

An Analysis of the Factors Affecting University Students Intention to Use Mobile Commerce: An Extended TPB

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Abstract

Mobile commerce has recently surged in popularity because of mobile and communications technology developments. This study investigates the factors affecting Malaysian university students' behavioural intention to use mobile commerce. The theory of planned behaviour is utilised. Surveys were distributed to university students in Malaysia via an online Google Form, generating 250 usable responses. A two-stage structural equation modelling was used to test the study's hypotheses. The results indicate that attitude, subjective norm, and perceived behavioural control significantly affect the behavioural intention to use mobile commerce. In contrast, perceived security does not significantly affect the intention to use mobile commerce. Hence, these findings will benefit mobile commerce providers, merchants, students, consumers, academicians, and other industry players. The study enhances comprehension of the factors influencing the behavioural intention of Malaysian university students to use mobile commerce. This study extended the theory of planned behaviour in mobile commerce use by including perceived security. The extended theory of planned behaviour enhances the understanding of Malaysian university students' intention to engage in mobile commerce. However, the study discusses the implications of these findings for managers. It proposes alternatives for future researchers who wish to examine factors affecting university students' behavioural intention to use mobile commerce in Malaysia or any other country.

Keywords: Mobile Commerce, Behavioural Intention, Security, Malaysia.

Introduction

E-commerce originated in the late 1990s with the increasing adoption of desktop computers and the Internet, transforming traditional commerce (Van et al., 2020). Traditional commerce entails face-to-face encounters between customers and company representatives, while e-commerce involves interactions between customers and a company's online platform (Think et al., 2019). E-commerce enables people to utilise a desktop computer connected to the

Internet at home or in a corporate office to browse information on companies' websites and buy desired things or services (Mullick et al., 2023).

However, advancements in telecommunications, communication technology, and wireless Internet have led to the evolution of e-commerce into a new phase called mobile commerce. Mobile commerce enables customers to shop without limitations of physical location or time constraints (Lucas et al., 2023). Consumers can utilise a handheld device connected to the wireless Internet to search for information, engage, and make purchasing decisions regarding their favourite items or services. Due to this advantage, mobile commerce is expected to flourish in the coming years (Mullick et al., 2023).

Mobile technology has made significant advancements in recent years, stimulating creativity. Various services such as mobile social networks, mobile payments, and mobile commerce are readily available on mobile devices thanks to flexible communication networks that are not restricted by time or location (O'Dea, 2020). Mobile devices are becoming the predominant means of access to communication. Mobile networks are more economical than landlines and offer consumers increased flexibility and convenience (Asampana et al., 2022). Mobile devices are becoming the predominant method for completing commercial transactions in emerging and developing countries, transforming businesses across all industries.

As a result, the rise in mobile device usage for business transactions has substantially impacted conventional corporate practices, with wireless telecommunications emerging as the primary method to modernise traditional infrastructure using standard technology (Nokia et al., 2023; Jain et al., 2021). The increasing popularity of mobile devices and improvements in mobile technology have given rise to a new business trend known as mobile commerce. Thanks to the communication revolution enabled by wireless technology and mobile devices, businesses can now reshape their interactions with potential clients.

Mobile commerce provides advantages to consumers, businesses, and governmental entities. Businesses gain from mobile commerce by reducing operating expenses since they are not required to allocate resources to physical branches or offices for face-to-face consumer engagements (Barry et al., 2024a; Jahanshahi et al., 2011). Portable gadgets such as smartphones, tablets, or personal digital assistants linked to the wireless Internet enable people to seek information, interact with businesses' websites, and buy any desired products or services (Van et al., 2020). Additionally, businesses can benefit from extensive integration into the local and worldwide economy through mobile commerce (Bui et al., 2020). Technology is figuratively shrinking our world and reducing the tangible borders between countries. The interaction and exchange between persons and companies of different nations are essential.

Malaysia has a population of 32.78 million, with 29.35 million mobile internet users, accounting for around 89.53% of the entire population (Muller, 2022). There are around 16.53 million internet users in Malaysia, with 62% using mobile devices for shopping, which amounts to 20 million Malaysians buying via mobile devices. Morgan (2019) noted that mobile cell phones account for 47% of all electronic commerce transactions in Malaysia. Mobile commerce consumer sales had a compound annual growth rate of 31.4% by 2021, totalling US\$5.6 billion (RM23.9 billion). As a result, Malaysian online shoppers have started using mobile shopping as a different way to make purchases. In Malaysia, the smartphone penetration rate is strong despite the adoption rate of mobile commerce is very low compared to e-commerce and other neighbouring countries in the subregion (Barry et al.,

2024a; Yahaya et al., 2022). Therefore, this paper examines the factors affecting the behavioural intention to use mobile commerce among Malaysian university students.

Literature Review and Hypothesis Development

Mobile Commerce

Mobile commerce, or m-commerce, is the term used to describe electronic commerce transactions conducted through mobile devices. The mobile platform has unique challenges like restricted screen size, connectivity issues, and advantages like customization and user-friendly interfaces (Taneja, 2021). Mobile commerce has led to a shift in consumer behaviour, particularly among Generation Z, who is strongly inclined toward mobile technology (Puiu et al., 2022). The COVID-19 pandemic has increased the utilisation of m-commerce for buying goods and services, hastening this pattern (Varzaru & Bocean, 2021). Integrating m-commerce with e-commerce has boosted mobile social commerce, improving conventional e-commerce (Balague & Zhao, 2021). Challenges remain, such as the need for improved security and the impact of m-commerce on sales concentration and inventory management (Jain & Tan, 2022).

Additionally, mobile commerce involves utilising mobile devices for commercial activities including transactions and marketing (Narang & Arora, 2016). The factors influencing it include compatibility, user-friendliness, price, and innovation (Njenga et al., 2016). Mobile payments are a crucial component of mobile commerce, involving many technologies and related difficulties (Ahuja, 2016). The growth of M-commerce is propelled by advanced wireless and mobile technologies (Du, 2019) and is influenced by factors such as perceived enjoyment, utility, trust, and cost (Bhullar & Gill, 2019). Retail firms have shifted towards mobile marketing due to the increasing prominence of mobile commerce, as seen by Chao (2017).

