

The Influence of Expectation-Confirmation Model on Online Impulse Buying Mediated by Customer Satisfaction

Dorothea Wahyu Ariani

(Management Department, Universitas Mercu Buana Yogyakarta, Indonesia)

ABSTRACT : This study re-examines the Expectation-Confirmation Model (ECM) on customer satisfaction (SATF) and online impulsive buying (IMPL) in Indonesia. The study uses primary data collected through a questionnaire adapted from previous studies. There were 464 consumers who had made online purchases during the past year who participated as samples in this study. After the data was collected, a series of tests were conducted, including construct validity, convergent validity, and discriminant validity tests, reliability tests with internal consistency, composite reliability, and data collinearity tests. After all tests were passed, model testing was conducted using Smart-PLS. The results of the study found that perceived risk (RISK), performance (PERF), and usefulness (USE) affect SATF. SATF mediates the influence of variables in ECM on IMPL in Indonesia, but USE and SATF partially mediate the serial influence of RISK and PERF on IMPL.

KEYWORDS - perceived risk, perceived performance, perceived usefulness, customer satisfaction, impulse buying

I. INTRODUCTION

The development of the internet and technology has significantly changed consumer behavior around the world with the advent of online shopping (Kong et al., 2025). The COVID-19 pandemic has accelerated these changes, making people increasingly dependent on internet-based shopping and worsening the condition of traditional shopping. In Indonesia, Generation Z dominates online shoppers because of novelty, convenience, discounts, psychological needs, and lifestyle (Pohan et al., 2024). The majority of Generation Z buy cosmetics and clothing online. The online platforms that dominate online shopping in Indonesia are Shopee, Tokopedia, Bukalapak, and Lazada (Rakhman, 2024). These e-commerce companies still have opportunities for widespread growth in Indonesia, both in business to consumer (B2C) and consumer to consumer (C2C) (Tumanggor et al., 2022).

People, especially Generation Z, often make unplanned online purchases. When they cannot put down their cell phones, social media prompts them to visit online shopping platforms because they are exposed to stimulating cues (Wu et al., 2020). At first, teenagers and young adults only browse products in online stores without any intention of making a purchase. However, the appearance and reviews often prompt them to make unplanned purchases. Impulse buying (IMPL) is an unplanned or intuitive shopping behavior driven by feelings of pleasure or strong desire (Chan et al., 2017). Online shopping encourages IMPL more than traditional shopping because of its convenience, accessibility, and psychological triggers (Kapoor et al., 2018). IMPL is more likely to occur in online shopping because of the presence of stimuli that are difficult to avoid (Zheng et al., 2019).

However, there are several factors that can dampen IMPL during the purchasing process due to the potential risks of online shopping (Chen et al., 2019; Pee et al., 2018). This can change the purchase decision, whether to proceed to payment or to stop at the intention or desire to buy. In addition, consumers' perceptions of online stores can also sway their purchasing decisions. In this case, online store features such as products, ordering, communication style, payment, security, and delivery become considerations again after they are exposed to

stimuli and are about to make an IMPL (Wang & Herrando, 2018; Wu et al., 2020). Experiences that elicit satisfaction are also capable of driving IMPL (Ampadu et al., 2022).

The expectation-confirmation model (ECM) offers three variables that influence IMPL, namely perceived risk (RISK), perceived usefulness (USE), and perceived performance (PERF), which simultaneously affect customer satisfaction (SATF) and ultimately drive IMPL (Wu et al., 2020). RISK and PERF are the two main forces of the model that drive the USE of online stores (Elwalda et al., 2016). SATF is an important determinant that drives IMPL because of satisfaction with the process in the online store (Lu et al., 2019). Meanwhile, researchers agree that behavioral intention in the online market is based on the theory of planned behavior (TPB) and technology acceptance theory (TAM) (Hasan et al., 2021).

TPB, which is an extension of the theory of reasoned action (TRA, Fishbein & Ajzen, 1975), states that purchasing behavior is based on various motivating factors, both personal characteristics and satisfaction (Hasan et al., 2021). RISK is a separate consideration in increasing purchases. However, the results of previous studies are still debatable and require further research. The influence of RISK, USE, and PERF on SATF and IMPL has yet to yield consistent results. Meanwhile, the stimulus-organism-response theory (SORT) underlies the intention to make a purchase driven by cognitive and affective components (Chan et al., 2017; Chen & Yao, 2018). The cognitive components are USE and PERF, while the affective components are consumer attitudes such as SATF (Ampadu et al., 2022). USE is believed to be the strongest driver of online shopping behavior based on TAM (Anaam et al., 2023; Matar & Aloqaily, 2025).

This study aims to examine how ECM affects affective variables before conducting IMPL in online stores. As a new transaction method, e-commerce, especially in Indonesia, still requires further study. This is because e-commerce is a new, dynamic, complex, and constantly evolving method (Orzol & Szopik-Depczynska, 2023). Understanding consumer behavior in e-commerce is necessary due to its intense competition, rapid technological developments, and the need to continuously improve data security in order to maximize the digital economy, which is a global demand of industry and trade.

II. THEORETICAL STUDIES AND HYPOTHESIS DEVELOPMENT

The 21st century marks a major shift in consumer shopping behavior, characterized by the rapid growth of online shopping populations worldwide (Ampadu et al., 2022). This change has increased the income of many people who are adaptable to internet technology and social media (Dychtwald, 2021; Peng et al., 2021). Online and traditional shoppers who already have a purchase plan may change it due to new information they obtain. In the case of online shopping, website quality, RISK, USE, PERF, various reviews, and other information can influence purchasing decisions (Wu et al., 2020). Due to lifestyle factors, discount offers, ease of transaction, desire to try, and various other psychological factors, online shopping can trigger unplanned purchases (Rodrigues et al., 2021).

Impulse buying is unplanned purchasing behavior that must be done immediately. The rise of online shopping today, supported by the COVID-19 pandemic, has led to an increase in IMPL (Wu et al., 2020). Social media plays a role in increasing marketing activities and influences purchasing decisions (Alalwan et al., 2017; Stieglitz et al., 2018). Researchers claim that there is a relationship between IMPL and technology that supports online shopping (Hsu & Lin, 2015; Lu et al., 2019). However, IMPL does not appear suddenly, but rather has contributing factors. Based on SORT, cognitive (USE, PERF) and affective (SATF, RISK) components will influence IMPL (Huang, 2023). Meanwhile, TAM emphasizes that technological advances are external factors that encourage purchases (Davis, 1993). Technology makes people see its usefulness. Is online purchasing still necessary, does it provide adequate information, and does it support online transactions (Wu et al., 2020)? Therefore, USE will encourage the intention to purchase. However, with these technological advances, based on TAM, not everyone is able to use it properly. There are various risks associated with online shopping.

