, especially comparisons among Gen Z, Millennials, Gen X, and Baby Boomers, who may exhibit distinct values and digital behaviors. Finally, future studies should address the broader societal and environmental impacts of e-commerce, such as its effects on traditional retail employment, packaging waste, and carbon emissions from delivery services, to ensure a more sustainable and inclusive digital transition.

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REFERENCES

Ajzen, I. (1991), The theory of planned behavior. Organizational Behavior and Human Decision Processes, 50(2), 179-211.

Alalwan, A.A. (2020), Mobile food ordering apps: An empirical study of the factors affecting customer e-satisfaction and continued intention to reuse. International Journal of Information Management, 50, 28-44.

Ballerini, J., Herhausen, D., Ferraris, A. (2023), How commitment and platform adoption drive the e-commerce performance of SMEs: A mixed-method inquiry into e-commerce affordances. International Journal of Information Management, 71, 102649.

Cao, P.T. (2025), E-commerce behavioral intention of Vietnam Gen Z by using the UTAUT2 model. Journal of Advances in Management Research, 22, 323-337.

Davis, F.D. (1989), Perceived usefulness, perceived ease of use, and user acceptance of information technology. MIS Quarterly, 13(3), 319-340.

Deng, F., Hu, J., Yu, J., Yang, L. (2023), Influence mechanism of consumers' characteristics on continuous usage intention of e-commerce livestreaming marketing. Computers in Human Behavior, 148, 107894.

Dwivedi, Y.K., Hughes, L., Wang, Y. (2023), Metaverse marketing: How the metaverse will shape the future of consumer research and practice. Psychology and Marketing, 40(4), 750-776.

Erjavec, J., Manfreda, A. (2022), Online shopping adoption during COVID-19 and social isolation: Extending the UTAUT model with herd behavior. Journal of Retailing and Consumer Services, 65, 102867.

Guthrie, C., Fosso-Wamba, S., Arnaud, J.B. (2021), Online consumer resilience during a pandemic: An exploratory study of e-commerce behavior before, during and after a COVID-19 lockdown. Journal of Retailing and Consumer Services, 61, 102570.

Hair, J.F., Black, W.C., Babin, B.J., Anderson, R.E. (2019), Multivariate Data Analysis. 8th ed. India: Cengage Learning.

Halibas, A.S., Van Nguyen, A.T., Akbari, M. (2023), Developing trends in showrooming, webrooming, and omnichannel shopping behaviors. Journal of Consumer Behaviour, 22(5), 1122-1149.

International Trade Administration. (2023), Vietnam - Digital Economy. United States: U.S. Department of Commerce.

Kaur, J., Mogaji, E., Paliwal, M., Jha, S., Rana, N.P. (2024), Consumer behavior in the metaverse. Journal of Consumer Behaviour, 23(3), 1304-1325.

Ministry of Industry and Trade, (2024), Vietnam E-Business Index 2024. Vietnam: Ministry of Industry and Trade.

Nguyen Thi, B., Và Cộng SỰ. (2022), Factors influencing continuance intention of online shopping under the impact of COVID-19: A Vietnamese perspective. Cogent Business and Management, 9(1), 2143016.

Nunnally, J.C., Bernstein, I.H. (1994), Psychometric Theory. 3rd ed. United States: McGraw-Hill.

OECD. (2020), A Roadmap Toward a Common Framework for Measuring the Digital Economy. Paris: OECD.

Pantano, E., Pizzi, G. (2020), Forecasting artificial intelligence on online customer assistance: Evidence from chatbot patents analysis. Journal of Retailing and Consumer Services, 55, 101889.

Sheth, J. (2020), Impact of Covid-19 on consumer behavior: Will the old habits return or die? Journal of Business Research, 117, 280-283.

Solomon, M.R. (2020), Consumer Behavior: Buying, Having, and Being. 13th ed. London: Pearson.

UOB. (2023), Breaking the Digital Frontier: Vietnam Digital Economy Report; 2023.

VCCI. (2025), Vietnam's E-commerce Market Surges to US$25 Billion. Vietnam: VCCI.

Venkatesh, V., Thong, J.Y.L., Xu, X. (2012), Consumer acceptance and use of information technology: Extending the unified theory of acceptance and use of technology. MIS Quarterly, 36(1), 157-178.

VietnamPlus. (2025), Can Tho Vies for Top 10 Ranking in Vietnam's Digital Transformation. Vietna: VietnamPlus.

Vo, T.H.G., Cho, J., Le, K.H., Luong, D.B. (2022), Establishing customer behavior through e-commerce websites in newly emerging market. Marketing i Menedžment Innovacij, 2, 182-200.

Yao, P., Osman, S., Sabri, M.F., Zainudin, N. (2022), Consumer behavior in online-to-offline (O2O) commerce: A thematic review. Sustainability, 14(13), 7842.