Theory of Planned Behaviour

The Theory of Planned Behaviour (TPB) is developed from the Theory of Reasoned Action (TRA) by proposing that behaviour is not entirely voluntary, which differs from the TRA's original assertion (Ajzen & Fishbein, 1980; Fishbein & Ajzen, 1975; Ajzen, 1991). The prior idea emphasised voluntary behaviour but had a significant constraint. According to TRA, an individual's positive attitude and thoughts influence their behavioural intention. The Theory of Planned Behaviour (TPB) offers a more comprehensive account of behaviour compared to the Theory of Reasoned Action (TRA), suggesting that individuals are likely to engage in an activity if they have genuine control over it (Ajzen, 1991). Individuals are more inclined to engage in actual activity when they have a positive attitude, subjective norm, and a strong sense of perceived behavioural control and intention (Ajzen, 1991; Caulfield, 2012). The Theory of Planned Behaviour (TPB) states that attitude and normative views influence behavioural beliefs, subjective norms affect normative beliefs, and control beliefs are essential for behavioural control (Ajzen, 1991). The connection between these variables remained unclear (Ajzen, 1991). This study uses the theory of planned behaviour (TPB) to determine the factors affecting university students' behavioural intention to use mobile commerce, specifically by considering perceived security. The researchers suggest that attitude, perceived behavioural control, subjective standards, and perceived security impact customers' behavioural intention to use mobile commerce in Malaysia.

Behavioural Intention

Behavioural intention is an individual's intention towards positive or negative actions, serving as an antecedent to their actual behaviour (Ajzen, 1975). Several factors influence the intention to embrace mobile commerce. Varzaru and Bocean (2021) emphasise that perceived usefulness, ease of use, and user happiness are crucial. Friendliness, convenience, influence, and involvement impact purchase intention (El-Ebiary et al., 2021; Ye & Liu, 2021). Horga et al (2021) highlight the impact of habit and omnipresence on customer behaviour. Performance expectancy, convenience, reward, and security are essential for accepting direct mobile purchases through social media applications (Saprikis & Avlogiaris, 2021). Andronie et al. (2021) recognise the influence of perceived risk and trust consequences on customer behavioural intention. Generation Z values performance anticipation, social influences, facilitating conditions, perceived satisfaction, and trust as crucial factors (Nur & Panggabean, 2021). Chan et al (2022) found that during the COVID-19 lockdown, factors such as broad connection, perceived utility, simplicity of use, and enjoyment significantly influenced the intention and adoption of mobile purchases. Additionally, Barry et al (2024) proposed information, systems, and service quality to influence the intention to use mobile commerce in Malaysia.

Attitude

Another component of the Theory of Planned Behaviour, as suggested by Ajzen and Fishbein in 1975, is attitude. It pertains to how favourably or unfavourably an individual views a particular behaviour (Kim & James, 2016). Attitude is vital in influencing the intention to participate in mobile commerce, and several factors influence this relationship. Kao and L'Huillier (2022) found that positive attitudes about social distancing during the pandemic positively influenced the use of mobile commerce. Various studies have shown that individuals' attitude toward using a system or behaviour significantly impacts their intention to utilise that system or behaviour (Ahmed & Barry, 2023; Nurchayati et al., 2023; Ligaraba et al., 2022; Tian et al., 2023; Li, 2023; Barry & Jan, 2018; Barry & Jan, 2016). Consumers are more inclined to participate in behaviour if they have a positive attitude towards utilising a system or technology. This study focuses on the predicted behaviour of using mobile commerce, known as behavioural intention. Therefore, the researchers formulated the following hypothesis:

H1: Attitude positively affects the behavioural intention to use mobile commerce.

Subjective Norms

Subjective norm is a component of the Theory of Planned Behaviour proposed by Ajzen and Fishbein in 1975. Van Tonder et al (2023) described it as the extent to which an individual perceives social pressure or anticipates participating in a specific activity as directed by significant individuals. Subjective norms have significantly influenced the intention to use mobile commerce. Wang et al (2023); Chan et al (2022) found that perceived utility has a positive impact on the intention to use mobile shopping. Suo (2019) highlighted the importance of social influence in information technology. Misra et al (2022) investigated how demographics and types of mobile commerce services influence each other. Liu et al (2022) emphasised that social influence significantly impacts behavioural intention and usage behaviour. Nur and Panggabean (2021) acknowledged the impact of social influences. Previous studies have shown that subjective norms significantly impact students' behavioural

intention to use mobile commerce (Kholid et al., 2023; Tiew, 2023; Mokhtar et al., 2023). Tiew (2023) discovered a positive and substantial relationship between subjective norms and behavioural intention to use technology. However, based on these studies, the researcher proposed the following hypothesis:

H2: Subjective norms positively affect the behavioural intention to use mobile commerce.

Perceived Behavioural Control

Perceived behavioural control, as described by Ajzen (1991), is an individual's perception of the ease or difficulty of doing a particular behaviour. Perceived behavioural control in online shopping refers to an individual's opinion of the ease or difficulty of online purchases. Several research have examined the impact of various factors on the intention to use mobile commerce. Wang et al (2023) found that psychological cost significantly influences the intention to use mobile shopping. Chan et al (2022) discovered that perceived ease of use significantly impacts the intention to shop on mobile devices. Liu et al (2022) highlighted that effort expectations substantially impact shopping intention and usage behaviour. Widiar et al (2023); Esawe (2022) emphasised that perceived ease of use influences behavioural intention. Perceived behavioural control is a predictor that influences customer intention to use mobile commerce favourably, as indicated by previous studies (Lestari & Hartono, 2023; Huang, 2023; Li, 2023; Kristensen & Luders, 2023). As a result, the researcher, therefore, proposed the following hypothesis

H3: Perceived behavioural control positively affects the behavioural intention to use mobile commerce.

Perceived Security

Security refers to a user's confidence in the ability of technology to safeguard all their activities (Pantano & Di Pietro, 2012). Scholars have studied how the perceived level of security impacts the intention to use mobile commerce. Almaiah et al (2022) confirmed that feeling security, directly and indirectly, affected behavioural intention. Almaiah et al (2022) have highlighted the importance of trust in this connection. Gull et al (2022) highlighted the need for improved security in mobile commerce applications. Aprilia and Amalia (2023) found that perceived security is a significant predictor of satisfaction and attitude, although it has a minimal effect on the intention to continue. Chin et al (2022); Barakovic and Husic (2022) highlighted the importance of trust and the different impacts of security perception on user experience in different mobile web settings. Several research has shown that security significantly influences the intention to use technology or behaviour (Ardiansyahmiraja et al., 2023; Li, 2023; Patel, 2023; Ahmad et al., 2023; Barry & Jan, 2018; Barry & Jan, 2016). However, based on the previous studies, the researcher proposed the following hypothesis:

H4: Perceived security positively affects the behavioural intention to use mobile commerce.