RISK is an important concern in online purchasing because online stores are more uncertain than traditional stores (Shiau et al., 2018). RISK can be an obstacle to online purchasing because uncertainty can lead to negative outcomes. Risks can originate from products, finances, security, performance, or recommendations (Chiu et al., 2014; Liao et al., 2021). Based on TAM, technology-based risks will reduce consumer confidence due to doubts about the technology (Jung et al., 2021). Many researchers have examined how RISK affects purchase intention (Li et al., 2024; Marafon et al., 2018). RISK related to technology, product or service performance, time, privacy, delivery, psychology, and so on has a negative effect on purchase intention (Bonnin,

2019; Joo & Hwang, 2023; Suk et al., 2024). However, some researchers have found that RISK can increase purchase intention (Nuzula & Wahyudi, 2022). RISK factors do cause consumers to refrain from purchasing, unless there is trust as a moderating variable (Mathew et al., 2021). RISK has a negative effect and complicates consumer purchasing decisions (Driediger & Bhatiasavi, 2019; Hsu et al., 2022)

Meanwhile, the effect of RISK on SATF varies. Previous researchers have found that RISK reduces SATF (Jadil et al., 2022; Shafieizadeh et al., 2021; Wu et al., 2020; Xie et al., 2020). Some researchers found that high RISK reduces SATF (Ahmed et al., 2026; Jadil et al., 2022), which ultimately reduces purchase intention (Chang et al., 2024). Meanwhile, other researchers found that the effect of RISK on SATF was not significant (Liu et al., 2024; Quan et al., 2022; Shafieizadeh et al., 2021), while yet other researchers found that RISK actually increased SATF (Al-Ansi et al., 2018; Dai et al., 2015). In correlation analysis, RISK is also negatively related to SATF (Ahmed et al., 2026; Jadil et al., 2022). The results of research by Jo and Hwang (2023) found that psychological and quality risk will reduce SATF, while financial and time risk do not have a significant effect on SATF.

Regarding the desire to make a purchase, the influence of RISK also varies. Some researchers found that RISK encourages purchase intention (Belanche et al., 2022; Marafon et al., 2018; Tyrvaenen & Karjaluto, 2022), while others found that RISK reduces purchase intention (Hasan et al., 2021; Liu et al., 2024; Timur et al., 2023), and yet other researchers find that the influence of RISK on purchase intention is not significant (Gruchmann & Jazairy, 2025; Jadil et al., 2022). This is what drives the need for further research on RISK. RISK remains an important consideration in the use of new technology. RISK encompasses psychological, security, time, social, privacy, payment method, and performance factors that often discourage online purchase intent, especially for those who are not yet familiar with online shopping (Driediger & Bhatiasavi, 2019; Tyrvaenen & Karjaluto, 2022).

Based on SORT, USE will be able to drive purchase intention. Researchers have proven that USE can encourage both planned and IMPL purchasing desires (Alshammari et al., 2025; Matar & Aloqaily, 2025). However, Soomro and Habeeb (2025) found the opposite, that USE decreases purchase intention. Meanwhile, several researchers found that the effect of USE on purchase intention was not significant (Belanche et al., 2022; Yao et al., 2024). Based on TPB, USE will increase SATF (Chang et al., 2024; Wu et al., 2020; Xiao & Gaulias, 2022). Researchers have agreed that USE can increase SATF (Alshammari & Alkhabra, 2025; Bolodeoku et al., 2022; Chang et al., 2024; El Said & Al Hajri, 2022).

In addition to USE, based on SORT, PERF is also a cognitive factor that influences SATF and consumer purchase intention, including IMPL. Researchers found that PERF has increased both planned and unplanned purchase intention (Hansen et al., 2017), but Gruchmann & Jazairy (2025) found that the effect of PERF on purchase intention was not significant. Meanwhile, researchers agree that PERF can increase SATF (Restrepo-Morales et al., 2024; Rita et al., 2024; Uzir et al., 2020; Wang et al., 2018). Based on ECM, there is a correlation between PERF and USE. Researchers support this, where PERF can increase USE (Anaam et al., 2023; Wu et al., 2020). Furthermore, previous studies have proven that PERF has a negative effect on USE (Curras-Perez et al., 2017; Shaw & Sergueeva, 2019) so that consumers cancel their purchases. However, other researchers found that RISK has a positive effect on USE (Hansen et al., 2017), while others found that the effect of RISK on USE is insignificant (Belanche et al., 2022; Horst et al., 2007).

SORT also underlies the influence of SATF on IMPL (Ampadu et al., 2022). This is also supported by research findings that SATF can increase purchase intention (Ahmed et al., 2026; Ampadu et al., 2022; Chang et al., 2024; Do et al., 2020). However, these results are inconsistent because the influence of SATF on purchase intention was also found to be insignificant (Hansen et al., 2017; Yao et al., 2024). Some researchers have found that IMPL actually increases SATF (Lin et al., 2023; Princes, 2019) or decreases SATF (Ata & Sezer, 2021). SATF is a purchase antecedent that has been agreed upon by researchers (Ampadu et al., 2022; Antwi et al., 2021). There is a causal relationship between the product, SATF, and the outcome or purchasing behavior, which will then move back to SATF after consuming the product (Papista & Dimitriadis, 2019). SATF also influences purchase intention in addition to risk factors and trust (Ritchie et al., 2017; Zheng et al., 2019). Based on previous theories and research results, several hypotheses are proposed:

- H1: RISK has a negative effect on USE.
- H2: RISK has a negative effect on SATF.
- H3: PERF has a positive effect on USE.

- H4: PERF has a positive effect on SATF.
H5: USE has a positive effect on SATF.
H5: SATF has a positive effect on IMPL.
H6: SATF mediates ECM on IMPL.
H7: USE and SATF mediate the serial effects of PERF and RISK on IMPL.

III. RESEARCH METHODS

3.1. Sampling and Procedures

The study used a survey with primary data, where the respondents were online shoppers residing in major cities such as Jakarta, Surabaya, Bandung, Semarang, and Yogyakarta. Customers were categorized as those who made purchases at online stores such as Shopee, Tokopedia, Lazada, etc., or on social media such as Instagram, Tiktok Shop, and WhatsApp in the past year. The questionnaire was distributed over a period of 4 months, and there were 464 customers as samples for this study. After the data was collected, a series of tests were carried out, starting from testing the validity and reliability of the questionnaire, testing the collinearity of independent variables, to testing the relationship model using Smart PLS. Table 1 shows the demographic characteristics of the respondents.

Tabel 1. Sample Characteristics

Category	Amount	%
Gender		
Male	158	34.05
Female	306	65.95
Age (year)		
21 – 30	225	48.50
31 – 40	142	30.60
41 – 50	47	10.10
51 – 60	40	8.60
Older than 60	10	2.20
Education Level		
Senior high school	138	29.74
Bachelor's degree or equivalent	278	59.92
Post bachelor's degree	48	10.34

3.2. Measurement

This study used a questionnaire adapted from the research by Wu et al. (2020) and translated into Indonesian. The results of the questionnaire validity test using exploratory factor analysis (EFA) found that four RISK items were valid with factor loadings of 0.705 to 0.782, Kaiser-Meyer-Olkin (KMO) = 0.717, and Bartlett's Test of Sphericity (BTS) = 336.829 with sign = 0.000 and df = 6. Furthermore, the four USE items were declared valid with factor loadings ranging from 0.747 to 0.851, Kaiser-Meyer-Olkin (KMO) = 0.749, and Bartlett's Test of Sphericity (BTS) = 693.897 with sign = 0.000 and df = 6. Four SATF items were validated with loading factors ranging from 0.544 to 0.891, Kaiser-Meyer-Olkin (KMO) = 0.704, and Bartlett's Test of Sphericity (BTS) = 562.129 with sign = 0.000 and df = 6. Meanwhile, three of the four PERF items were declared valid with loading factors ranging from 0.765 to 0.857, Kaiser-Meyer-Olkin (KMO) = 0.695, and Bartlett's Test of Sphericity (BTS) = 383.207 with sign = 0.000 and df = 6; Three IMPL items were validated with loading factors ranging from 0.693 to 0.812, Kaiser-Meyer-Olkin (KMO) = 0.633, and Bartlett's Test of Sphericity (BTS) = 199.936 with sign = 0.000 and df = 3.

Factor loadings greater than 0.5 indicate that the questionnaire items are valid, while a KMO above 0.5 indicates that the sample is suitable for analysis. The significance of the fifth BTS variable is < 0.05, indicating that the questionnaire items are significantly valid. Table 2 presents the results of the reliability test with internal consistency, mean, standard deviation, and correlation between the variables studied.

Table 2. Descriptive Statistics

Variables	μ	Std.dev.	α	PR	PP	PU	CS	IB
Perceived Risk	2.889	0.909	0.711	1.000				
Perceived Performance	3.312	1.005	0.763	-0.345**	1.000			
Perceived Usefulness	3.458	1.077	0.824	-0.382**	0.743**	1.000		
Customer Satisfaction	3.420	0.956	0.755	-0.440**	0.798**	0.826**	1.000	
Impulse Buying	3.075	1.028	0.653	0.014	0.202**	0.145**	0.264**	1.000

** sign at $p \leq 0.01$

Table 2 indicates that the mean of each variable is moderate because it is between 2.33 and 3.66, while the standard deviation is high. This shows that respondents filled out the questionnaire independently. Cronbach's Alpha is in the fairly good reliability and good reliability categories according to Zikmund et al. (2013). Furthermore, the correlations between the variables studied are significant, except for the correlation between IMPL and RISK, which is not significant. RISK is negatively correlated with USE, PERF, and SATF. These preliminary test results indicate that all data are suitable for further model testing using Smart PLS.

IV. RESULTS

4.1. Preliminary Testing Results

Before testing the model, Smart-PLS conducted a series of validity and reliability tests. Convergent validity was tested using outer loading scores and average variance extracted (AVE). Meanwhile, discriminant validity was tested using Fornell-Larcker and heterotrait-monotrait ratio (HTMT). The results of the convergent validity test are presented in Table 3.

Table 3. Items listing, Outer Loading, CR, AVE

Construct	Indicators	Weights (β)	Cronbach's Alpha	Composite Reliability (ρ_C)	AVE
Perceived Risk	RISK2	0.794	0.768	0.819	0.602
	RISK3	0.820			
	RISK4	0.709			
Perceived Usefulness	USE1	0.851	0.857	0.883	0.654
	USE2	0.857			
	USE3	0.792			
	USE4	0.729			
Store Performance	PERF1	0.834	0.763	0.863	0.679
	PERF2	0.771			
	PERF3	0.864			
Consumer Satisfaction	SATF1	0.818	0.805	0.885	0.721
	SATF2	0.903			
	SATF3	0.824			
Impulse Buying	IMPL1	0.710	0.753	0.752	0.520
	IMPL2	0.960			
	IMPL3	0.731			

Source: The Author

Table 3 shows the results of convergent validity testing. The outer loading scores for each variable's items are > 0.70 (greater than 0.70), which means that the indicators used in this study are correlated to measure the construct or variable being studied (Hair et al., 2017). The indicators RISK1, PERF4, and SATF4 were not used in further testing because their outer loadings were < 0.70 (less than 0.70). Furthermore, the AVE of each variable was > 0.50 (greater than 0.50), which means that these variables were able to explain more than 50 percent of the variance of their indicators (Hair et al., 2017). In other words, the indicators in Table 3 met convergent validity.

The reliability test using Smart-PLS was conducted using Cronbach's Alpha and composite reliability ρ_C scores. Table 3 shows that the Cronbach's Alpha value is > 0.70 (greater than 0.70), which means that there is internal consistency in these indicators. Meanwhile, the composite reliability score (ρ_C), which is considered more accurate than Cronbach's Alpha, also shows a score above 0.70 (Hair et al., 2021). This means that the indicators in this study have met the reliability requirements. Next, a discriminant validity test was conducted.

Table 4. Discriminant Validity (HTMT Ratio)

Latent Construct	IMPL	PERF	RISK	SATF	USE
Impulse Buying					
Store Performance	0.356				
Perceived Risk	0.233	0.474			
Consumer Satisfaction	0.308	0.870	0.635		
Perceived Usefulness	0.254	0.834	0.484	0.819	

Source: Primary Data, processed

Table 4 shows the results of discriminant validity testing using HTMT. A good HTMT value is < 0.90 (less than 0.90). If the HTMT value is > 0.90 (greater than 0.90), discriminant validity is considered poor, which could mean that the constructs overlap conceptually, referring to the guidelines from Hair et al. (2021). The results of the discriminant validity test in Table 3 show that all constructs or variables do not overlap and have been measured using indicators that are different from one another. Next, the discriminant validity test using the Fornell-Larcker criteria is presented in Table 5.