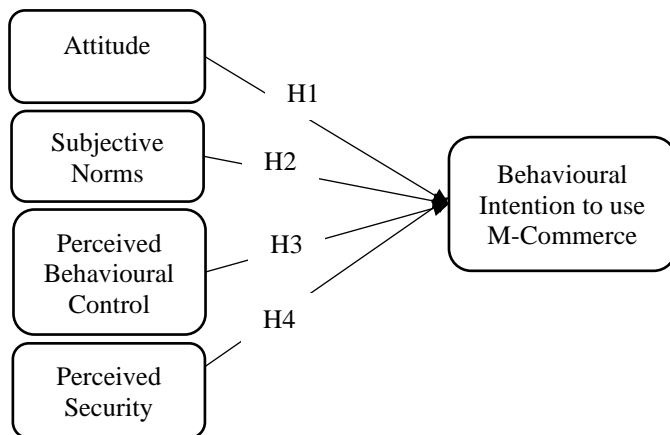


Figure 1: Research framework of the study

Research Methodology

Measurement Instrument

The survey items measuring attitude, subjective norms, perceived behavioural control, and behavioural intention were adapted from studies conducted by Ajzen (1991); Ajzen and Fishbein (1975) to develop the survey instrument used in this research. Perceived security variable items were adapted from (Barry and Jan, 2018). However, all items were adjusted and modified from previous studies to suit this research. Additional tests were conducted to confirm that these items are suitable metrics for the structures in the proposed study model. The survey items were evaluated using a Likert scale that ranged from 1 (Strongly Disagree) to 5 (Strongly Agree).

Data Collection

Survey questions were collected through online distribution in February 2024 using a Google form. The survey form's hyperlink and a description explaining the study's objective were distributed to the intended respondents using several social media sites such as Facebook, Instagram, and WhatsApp. These platforms were chosen based on their widespread usage in Malaysia. The survey link was accessible to the intended audience for two months, allowing respondents to conveniently fill out the questionnaire by simply clicking on the provided URL. Participants were given the choice to take part in the survey freely. After two months of collecting data, any duplicate or incorrect replies were removed to ensure the accuracy and reliability of the dataset. 270 surveys were gathered, resulting in 250 valid responses from many university students in Malaysia. The result yielded a response rate of 92.60%, which exceeded the minimum level suggested by most studies (Hair et al., 2010).

Data Analysis

The data was analysed using two statistical software packages: SPSS 26 and AMOS 24. The analysis is explained below.

Demographic Profile of the Respondents

Of the 270 responses, only 250 were deemed suitable, with 136 males (54.4%) and 114 females (45.6%). Of the responses, 165 people (66%) were aged 20-25, while 51 (20.4%) were aged 26-30. Among the responses, only 17 (6.8%), 11 (4.4%), and 6 (2.4%) were from individuals aged 31-35, 36-40, and 41 and above, respectively. Among the respondents, just

38 persons (15.2%) were married, while the majority, 212 individuals (84.8%), were single. The survey had 140 participants (56%) Malaysian and 110 (44%) international students. 155 individuals (62%) were Undergraduate students, 62 individuals (24.8%) were Master students, and 22 individuals (8.8%) were Ph.D. students, only 11 Diploma students were in attendance, representing 4.4%. (refer to Table 1).

Table 1
Demographics profile of the respondents

Demographic variables		Research Sample (n = 250)	
		Frequency	Percentage (%)
Gender	Male	136	54.4
	Female	114	45.6
Age	20 – 25	165	66
	26 – 30	51	20.4
	31 – 35	17	6.8
	36 – 40	11	4.4
	41 – Above	6	2.4
Nationality	Malaysian	140	56
	Non-Malaysian	110	44
Marital Status	Single	212	84.8
	Married	38	15.2
Level of Education	Diploma	9	3.6
	Bachelor	155	62
	Master	62	24.8
	PhD	22	8.8

Source: Authors' Computation

Reliability

Reliability tests were conducted on each factor within each sample group to evaluate the instrument's internal consistency. The Cronbach's alpha values in Table 2 indicated test reliability beyond the required threshold of 0.70, as Nunnally (1978) and Barry et al. (2024a) suggested. Based on the reliability test results, the measurement instrument's internal consistency is deemed satisfactory.

Table 2
Reliability statistics

Constructs	Cronbach's α	Number of items
BIN	0.918	10
ATT	0.927	11
SBN	0.904	8
PBC	0.901	7
SRT	0.710	5

Source: Authors' result

KMO and Bartlett's Test

KMO and Bartlett's Test were used to evaluate the scales' unidimensionality (refer to Table 3). The results indicate that the Kaiser-Meyer-Olkin (KMO) value is 0.894, meeting the

acceptable threshold value of 0 to 1, as Field (2017) and Barry et al. (2024a) suggested. The p-value for the Sphericity Tests is less than 0.001, indicating statistical significance. Therefore, the factor analysis meets the requirement.

Table 3

KMO and Bartlett's Tests

KMO and Bartlett's Test			
KMO Sampling Adequacy Measurement			0.894
Sphericity Test	Approx. Chi-Square		6734.872
	Degree of Freedom		741
	Sig.		0.000

Source: Authors' result

Common Method Bias

Harman's single-factor test confirmed the model's absence of common method bias. The result was achieved by an unrotated, single factor constrained factor analysis using SPSS software. One component accounted for 31.549% of the variance, whereas the five variables explained 61.801%, indicating no common method bias in the samples (refer to Table 4).

Table 4

Total variance explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	12.304	31.549	31.549	12.304	31.549	31.549	6.581	16.875	16.875
2	4.186	10.732	42.281	4.186	10.732	42.281	5.704	14.625	31.500
3	3.466	8.887	51.168	3.466	8.887	51.168	5.059	12.972	44.473
4	2.378	6.098	57.266	2.378	6.098	57.266	4.588	11.764	56.236
5	1.768	4.534	61.801	1.768	4.534	61.801	2.170	5.564	61.801

Extraction Method: Principal Component Analysis.