Tabel 5. Fornell-Larcker

Latent Construct	IMPL	PERF	RISK	SATF	USE
Impulse Buying	0.721				
Store Performance	0.329	0.824			
Perceived Risk	-0.102	-0.334	0.776		
Consumer Satisfaction	0.340	0.842	-0.465	0.849	
Perceived Usefulness	0.277	0.751	-0.358	0.836	0.809

Source: Primary Data, processed

The Fornell-Larcker criteria (for discriminant validity) are met if the square root of the AVE value of each construct is greater than the correlation value of that construct with other constructs (Hair et al., 2021). This indicates that each latent variable measures its own concept well and is distinct from other variables, as shown by the higher AVE square root value in its column compared to the correlation number in its row. Next, data collinearity testing was conducted to test the correlation between independent variables. This test was performed by looking at the variance inflation factor (VIF) score.

Tabel 6. Collinearity Statistic

Latent Construct	Inner VIF Values
PERF $\rightarrow$ SATF	2.317
PERF $\rightarrow$ USE	1.126
RISK $\rightarrow$ SATF	1.160
RISK $\rightarrow$ USE	1.126
SATF $\rightarrow$ IMPL	1.000
USE $\rightarrow$ SATF	2.361

Source: Primary Data, processed

In SmartPLS, VIF scores indicating no strong correlation between independent variables are less than 5.0 for formative indicators and above 5.0 for reflective indicators, or VIF testing is not necessary for reflective indicators. Table 6 shows that the inner VIF values are < 5 (less than 5), which means that the independent variables are able to explain the dependent variables individually, without overlapping.

4.2. Hypothesis Testing Results

4.2.1. Direct Effect

Hypothesis testing was conducted by testing the direct effect of the independent variables on the dependent variables. The results are presented in Table 7.

Table 7. Structural Model

Variable Relationship	β	t-values	R^2	p-values	Results
PERF $\rightarrow$ SATF	0.468	13.751	0.823	0.000	Significant
RISK $\rightarrow$ SATF	-0.155	6.745		0.000	Significant

USE → SATF	0.429	12.437		0.000	Significant
PERF → USE	0.710	27.669	0.575	0.000	Significant
RISK → USE	-0.121	3.761		0.000	Significant
SATF → IMPL	0.340	9.370	0.114	0.000	Significant

Source: The Author

The results of the direct effect test show that all independent variables have a significant effect on the dependent variable. The direct effect of RISK on SATF and RISK on USE is significantly negative. This indicates that RISK reduces USE and SATF. Risks feared by customers related to finance, products, security, and data accuracy can reduce satisfaction with online stores and the usefulness of online purchases related to ease of use, completeness and usefulness of information, and fast transactions. Meanwhile, The effects of PERF and USE on SATF and the effect of SATF on IMPL are positive. This means that perceptions of online stores that provide information, products, speed, and convenience can increase SATF. In addition, a better experience using online stores, providing information and feedback, and guiding customers can increase SATF. Furthermore, SATF is able to motivate consumers to make both planned and unplanned purchases.

4.2.2. Mediation Model Test Results

The mediation test of SATF on the influence of RISK, USE, and PERF on IMPL is presented in Figure 1 and Table 8 below.

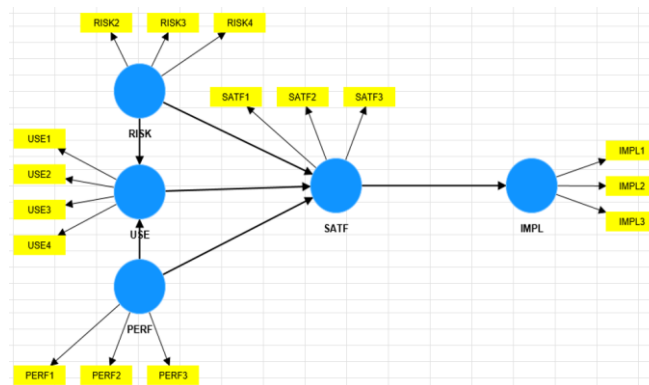


Figure 1. Mediating Model

Table 8. Mediation Effects

Indirect Effects	Coefficient	t-values	p-values	Remarks
PERF → SATF → IMPL	0.159	8.093	0.000	Significant
USE → SATF → IMPL	0.146	7.022	0.000	Significant
RISK → SATF → IMPL	-0.053	5.481	0.000	Significant

Table 8 presents the results of the model mediation test, in which SATF mediates the influence of PERF, USE, and RISK according to ECM. The results indicate that SATF mediates the influence of RISK, USE, and PERF on IMPL. Meanwhile, according to ECM, USE is influenced by RISK and PERF. Therefore, Table 8 tests the serial mediation of USE and SATF on IMPL.

Tabel 9. Serial Mediation Effects

Variable Effects	Coefficient	t-values	p-values	Results	Remarks
Direct Effects (RISK → SATF)	-0.155	6.745	0.000	Significant	Partially Mediation
Indirect Effect (RISK → USE → SATF → IMPL)	-0.018	2.971	0.003	Significant	
Direct Effect (PERF → SATF)	0.468	13.751	0.000	Significant	Partially Mediation
Total Indirect Effects (PERF → USE → SATF → IMPL)	0.104	6.629	0.000	Significant	

Source: The Author

Table 9 indicates that USE mediates part of the influence of RISK and PERF on SATF. However, Table 9 also shows that USE and SATF serially mediate the influence of RISK and PERF on IMPL.

This study aims to examine the influence of RISK, PERF, and USE on IMPL mediated by SATF. In addition, this study also examines whether USE is influenced by RISK and PERF as in ECM. The results of this study indicate that the higher the RISK, the lower the SATF. This is consistent with several previous findings (Ahmed et al., 2026; Jadil et al., 2022; Joo & Hwang, 2023; Tyrvaianen & Karjaluo, 2022). This study also supports previous researchers who found that PERF can increase SATF (Restrepo-Morales et al., 2024; Rita et al., 2024; Uzir et al., 2020; Wang et al., 2018). Furthermore, the results of this study also support the findings that USE can increase SATF (Alshammari & Alkhabra, 2025; Anaam et al., 2023; Chang et al., 2024; Do et al., 2020; Xiao & Golulias, 2022). Similar to previous researchers, this study also found that SATF can improve IMPL (Ampadu et al., 2022; Chang et al., 2024; Do et al., 2020).

SATF is indeed capable of encouraging purchases, both planned and unplanned, as well as repeat purchases. Experience is indeed a valuable variable that underlies future behavior. This is consistent with SORT, in which SATF is an internal stimulus capable of driving IMPL (Feng et al., 2024; Wu et al., 2020). SATF is also related to affective components that can motivate individuals to behave, thereby underpinning individuals' IMPL. This is consistent with previous research findings (Alshammari & Alkhabra, 2025; Diani et al., 2021). In addition, TPB also underlies why individuals behave. SATF is an important concept in ECM because purchase intention is influenced by satisfaction with previous experiences related to risk, usefulness, and performance. When the performance of an online store exceeds expectations, consumers will feel satisfied and will behave with IMPL or make repeat purchases. Therefore, even if it is not planned, consumers will consider various things to make a purchase, such as their perceived experience.

This study also further strengthens TAM, which underlies technology adoption in influencing behavior. The risks of using technology, the benefits of technology, and technology performance are important variables for consumers that influence unplanned purchasing behavior. Technology components such as online shopping are diverse, which are mainly dominated by the use of the internet. The focus of TAM is how online shopping benefits consumers (ease of obtaining products, complete and helpful information, transaction speed), no risks (financial, product, security, accuracy), and superiority (online shopping is better than traditional shopping, faster and easier, information is available) so that consumers are satisfied and make purchases.

The results of this study further reinforce that IMPL, even though it is done by consumers without planning, is still influenced by various factors that are considered. Online stores and transaction processes remain important considerations for consumers in making purchases, in addition to various psychological factors that encourage IMPL (Gogoi & Shillong, 2020; Rodrigues et al., 2021).

V. CONCLUSION

The results of this study further reinforce that consumers' IMPL is indeed unplanned, but is still influenced by various factors that consumers consider. Online purchases do trigger more IMPL than traditional purchases. Risk factors, benefits, and online store performance are important factors that cause consumers to be satisfied and make purchases. The results of this study further reinforce the need for ECM to be considered by marketers, including online marketers. This model is reinforced by TAM because it adopts technology to carry out marketing activities. This study also reinforces TPB, that individual behavior is definitely the result of a plan, even if it is not a long-term plan.

Although it successfully confirmed previous theories and research results, this study is not without its weaknesses. The use of respondents still needs to be expanded, and the use of cross-sectional data to test the mediation model needs to be refined. In the future, similar research needs to be conducted with a larger number of respondents, but focusing on the same products in online purchases. In addition, longitudinal data needs to be used to refine the mediation model testing.

Acknowledgements

Thank you to the respondents who were willing to participate in filling out this research questionnaire.

REFERENCES

- [1] Ahmed, W., Al-Sharaf i, M.A., Raza, A., Al-Zaeemi, S.A.S., Al-Bashrawi, M.A., & Dwivedi, Y.K. (2026). A longitudinal big data approach to theorizing consumers' continuance intention to use loyalty

- apps. *Journal of Retailing and Consumer Services*, 88, 104453. <https://doi.org/10.1016/j.jretconser.2025.104453>.
- [2] Alalwan, A.A., Rana, N.P., Dwivedi, Y.K., Algharabat, R. (2017). Social media in marketing: A review and analysis of the existing literature. *Telematics and Informatics*, 34(7), 1177-1190. <https://doi.org/10.1016/j.tele.2017.05.008>.
- [3] Al-Ansi, A., Olya, H.G.T. and Han, H. (2019) Effect of general risk on trust, satisfaction, and recommendation intention for halal food. *International Journal of Hospitality Management*, 83, 210-219. <https://doi.org/10.1016/j.ijhm.2018.10.017>.
- [4] Alshammari, S.H. & Alkhabra, S. (2025) Modelling the effects of self-regulation, perceived usefulness, confirmation and satisfaction on the continuous intention to utilise mobile learning applications. *Frontiers in Education*, 10, 1506185. <https://doi.org/10.3389/feduc.2025.1506185>.
- [5] Ampadu, S., Jiang, Y., Debrah, E., Antwi, C.O., Amankwa, E., Gyamfi, S.A., & Amoako, R. (2022). Online personalized recommended product quality and e-impulse buying: A conditional mediation analysis. *Journal of Retailing and Consumer Services*, 64, 102789. <https://doi.org/10.1016/j.jretconser.2021.102789>.
- [6] Anaam, E.A., Haw, S.C., Palanichamy, N., Ali, A., & Azni, S. (2023). Analysis of perceived usefulness and perceived ease of use in relation to employee performance. *International Journal of Membrane Science and Technology*, 10(2), 1607-1616.
- [7] Antwi, C.O., Ren, J., Owusu-Ansah, W., Mensah, H.K., Aboagye, M.O., 2021. Airport self-service technologies, passenger self-concept, and behavior: An attributional view. *Sustainability* 13(6), 3134. <https://doi.org/10.3390/su13063134>.
- [8] Ata, S. & Sezer, A. (2021). Evaluating the effects of life satisfaction on impulse buying behavior in terms of online buying. *Marketing and Management of Innovations* (1), S.38-55. <https://mmi.fem.sumdu.edu.ua/sites/default/files/463-2020-04.pdf>.
- [9] Belanche, D., Guinaliu, M., & Albas, P. (2022). Customer adoption of p2p mobile payment systems: The role of perceived risk. *Telematics and Informatics*, 72, 101851. <https://doi.org/10.1016/j.tele.2022.101851>.
- [10] Bolodeoku, P.B., Igbinoba, E., Salau, P.O., Chukwudi, C.K., & Idia, S.F. (2022). Perceived usefulness of technology and multiple salient outcomes: the improbable case of oil and gas workers. *Heliyon*, 8, e09322. <https://doi.org/10.1016/j.heliyon.2022.e09322>.
- [11] Bonnin, G. (2020). The roles of perceived risk, attractiveness of the online store and familiarity with AR in the influence of AR on patronage intention. *Journal of Retailing and Consumer Services*, 52, 101938. <https://doi.org/10.1016/j.jretconser.2019.101938>.
- [12] Chan, T.K., Cheung, C.M., & Lee, Z.W. (2017). The state of online impulse-buying research: A literature analysis. *Information & Management*, 54(2), 204–217. <https://doi.org/10.1016/j.im.2016.06.001>.
- [13] Chang, C-W., Lai, C-J., & Yen, C-C. (2024). Examining drivers of NFT purchase intention: The impact of perceived scarcity and risk. *Acta Psychologica*, 248, 104424, <https://doi.org/10.1016/j.actpsy.2024.104424>.
- [14] Chen, C., Yao, J., 2018. What drives impulse buying behaviors in a mobile auction ? The perspective of the Stimulus-Organism-Response model. *Telematics and Informatics*, 35(5), <https://doi.org/10.1016/j.tele.2018.02.007>.
- [15] Chen, Q., Feng, Y., Liu, L., & Tian, X. (2019). Understanding consumers' reactance of online personalized advertising: A new scheme of rational choice from a perspective of negative effects. *International Journal of Information Management*, 44, 53–64. <https://doi.org/10.1016/j.ijinfomgt.2018.09.001>.
- [16] Chiu, C., Wang, E.T., Fang, Y., & Huang, H. (2014). Understanding customers' repeat purchase intentions in B2C e-commerce: the roles of utilitarian value, hedonic value and perceived risk. *Information Systems Journal*, 4(1), 85-114. <https://doi.org/10.1111/j.1365-2575.2012.00407.x>.
- [17] Curras-Perez, R., Ruiz, C. Sanchez-Garcia, I. & Sanz, S. (2017). Determinants of customer retention in virtual environments. The role of perceived risk in a tourism services context. *Spanish Journal of Marketing – ESIC*, 21(1), 131-145. <https://doi.org/10.1016/j.sjme.2017.07.002>.
- [18] Dai, H., Luo, X-R., Liao, Q., & Cao, M. (2015). Explaining consumer satisfaction of services: The role of innovativeness and emotion in an electronic mediated environment. *Decision Support Systems*, 70(1), 97–106. <http://dx.doi.org/10.1016/j.dss.2014.12.003>.
- [19] Davis, F.D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, 13(3), 319–340.
- [20] Diani, S.L., Jatnika, R., & Yanuarti, N. (2021). Correlation between impulsive buying and customer satisfaction on online purchase “X”. *Journal of Legal, Ethical and Regulatory Issues*, 24(1), 1-7.