Source: Authors' result

Analysis of Factor Loadings

A principal component analysis extraction method and varimax with Kaiser normalization rotation method were employed for the factor analysis. The factor loadings were used to validate that each survey item loaded into the appropriate component, the items associated with five factors, explaining 61.801% of the total variation. The data analysis removed items with factor loadings below the recommended threshold of 0.5 (Hair et al., 2009). The attitude construct retains eleven items with loadings ranging from 0.602 to 0.788. The behavioural intention construct retains ten items with loadings ranging from 0.605 to 0.759. The subjective norms construct retains eight items with loadings ranging from 0.639 to 0.830. The perceived behavioural control construct retains seven items with loadings from

0.644 to 0.850. The perceived security construct retains three items with loadings ranging from 0.760 to 0.840. Therefore, the results of the factors analysis show that all items loading are above 0.5, as Hair et al. (2009) suggested.

Convergent and Discriminant Validity

The reliability, convergent validity, and discriminant validity were evaluated using composite reliability (CR) and average variance extracted (AVE), following the guidelines of Hair et al. (2010). However, Hair et al (2010) suggested that for good reliability, the composite reliability (CR) should exceed 0.7, the average variance extracted (AVE) should exceed 0.5, the CR should be higher than the AVE for convergent validity, and the total AVE of the variables should surpass the correlation value for discriminant validity. The findings from Table 4 indicate that the average extracted variances (AVE) for each construct exceeded 0.523, while construct reliability (CR) was over 0.780. This indicates that the structures were dependable and accurate. All the constructs displayed have enough discriminant validity, as indicated by the square root of AVE being greater than their correlation coefficients (refer to Table 5).

Table 5

Construct validity and reliability

	CR	AVE	MSV	ASV	BIN	ATT	SBN	SRT	PBC
BIN	0.916	0.523	0.453	0.225	0.723				
ATT	0.919	0.533	0.453	0.190	0.473	0.730			
SBN	0.895	0.555	0.229	0.116	0.479	0.347	0.745		
SRT	0.780	0.542	0.118	0.080	0.251	0.313	0.206	0.736	
PBC	0.901	0.604	0.154	0.109	0.393	0.301	0.269	0.344	0.777

Source: Authors' results

Multicollinearity Test

The research model was assessed for multicollinearity due to its potential adverse effects (Barry et al., 2024a; Cenfetelli & Bassellier, 2009). The variance inflation factor (VIF) ranges from 1.023 to 1.734, indicating that multicollinearity is not an issue in this dataset as it is below the threshold of 10.

Structural Equation Model

The study model was analysed via SPSS AMOS 24. The whole model's goodness of fit was assessed using five structural equation modelling (SEM) fit measures. According to Tucker & Lewis (1973); Barry et al (2024), the model demonstrated a good match with the data, as all goodness of fit indices fell within acceptable ranges (refer to Table 6).

Table 6

Fit indices for the models

Indices of Fit	Value Recommended	Model Value
Df/Chi-square	≤3.00	2.023
Goodness of fit	≥0.90	0.995
Adjusted Goodness of fit	≥0.80	0.902
Root mean square error of approximation.	≤0.06	0.064
Comparative fit index	≥0.93	0.901
Tucker-Lewis index	≥0.90	0.989
Normed fit index	≥0.90	0.922

Source: Authors' results

Hypotheses Testing

The results of the hypothesis testing are displayed in Table 7. Figure 2 displays the properties of the causal routes, such as the standardised path coefficients.

Table 7

Hypotheses testing and results

	Paths	Coefficient (β)	P-value	Critical Ratio	Decision
H1	Intention <-- Attitude	0.586	***	7.011	Supported
H2	Intention <-- Subj Norms	0.290	***	4.331	Supported
H3	Intention <-- PB Control	0.196	0.004	3.124	Supported
H4	Intention <-- Perceived Security	-0.006	0.921	-0.990	Not Supported

Source: Authors' results.

Note: *** indicates significance level < 0.001,

** indicates significance level < 0.05

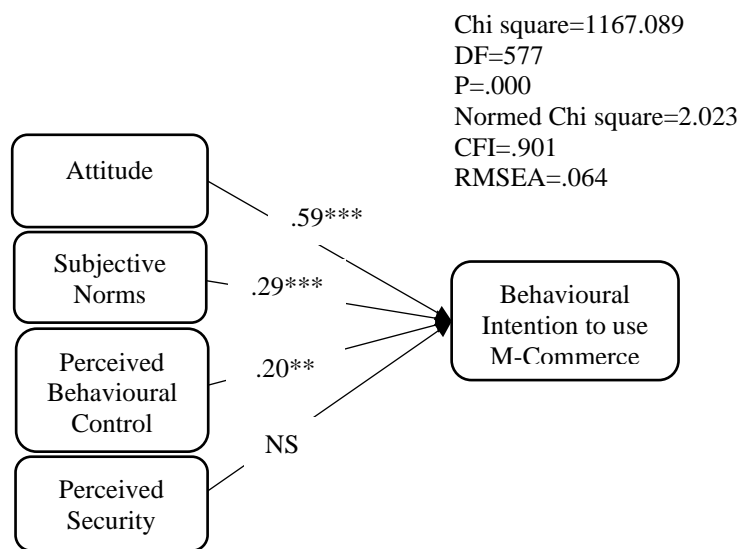


Figure 2: Factors affecting the behavioural intention to use mobile commerce.

Results and Discussions

All hypotheses were confirmed by the data shown in Table 9. The results for hypothesis H1 indicate that attitude has a significant impact on the intention to use mobile commerce ($\beta = 0.586$, $CR = 7.011$, $p < 0.001$). Hence, H1 is supported. The result is consistent with previous studies (Malik et al., 2023; EL Ashfahany et al., 2023; Ahmed & Barry, 2023). However, they discovered that attitude strongly impacted the intention to adopt mobile commerce. Therefore, university students with a positive attitude towards mobile commerce are more likely to have a positive intention to purchase and use it. Additionally, A favourable attitude toward mobile commerce might significantly impact students' intention to participate. A positive attitude indicates a conviction in the advantages of utilising mobile commerce, including convenience, user-friendliness, and access to a broader collection of items and services. A positive perception enhances the likelihood of individuals intending to utilise mobile commerce platforms for shopping.

Regarding hypothesis H2, the subjective norm substantially impacts the intention to adopt mobile commerce ($\beta = 0.290$, $CR = 4.331$, $p < 0.001$). Thus, H2 is supported. This finding is consistent with studies of previous scholars (EL Ashfahany et al., 2023; Kholid et al., 2023; Mollick et al., 2023; Gunawan et al., 2023; Yang et al., 2023; Ahmed & Barry, 2023). For instance, Kholid et al (2023) discovered that subjective norms significantly impact the intention to adopt mobile commerce. However, subjective norms, which are the perceived social pressures or expectations from influential individuals like family, friends, and classmates, might slightly influence behavioural intention to use mobile commerce. People who see their social network actively adopting and supporting mobile commerce are more inclined to have a favourable intention to adopt this behaviour. This arises from the wish to adhere to the social group's standards and possibly receive social validation. The intensity of this impact may differ based on individual autonomy and the perceived significance of the social group's viewpoints.

The study found a notable impact of perceived behavioural control on the behavioural intention to use mobile commerce among university students in Malaysia ($\beta = 0.196$, $CR = 3.124$, $p < 0.05$). Therefore, H3 is supported. This finding is confirmed by previous scholars

(Widiar et al., 2023; EL Ashfahany et al., 2023; Ahmed & Barry, 2023). Therefore, students with a more robust sense of behavioural control tend to show a greater intention to use mobile commerce. According to the Theory of Planned Behaviour (TPB), individuals are more inclined to use mobile commerce platforms if they are confident in their abilities and resources to navigate them and execute transactions successfully (Ajzen & Fishbein, 1975). If individuals encounter substantial obstacles or feel technically unable to use mobile commerce efficiently, they are less likely to intend to engage with it. Emphasizing user-friendly interfaces, clear instructions, and easily accessible customer service is crucial for promoting perceived control and driving the adoption of mobile commerce.

For hypothesis H4, the study found that security has no significant impact on the behavioural intention to use mobile commerce among university students in Malaysia ($\beta = -0.006$, $CR = -0.990$, $p = 0.921$). Thus, it can be inferred that H4 is not supported. This discovery aligns with the research conducted by (Barry and Jan, 2018). However, a perceived lack of security in mobile commerce transactions can significantly reduce consumers' willingness to use it. This is because students are concerned that their personal information, such as bank details and purchase history, could be at risk of being compromised in data breaches and identity theft incidents during purchases. Additionally, unauthorised transactions can discourage individuals due to the risk of unauthorised purchases using their mobile wallets or saved payment information. Moreover, doubt about the security measures of a particular mobile commerce platform can cause reluctance to use it.

Practical Implications

This study's results indicate that designers of mobile commerce platforms should offer explicit information about the advantages of mobile commerce and leverage the experiences of previous users to retain current mobile commerce customers. This study shows that mobile commerce service providers should increase their understanding and awareness of user characteristics to enhance students' behavioural intention to utilise mobile commerce. Our research indicates that attitude, subjective norms, and perceived behavioural control are the factors affecting the behavioural intention to use mobile commerce among Malaysian university students. Mobile commerce service providers should focus on attitude, subjective norms, and perceived behavioural control when marketing their products and services to university students. Therefore, these factors are crucial for enhancing behavioural intention among Malaysian students to use mobile commerce.

Therefore, mobile commerce providers should create a mobile application that is user-friendly and intuitive, designed to be optimised for different screen sizes and data consumption restrictions. Guarantee a consistent user experience on all platforms including online, app, and social media. This involves providing effective search features, fast checkout procedures, and simple order monitoring. They should also collaborate with student influencers or campus organisations to advertise their platform using genuine and relevant marketing tactics. Use social media channels such as Instagram, Facebook, or TikTok to interact with students and distribute relevant content, promotions, and contests. They should introduce loyalty programmes or incentive systems to motivate students to use the platform and promote repeat purchases. Provide a range of cashless payment methods that students, such as e-wallets or mobile banking interfaces favour.

Additionally, they should create features and functions tailored to the fast-paced and technology-savvy student lifestyle. Possible features might involve providing discounts for students, fast delivery choices, compatibility with well-known student platforms, and

including gamification components. They should also emphasise security concern by implementing strong security protocols to safeguard data privacy and ensure transaction security. Clearly emphasise these safeguards on the platform and contemplate providing capabilities such as two-factor authentication and secure payment methods. In addition, they must disclose data-gathering procedures and privacy policies openly. As a result, this will foster trust and promote a sense of ease for university students to share their information. Hence, mobile commerce service providers should evaluate the services they must provide to enhance students' understanding or confidence in mobile commerce. By following these procedures, they can reduce security vulnerabilities.

Therefore, implementing these techniques will help mobile commerce providers in Malaysia cater to the concerns and preferences of university students, leading to a favourable attitude, sense of security, and eventually boosting their intention to use mobile commerce platforms.

Conclusion

The current study aims to provide more information for academics and professionals interested in using smartphones to purchase, specifically in Malaysia. This study may be one of the first to tackle the essential issues related to university students' behavioural intention to use mobile commerce in Malaysia. This study has the potential to significantly enhance our comprehension of Malaysian students' behavioural intention to use mobile commerce. By establishing a research framework based on a solid theoretical foundation, we may fill the primary gap in the literature this study has identified as the factor affecting university students' behavioural intention to use mobile commerce. The theory of planned behaviour (TPB) was utilised for this purpose. The findings revealed that attitude, subjective norms, and perceived behavioural control are the factors affecting the behavioural intention of Malaysian university students to use mobile commerce.

Additionally, the results of this study will provide academic scholars with a valuable source of literature. The study examines important factors and conducts empirical tests to identify the factors that affect Malaysian university students' behavioural intention to use mobile commerce. This research significantly contributes to the current understanding of the subject matter. The study will also help mobile commerce providers in Malaysia by providing valuable insights to make informed strategic decisions that enhance university students' behavioural intention to utilise mobile commerce. As a result, the high adoption rate of mobile commerce among university students in Malaysia will make a significant contribution to the Malaysian economy. Furthermore, this study enhances the existing theory by extending the theory of planned behaviour to identify the factors affecting university students' behavioural intention to utilise mobile commerce in Malaysia. In conclusion, mobile commerce providers should develop secure applications to improve university students' behavioural intention to adopt and boost their engagement in mobile commerce transactions. As a result, it will create a positive attitude in their minds. It will also motivate them to recommend their peers, colleagues, and classmates to adopt mobile commerce transactions.

Limitation and Direction for Future Research

The literature analysis indicates that there are factors to consider concerning how students perceive mobile commerce transactions. However, these factors include attitude, subjective norms, and perceived behavioural control. The report identified critical areas for

significant contribution to the subject and suggested a methodology for future investigation and empirical testing. This study focuses on the behavioural intention of students to use mobile commerce to help mobile commerce providers encourage a positive intention among university students and increase their likelihood of utilising mobile commerce.