- [21] Do, H-N., Shih, W., & Ha, Q-A. (2020). Effects of mobile augmented reality apps on impulse buying behavior: An investigation in the tourism field. *Heliyon*, 6, e04667. <https://doi.org/10.1016/j.heliyon.2020.e04667>.
- [22] Driediger, F. & Bhatiasavi, V. (2019). Online grocery shopping in Thailand: Consumer acceptance and usage behavior. *Journal of Retailing and Consumer Services*, 48, 224-237. <https://doi.org/10.1016/j.jretconser.2019.02.005>.
- [23] Dychtwald, Z., 2021. China's New Innovation Advantage, 2021. <https://hbr.org/2021/05/chinas-new-innovation-advantage>.
- [24] El-Said, O. & Al Hajri, S. (2022). Are customers happy with robot service? Investigating satisfaction with robot service restaurants during the COVID-19 pandemic. *Heliyon*, 8, e08986. <https://doi.org/10.1016/j.heliyon.2022.e08986>.
- [25] Elwalda, A., Lu, K., & Ali, M. (2016). Perceived derived attributes of online customer reviews. *Computers in Human Behavior*, 56, 306-319. <https://doi.org/j.chb.2015.11.051>.
- [26] Feng, Z., Al Mamun, A., Masukujjaman, M., Wu, M., & Yang, Q. (2024). Impulse buying behavior during livestreaming: Moderating effects of scarcity persuasion and price perception. *Heliyon*, 10, e28347. <https://doi.org/10.1016/j.heliyon.2024.e28347>.
- [27] Gogoi, B., and Shillong, I. (2020). Do impulsive buying influence compulsive buying? *Academy Marketing Study Journal* 24(1), 1–15.
- [28] Gruchmann, T. & Jazairy, A. (2025). Big brother is watching you: Examining truck drivers' acceptance of road-facing dashcams. *Transportation Research Part F: Traffic Psychology and Behaviour*, 111, 316-330. <https://doi.org/10.1016/j.trf.2025.03.015>.
- [29] Hair Jr et al. (2021). Partial least squares structural equation modeling (PLS-SEM) using R: A workbook (p. 197). Springer Nature. *Structural Equation Modeling: A Multidisciplinary Journal*, 30(July), 165–167.
- [30] Hair Jr., J. F., Matthews, L. M., Matthews, R. L., & Sarstedt, M. (2017). PLS-SEM or CB-SEM: updated guidelines on which method to use. *International Journal of Multivariate Data Analysis*, 1(2), 107. <https://doi.org/10.1504/ijmda.2017.10008574>.
- [31] Hansen, J., Saridakis, G. & Benson, V. (2017). Risk, trust, and the interaction of perceived ease of use and behavioral control in predicting consumers' use of social media for transactions. *Computers in Human Behavior*, 80(1), 197-206. <https://repository.uwl.ac.uk/id/eprint/4447/>
- [32] Hasan, R., Shams, R., & Rahman, M. (2021). Consumer trust and perceived risk for voice-controlled artificial intelligence: The case of Siri. *Journal of Business Research*, 131, 591-597. <https://doi.org/10.1016/j.jbusres.2020.12.012>.
- [33] Horst, M., Kuttschreuter, M., & Gutteling, J.M. (2007). Perceived usefulness, personal experiences, risk perception and trust as determinants of adoption of e-government services in The Netherlands. *Computers in Human Behavior*, 23(4), 1838-1852. <https://doi.org/10.1016/j.chb.2005.11.003>.
- [34] Hsu, C-L. & Lin, J.C-C. (2015). What drives purchase intention for paid mobile apps? – An expectation confirmation model with perceived value. *Electronic Commerce Research and Applications*, 14(1), 46-57. <https://doi.org/10.1016/j.elerap.2014.11.003>.
- [35] Hsu, S-C., Huang, Y-F., Mahmudiono, T., & Chen, H-L. (2022). Food traceability systems, consumers' risk perception, and purchase intention: Evidence from the “4-label-1-Q” approach in Taiwan. *Journal of Food Protection*, 85(1), 155–163. <https://doi.org/10.4315/JFP-21-160>.
- [36] Huang, T. (2023). Using SOR framework to explore the driving factors of older adults smartphone use behavior. *Humanities and Social Sciences Communications*, 10, 690. <https://doi.org/10.1057/s41599-023-02221-9>.
- [37] Jadil, Y., Rana, N.P., & Dwivedi, Y.K. (2022). Understanding the drivers of online trust and intention to buy on a website: An emerging market perspective. *International Journal of Information Management Data Insights*, 2, 100065. <https://doi.org/10.1016/j.jjimei.2022.100065>.
- [38] Joo, K. & Hwang, J. (2023). Acceptance of green technology-based service: Consumers' risk-taking behavior in the context of indoor smart farm restaurants. *Applied Sciences*, 13, 11433. <https://doi.org/10.3390/app132011433>.
- [39] Jung, J., Park, E., Moon, J., & Lee, W.S. (2021). Exploration of sharing accommodation platform Airbnb using an extended technology acceptance model. *Sustainability*, 13, 1185. <https://doi.org/10.3390/su13031185>.
- [40] Kapoor, K.K., Tamilmani, K., Rana, N.P., Patol, P., Dwivedi, Y.K., & Nerir, S. (2018). Advances in Social Media Research: Past, Present and Future. *Information Systems Frontiers*, 20, 531–558. <https://doi.org/10.1007/s10796-017-9810-y>.
- [41] Kong, X., Wang, R., & Zhang, Y. (2025). Exploring the influence of “keeping consumers in suspense” in live streaming on consumer impulse buying behavior: A test of the mediating effects of consumer inner states. *Acta Psychologica*, 253, 104762. <https://doi.org/10.1016/j.actpsy.2025.104762>.