The study's quantitative approach may limit the qualitative basis for its conclusions, highlighting several constraints. University students' intention to adopt mobile commerce may be affected by perceived cost, trust, or other unexamined factors. Nevertheless, additional factors, such as religious or cultural considerations, may influence university students' behavioural intention to use mobile commerce. Moreover, this study focused solely on data from university students in the Klang Valley and did not include all students in Malaysia. Subsequent research could explore other states in Malaysia, including high school students, to examine the factors affecting their behavioural intention to use mobile commerce. Future research could explore conducting a comparative study across two countries or other states in Malaysia to examine the factors affecting the behavioural intention to use mobile commerce.

References

- Ahmad, M., Ahmad, K., & Bhatti, R. (2023). Assessing the impact of knowledge management factors on digital resources acceptance: a survey of postgraduate students of public sector universities of Punjab. *The Electronic Library*, 41(5), 617-640. <https://doi.org/10.1108/el-01-2023-0013>
- Ahmed, B., & Barry, M. (2023). A preliminary investigation into the knowledge-sharing practices of academic librarians in Malaysia. *Research Journal of Library and Information Science*, 7(1), 24-39. <https://doi.org/10.22259/2637-5915.0701003>
- Ahuja, R. (2018). Mobile payments for conducting M-Commerce. In *Mobile commerce: Concepts, methodologies, tools, and applications* (pp. 450-467). IGI Global. <https://doi.org/10.4018/978-1-5225-0236-4.CH008>
- Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50(2), 179-211. [https://doi.org/10.1016/0749-5978\(91\)90020-T](https://doi.org/10.1016/0749-5978(91)90020-T)
- Ajzen, I., & Fishbein, M. (1975). Belief, attitude, intention, and behavior: An introduction to theory and research.
- Almaiah, M. A., Al-Rahmi, A., Alturise, F., Hassan, L., Lutfi, A., Alrawad, M., & Aldhyani, T. H. (2022). Investigating the effect of perceived security, perceived trust, and information quality on mobile payment usage through near-field communication (NFC) in Saudi Arabia. *Electronics*, 11(23), 3926. <https://doi.org/10.3390/electronics11233926>
- Andronie, M., Lăzăroiu, G., Ștefănescu, R., Ionescu, L., & Cocoșatu, M. (2021). Neuro-management decision-making and cognitive algorithmic processes in the technological adoption of mobile commerce apps. *Oeconomia Copernicana*, 12(4), 1033-1062. <https://doi.org/10.24136/oc.2021.034>
- Aprilia, C., & Amalia, R. (2023). Perceived security and technology continuance theory: An analysis of mobile wallet users' continuance intention. *Global Business Review*, 0(0). <https://doi.org/10.1177/09721509221145831>
- Ardiansyahmiraja, B., Andajani, E., & Wicaksono, A. P. (2023). Effects of e-servicescape dimensions on online food delivery services' purchase intention. *Journal of Foodservice Business Research*, 1-17. <https://doi.org/10.1080/15378020.2023.2227142>

- Asampana, I., Akanferi, A. A., Matey, A. H., & Tanye, H. A. (2022). Adoption of mobile commerce services among artisans in developing countries. *Interdisciplinary Journal of Information, Knowledge, and Management*, 17, 101-123.
<https://doi.org/10.28945/4921>
- Balague, C., & Zhao, Z. (2021). Mobile social commerce. In *Research Anthology on E-Commerce Adoption, Models, and Applications for Modern Business* (pp. 40-52). IGI Global. <https://doi.org/10.4018/978-1-5225-2449-6.CH007>
- Barakovic, S., & Husic, J. B. (2023). The importance of security matters for quality of experience in mobile web context. *International Journal of Human-Computer Interaction*, 39(8), 1712-1722. <https://doi.org/10.1080/10447318.2022.2072454>
- Barry, M., & Jan, M. T. (2016). What drives social networking users to use mobile commerce? *American Journal of Social Sciences*, 1, B6-B16.
- Barry, M., & Jan, M. T. (2018). Factors influencing the use of m-commerce: An extended technology acceptance model perspective. *International Journal of Economics, Management and Accounting*, 26(1), 157-183.
- Barry, M., Haque, A. A., & Jan, M. T. (2024a). Factors affecting the intention to use mobile commerce in Malaysia: An integration of TAM And IS success model. *International Journal of Academic Research in Business and Social Sciences*, 14(3), 726-753.
<http://dx.doi.org/10.6007/IJARBS/v14-i3/21037>.
- Barry, M., Haque, A. A., & Jan, M. T. (2024b). Mobile commerce adoption in Malaysia: A conceptual framework. *Open Journal of Economics and Commerce*, 5(1), 4-12.
<https://doi.org/10.22259/2638-549X.0501002>
- Bhullar, A., & Gill, P. S. (2019). Future of mobile commerce: an exploratory study on factors affecting mobile users' behaviour intention. *International Journal of Mathematical, Engineering and Management Sciences*, 4(1), 245.
<https://doi.org/10.33889/IJMEMS.2019.4.1-021>
- Bui, N., Pham, L., Williamson, S., Mohebbi, C., & Le, H. (2020). Intention to use mobile commerce: Evidence from emerging economies. *International Journal of Enterprise Information Systems (IJEIS)*, 16(1), 1-30. <https://doi.org/10.4018/ijeis.2020010101>
- Cenfetelli, R. T., Bassellier, G. (2009). Interpretation of formative measurement in information systems research. *MIS Q*, 33, 689–707. <https://doi.org/10.2307/20650323>
- Chan, X. Y., Rahman, M. K., Mamun, A. A., A. Salameh, A., Wan Hussain, W. M. H., & Alam, S. S. (2022). Predicting the intention and adoption of mobile shopping during the COVID-19 lockdown in Malaysia. *Sage Open*, 12(2).
<https://doi.org/10.1177/2158244022109501>
- Chao, C. N. (2017). Emergence impacts of mobile commerce: An exploratory study. *Journal of Management and Strategy*, 8(2), 63-70. <https://doi.org/10.5430/JMS.V8N2P63>
- Chen, B., Chen, H., Cheng, Q., & Li, Y. (2023). The development of China's digital economy and its implications for China-ASEAN Cooperation. *East Asian Policy*, 15(03), 49-81.
<https://doi.org/10.1142/s1793930523000211>
- Chen, M. (2023). Adapting to online and blended learning in higher education: Supporting the retention and success of the expanded and diversified intake: edited by David Kember, Robert A. Ellis, Si Fan, and Allison Trimble, Singapore, Springer Singapore, 2023, XIII+ 459 pp. 117.79 (e-Book), ISBN 97898199089811.
<https://doi.org/10.1080/03623319.2023.2253578>