- [42] Li, Z., Cui, R., & Shen, Z. (2024). How can the government effectively promote consumers' green purchasing behavior?—Based on the diffusion study of new energy vehicles in China. *World Electric Vehicle Journal*, 15, 437. <https://doi.org/10.3390/wevj15100437>.
- [43] Liao, S-H., Hu, D.C., Chung, Y-C., Huang, A-P. (2021). Risk and opportunity for online purchase intention – A moderated mediation model investigation. *Telematics and Informatics*, 62(6), 101621. <https://doi.org/j.tele.2021.101621>.
- [44] Lin, C-T., Chen, C-W., Wang, S-J., & Lin, C-C. (2023). The influence of impulse buying toward consumer loyalty in online shopping: a regulatory focus theory perspective. *Journal of Ambient Intelligence and Humanized Computing*, 14(5), 14611–14621. <https://doi.org/10.1007/s12652-018-0935-8>.
- [45] Liu, Y., Shang, M., Jia, C., Lim, X-J., & Ye, Y. (2024). Understanding consumers' continuous-use intention of crowdsourcing logistics services: Empirical evidence from China. *Heliyon*, 10, e29819. <https://doi.org/10.1016/j.heliyon.2024.e29819>.
- [46] Lu, C-C., Wu, I-L., & Hsiao, W-H. (2019). Developing customer product loyalty through mobile advertising: Affective and cognitive perspectives. *International Journal of Information Management*, 47(1), 101-111. <https://doi.org/10.1016/j.ijinfomgt.2018.12.020>.
- [47] Marafon, D.L., Basso, K., Espartel, L.B., de Barcellos, M.D., & Rech, E. (2018). Perceived risk and intention to use internet banking: The effects of self-confidence and risk acceptance. *International Journal of Bank Marketing*, 36(2), 277-289. <https://doi.org/10.1108/IJBM-11-2016-0166>.
- [48] Matar, A. & Aloqaily, A.N. (2025). The mediating influence of perceived usefulness on consumer behaviour towards driving e-wallet adoption in Jordan. *Journal of Open Innovation: Technology, Market, and Complexity*, 11, 100651. <https://doi.org/10.1016/j.joitmc.2025.100651>.
- [49] Mathew, A.O., Jha, A.N., Lingappa, A.K., & Sinha, P. (2021). Attitude towards drone food delivery services—Role of innovativeness, perceived risk, and green image. *Journal of Open Innovation: Technology, Market and Complexity*, 7, 144. <https://doi.org/10.3390/joitmc7020144>.
- [50] Nuzula, I.F. & Wahyudi, L. (2022). The Influence of Perceived Risk, Perceived Quality, Brand Attitude, and E-WoM on Purchase Intention. *Expert Journal of Business and Management*, 10(2), 51-64.
- [51] Orzoł, M. & Szopik-Depczynska, M. (2023). Development trends in e-commerce sector. *Procedia Computer Science*, 225, 4157–4166. <https://doi.org/10.1016/j.procs.2023.10.412>.
- [52] Papista E, Dimitriadis S (2019), "Consumer – green brand relationships: revisiting benefits, relationship quality and outcomes". *Journal of Product & Brand Management*, 28(2), 166–187. <https://doi.org/10.1108/JPBm-09-2016-1316>.
- [53] Pee, L.G., Jiang, J., & Klein, G. (2018). Signaling effect of website usability on repurchase intention. *International Journal of Information Management*, 39, 228-241. <https://doi.org/10.1016/j.ijinfomgt.2017.12.010>.
- [54] Peng, C., Ma, B., Zhang, C., 2021. Poverty alleviation through e-commerce: village involvement and demonstration policies in rural China. *Journal of Integrative Agriculture* 20(4), 998–1011. [https://doi.org/10.1016/S2095-3119\(20\)63422-0](https://doi.org/10.1016/S2095-3119(20)63422-0).
- [55] Pohan, M.Z., Nasution, T.A., & Pohan, S. (2024). Gaya hidup konsumtif generasi Z dalam era belanja daring Indonesia. *Jurnal Ilmu Sosial Humaniora Indonesia*, 4(2) 237-246. <https://doi.org/10.52436/1.jishi.205>.
- [56] Princes, E. (2019). Boosting impulse buying behavior in marketing management: Customer satisfaction perspective. *Polish Journal of Management Studies*, 20(2), 403-413. <https://doi.org/10.17512/pjms.2019.20.2.34>.
- [57] Quan, L., Al-Ansi, Amr., & Han, H. (2022). Assessing customer financial risk perception and attitude in the hotel industry: Exploring the role of protective measures against COVID-19. *International Journal of Hospitality Management*, 101, 103123. <https://doi.org/10.1016/j.ijhm.2021.103123>.
- [58] Rakhman, A.A. (2024). Analisis pangsa pasar dan peluang pengembangan katalog elektronik pemerintah versi 6 dalam era transformasi e-commerce Indonesia. *Jurnal Pengadaan Indonesia*, 3(2), 69–77. <https://doi.org/10.59034/jpi.v3i2.52>.
- [59] Restrepo-Morales, J.A., Valencia-Cardenas, M., & López-Cadavid, D.A. (2024). Interplay of customer satisfaction, innovation, and product quality: Key determinants of company performance. *Journal of Technology Management & Innovation*, 19(2), 28-42.
- [60] Rita, P., Guerreiri, J., Ramos, R., & Caetano, R.G. (2024). The role of microtransactions in impulse buying and purchase intention in the video game market. *Entertainment Computing*, 50, 100693. <https://doi.org/10.1016/j.entcom.2024.100693>.
- [61] Ritchie, B. W., Chien, P. M., & Sharifpour, M. (2017). Segmentation by travel related risks: An integrated approach. *Journal of Travel & Tourism Marketing*, 34(2), 274-289. <https://doi.org/10.1080/10548408.2016.1156616>.
- [62] Rodrigues, R.I., Lopes, P., & Varela, M. (2021). Factors affecting impulse buying behavior of consumers. *Frontiers in Psychology*, 12, 697080. <https://doi.org/10.3389/fpsyg.2021.697080>.