- Chin, A. G., Harris, M. A., & Brookshire, R. (2022). An empirical investigation of intent to adopt mobile payment systems using a trust-based extended valence framework. *Information Systems Frontiers*, 1-19. <https://doi.org/10.1007/s10796-020-10080-x>
- Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, 13(3), 319–340. <https://doi.org/10.2307/249008>
- Du, S. R. (2019). A review for mobile commerce research and service. *DEStech Transactions on Social Science, Education and Human Science*. <https://doi.org/10.12783/DTSSEHS/ICSSM2018/27094>.
- El Ashfahany, A., Azzahra, F., & Unal, I. M. (2023). Intention to use sharia e-commerce: Applying a combination of the technology acceptance model and theory of planned behavior. *Innovative Marketing*, 19(2), 184. [https://doi.org/10.21511/im.19\(2\).2023.15](https://doi.org/10.21511/im.19(2).2023.15)
- El-Ebiary, Y. A. B., Pathmanathan, P. R., Tarshany, Y. M. A., Jusoh, J. A., Aseh, K., Al Moaiad, Y., & Bamansoor, S. (2021). Determinants of customer purchase intention using Zalora mobile commerce application. In *2021 2nd International Conference on Smart Computing and Electronic Enterprise (ICSCEE)* (pp. 159-163). IEEE. <https://doi.org/10.1109/ICSCEE50312.2021.9497995>
- Esawe, A. T. (2022). Understanding mobile e-wallet consumers' intentions and user behavior. *Spanish Journal of Marketing-ESIC*, 26(3), 363-384. <https://doi.org/10.1108/sjme-05-2022-0105>
- Field, A. (2017). *Discovering statistics using IBM SPSS statistics*, 5th ed. London, UK: Sage Publications Limited.
- Gull, H., Saeed, S., Iqbal, S. Z., Bamarouf, Y. A., Alqahtani, M. A., Alabbad, D. A., & Alamer, A. (2022). An empirical study of mobile commerce and customers security perception in Saudi Arabia. *Electronics*, 11(3), 293. <https://doi.org/10.3390/electronics11030293>
- Gunawan, C. M., Rahmania, L., & Kenang, I. H. (2023). The influence of social influence and peer influence on intention to purchase in e-commerce. *Review of Management and Entrepreneurship*, 7(1), 61-84. <https://doi.org/10.37715/rme.v7i1.3683>
- Hair, J. F., Black, W. C., Babin, B. J., Anderson, R. E., & Tatham, R. L. (2010). *Multivariate data analysis*. Prentice Hall, 816.
- Hair, J., Black, W., Babin, B., & Anderson, R. (2009). *Multivariate data analysis: A Global perspective*, 7th ed.; Prentice Hall: Upper Saddle River, NJ, USA.
- Horga, M. G., Nica, E., & Nancu, D. (2021). Perceptions and behavior-related intentions of consumers in smartphone-based mobile commerce. In *SHS Web of Conferences* (Vol. 92, p. 06011). EDP Sciences. <https://doi.org/10.1051/SHSCONF/20219206011>
- Huang, Y. C. (2023). Integrated concepts of the UTAUT and TPB in virtual reality behavioral intention. *Journal of Retailing and Consumer Services*, 70, <https://doi.org/10.1016/j.jretconser.2022.103127>.
- Jahanshahi, A. A., Mirzaie, A., & Asadollahi, A. (2011). Mobile commerce beyond electronic commerce: Issue and challenges. *Asian Journal of Business and Management Sciences*, 1(2), 119-129.
- Jain, N. K., Kaul, D., & Sanyal, P. (2021). What drives customers towards mobile shopping? An integrative technology continuance theory perspective. *Asia Pacific Journal of Marketing and Logistics*, 34 (5), 922 – 943. <https://doi.org/10.1108/APJML-02-2021-0133>

- Jain, N., & Tan, T. F. (2022). M-commerce, sales concentration, and inventory management. *Manufacturing & Service Operations Management*, 24(4), 2256-2273. <https://doi.org/10.2139/ssrn.3763707>
- Kao, W. K., & L'Huillier, E. A. (2022). The moderating role of social distancing in mobile commerce adoption. *Electronic Commerce Research and Applications*, 52. <https://doi.org/10.1016/j.elerap.2021.101116>
- Kholid, M. N., Lutfiani, A. P., & Salsabilla, S. (2023). Determinants students continue usage of e-book: A developing country experience. In *Artificial Intelligence (AI) and Finance* (pp. 280-289). Cham: Springer Nature Switzerland. https://doi.org/10.1007/978-3-031-39158-3_26.
- Kim, J., & Seo, J. (2017). User resistance to digital goods: a case of e-books. *14th Asia-Pacific Regional Conference of International Telecommunication Society (ITS): Mapping ICT into Transformation for the Next Information Society*, Kyoto, Japan (24th – 27th June 2017).
- Kristensen, L. B., & Luders, M. (2023). Convenient and worth the price? Identifying early users and predicting future use of book streaming services. *Convergence*, 29(1), 183-200. <https://doi.org/10.1177/13548565211057516>
- Lestari, E. J., & Hartono, A. (2023). Digital innovation piracy in online entertainment media in Indonesia: Determinants of individual Planned Behavior. *Journal of Economics, Management and Trade*, 29(8), 140-152. <https://doi.org/10.9734/jemt/2023/v29i81122>
- Li, H. (2023). Factors impacting male students' behavioral intentions to purchase mobile reading apps in chengdu, China. *AU-GSB e-JOURNAL*, 16(1), 70-81.
- Li, K. (2023). Determinants of college students' actual use of AI-based systems: An extension of the technology acceptance model. *Sustainability*, 15(6), 5221. <https://doi.org/10.3390/su15065221>
- Li, X., Shi, X., Xie, R., & Gu, Z. (2023). Evaluating mobile commerce vendors in the era of smart libraries. *Library & Information Science Research*, 45(3). <https://doi.org/10.1016/j.lisr.2023.101254>
- Ligaraba, N., Nyagadza, B., Dörfling, D., & Zulu, Q. M. (2023). Factors influencing re-usage intention of online and mobile grocery shopping amongst young adults in South Africa. *Arab Gulf Journal of Scientific Research*, 41(3), 389-415. <https://doi.org/10.1108/agjsr-06-2022-0088>
- Liu, C. H., Chen, Y. T., Kittikowit, S., Hongsuchon, T., & Chen, Y. J. (2022). Using unified theory of acceptance and use of technology to evaluate the impact of a Mobile payment app on the shopping intention and usage behavior of middle-aged customers. *Frontiers in Psychology*, 13. <https://doi.org/10.3389/fpsyg.2022.830842>
- Lucas, G. A., Lunardi, G. L., & Dolci, D. B. (2023). From e-commerce to m-commerce: An analysis of the user's experience with different access platforms. *Electronic Commerce Research and Applications*, 58, <https://doi.org/10.1016/j.elerap.2023.101240>
- Malik, I. A., Raza, M. A., Hadi, N. U., Khan, M. J., & Hameed, F. (2023). Social commerce constructs and purchase intention on social commerce sites: Investigating the role of affective and cognitive attitudes in managing digital marketing challenges. *Management & Marketing*, 18(s1), 474-495. <https://doi.org/10.2478/mmcks-2023-0026>
- Misra, R., Mahajan, R., & Singh, N. (2022). Analysis of factors affecting intent to use mobile commerce services in India. *International Journal of E-Services and Mobile Applications (IJESMA)*, 14(1), 1-21. <https://doi.org/10.4018/ijesma.300268>