- [63] Shafieizadeh, K., Alotaibi, S., & Tao, C-W. (2021). How do authenticity and quality perceptions affect dining experiences and recommendations of food trucks? The moderating role of perceived risk. *International Journal of Hospitality Management*, 93, 102800. <https://doi.org/10.1016/j.ijhm.2020.102800>.
- [64] Shaw, N. & Sergueeva, K. (2019). The non-monetary benefits of mobile commerce: Extending UTAUT2 with perceived value. *International Journal of Information Management*, 45(1), 44-55. <https://doi.org/10.1016/j.ijinfomgt.2018.10.024>.
- [65] Shiau, W.L., Dwivedi, Y.K., & Lai, H.H. (2018). Examining the core knowledge on facebook. *International Journal of Information Management*, 43(1), 52–63. <https://doi.org/10.1016/j.ijinfomgt.2018.06.006>.
- [66] Soomro, S.A. & Habeeb, Y.O. (2025). Impact of perceived ease of use on impulsive buying behaviour through mobile commerce with hedonic and utilitarian effects. *Asia-Pacific Journal of Business Administration*, 17(3), 796–813. <https://doi.org/10.1108/APJBA-11-2023-0563>.
- [67] Stieglitz, S., Mirbabaie, M., Ross, B., & Neuberger, C. (2018). Social media analytics – Challenges in topic discovery, data collection, and data preparation. *International Journal of Information Management*, 39(1), 156-168. <https://doi.org/10.1016/j.ijinfomgt.2017.12.002>.
- [68] Suk, J., Liu, P., & Nam, S-J. (2024). Perception of food labeling and purchase of food: The moderating effect of food risk perception. *Human Ecology Research*, 62(1), 181-196. <http://doi.org/10.6115/her.2024.013>.
- [69] Timur, B., Oguz, Y.E., & Yolmaz, V. (2023). Consumer behavior of mobile food ordering app users during COVID-19: dining attitudes, e-satisfaction, perceived risk, and continuance intention. *Journal of Hospitality and Tourism Technology*, 14(3), 460-475. <https://doi.org/10.1108/JHTT-04-2021-0129>.
- [70] Tumanggor, S., Hadi, P., & Sembiring, R. (2021). Pembelian impulsif pada e-commerce shopee (studi pada konsumen shopee di Jakarta Selatan). *Journal of Business and Banking*, 11(2), 251-270. <https://doi.org/10.14414/jbb.v11i2.2733>.
- [71] Tyrvaenen, O. & Karjaluoto, H. (2022). Online grocery shopping before and during the COVID-19 pandemic: A meta-analytical review. *Telematics and Informatics*, 71, 101839. <https://doi.org/10.1016/j.tele.2022.101839>.
- [72] Uzir, M.U.H., Jerin, I., Al Halbusi, H., Hamid, A.B.A., & Latiff, A.S.A. (2020). Does quality stimulate customer satisfaction where perceived value mediates and the usage of social media moderates? *Heliyon*, 6, e05710. <https://doi.org/10.1016/j.heliyon.2020.e05710>.
- [73] Wang, Y. & Herrando, C. (2019). Does privacy assurance on social commerce sites matter to millennials? *International Journal of Information Management*, 44(1), 164-177. <https://doi.org/10.1016/j.ijinfomgt.2018.10.016>.
- [74] Wang, Y., Lu, X., & Tan, Y. (2018). Impact of product attributes on customer satisfaction: An analysis of online reviews for washing machines. *Electronic Commerce Research and Applications* 29, 1–11. <https://doi.org/10.1016/j.elerap.2018.03.003>.
- [75] Wu, I-L., Chiu, M-L., & Chen, K-W. (2020). Defining the determinants of online impulse buying through a shopping process of integrating perceived risk, expectation-confirmation model, and flow theory issues. *Journal of Information Management*, 52, 102099. <https://doi.org/10.1016/j.ijinfomgt.2020.102099>.
- [76] Xiao, J. & Goulias, K.G. (2022). Perceived usefulness and intentions to adopt autonomous vehicles. *Transportation Research Part A*, 161(1), 170–185. <https://doi.org/10.1016/j.tra.2022.05.007>.
- [77] Xie, C., Huang, Q., Lin, Z., & Chen, Y. (2020). Destination risk perception, image and satisfaction: The moderating effects of public opinion climate of risk. *Journal of Hospitality and Tourism Management*, 44(1), 122-130. <https://doi.org/10.1016/j.jhtm.2020.03.007>.
- [78] Yao, E., Guo, D., Liu, S., & Zhang, J. (2024). The role of technology belief, perceived risk and initial trust in users' acceptance of urban air mobility: An empirical case in China. *Multimodal Transportation*, 3, 100169. <https://doi.org/10.1016/j.multra.2024.100169>.
- [79] Zheng, X., Men, J., Yang, F., & Gong, X. (2019). Understanding impulse buying in mobile commerce: An investigation into hedonic and utilitarian browsing. *International Journal of Information Management*, 48(1), 151-160. <https://doi.org/10.1016/j.ijinfomgt.2019.02.010>.
- [80] Zikmund, W.G., Babin, B.J., Carr, J.C., & Griffin, M. (2013). *Business Research Methods* 8th edition. Australia: South-Western Cengage Learning.