- Mokhtar, S., Hilaluddin, T., & Nik Nazli, N. N. N. (2023). Challenges impacting students' intention to effectively use e-learning method in a virtual learning environment. *International Journal of Technology in Education*, 6(2), 310-325. <https://doi.org/10.46328/ijte.407>
- Mollick, J., Cutshall, R., Changchit, C., & Pham, L. (2023). Contemporary mobile commerce: Determinants of its adoption. *Journal of Theoretical and Applied Electronic Commerce Research*, 18(1), 501-523. <https://doi.org/10.3390/jtaer18010026>
- Morgan, J. (2019). E-commerce payments trends: Malaysia. <https://www.jpmorgan.com/europe/merchant-services/insights/reports/malaysia>.
- Muller, J. (2022). Smartphone penetration in Malaysia 2010 – 2025. <https://www.statista.com/statistics/625418/smartphone-user-penetration-in-malaysia/>
- Narang, B., & Arora, J. B. (2016). Present and future of mobile commerce: Introduction, comparative analysis of m-commerce and e-commerce, advantages, present and future. In *Securing transactions and payment systems for m-Commerce* (pp. 293-308). IGI Global. <https://doi.org/10.4018/978-1-5225-0236-4.CH015>
- Njenga, A. K., Litondo, K., & Omwansa, T. (2016). A theoretical review of mobile commerce success determinants. *Journal of Information Engineering and Applications*, 6(5), 13-23.
- Nokia, O., Yrjola, F. S., & Matinmikko-Blue, M. (2023). The importance of business models in mobile communications. In *The Changing World of Mobile Communications: 5G, 6G and the Future of Digital Services*, 138. <https://doi.org/10.1007/978-3-031-33191-6>.
- Nunnally, J. C. (1978). *Psychometric theory*. McGraw Hill: New York, NY, USA,
- Nur, T., & Panggabean, R. R. (2021). Factors influencing the adoption of mobile payment method among generation Z: The extended UTAUT approach. *Journal of Accounting Research, Organization, and Economics*, 4(1), 14 – 28. <https://doi.org/10.24815/JAROE.V4I1.19644>
- Nurchayati, N., Widayati, T., Sulistiyani, S., & Suprpti, S. (2023). Antecedents of user attitude towards e-commerce and future purchase intention. *International Journal of Data and Network Science*, 7(1), 505-512. <https://doi.org/10.5267/j.ijdns.2022.8.007>
- O'Dea, S. (2020). Number of Smartphone Users from 2016 to 2021 (in billions). <https://www.statista.com/statistics/330695/number-of-smartphone-users-worldwide/>
- Patel, R. A. P. (2023). A comparative analysis of consumer attitudes towards online shopping in Gujarat. *Top American Journal of Marketing and Management*, 8(1), 22-44.
- Puiu, S., Demyen, S., Tanase, A. C., Varzaru, A. A., & Bocean, C. G. (2022). Assessing the adoption of mobile technology for commerce by Generation Z. *Electronics*, 11(6), 866. <https://doi.org/10.3390/electronics11060866>
- Saprikis, V., & Avlogiaris, G. (2021). Factors that determine the adoption intention of direct mobile purchases through social media apps. *Information*, 12(11), 449. <https://doi.org/10.3390/info12110449>
- Suo, W. J. (2019). Factors influencing behavioural intention to adopt the QR-Code payment in Sarawak. *Master Thesis: Curtin University*.
- Taneja, B. (2021). The digital edge for m-commerce to replace e-commerce. In *Emerging Challenges, Solutions, and Best Practices for Digital Enterprise Transformation* (pp. 299-318). IGI Global. <https://doi.org/10.4018/978-1-7998-8587-0.CH016>
- Thinh, N. H. T., Pham, L., & Strickler, C. (2019). Customer trust and purchase intention: How do primary website service quality dimensions matter in the context of luxury hotels in

- Vietnam. *International Journal of E-Services and Mobile Applications (IJESMA)*, 11(1), 1-23. <https://doi.org/10.4018/IJESMA.2019010101>
- Tian, Y., Chan, T. J., Suki, N. M., & Kasim, M. A. (2023). Moderating role of perceived trust and perceived service quality on consumers' use behavior of Alipay e-wallet system: the perspectives of technology acceptance model and theory of planned behavior. *Human Behavior and Emerging Technologies*. <https://doi.org/10.1155/2023/5276406>
- Tiew, K. Y. (2023). *The influence of electronic word of mouth (eWOM) on the purchase intention of technological gadgets*. Doctoral dissertation, UTAR.
- Tucker, L. R., Lewis, C. (1973). A reliability coefficient for maximum likelihood factor analysis. *Psychometrika*, 38, 1–10. <https://doi.org/10.1007/BF02291170>
- Van Tonder, E., Fullerton, S., De Beer, L. T., & Saunders, S. G. (2023). Social and personal factors influencing green customer citizenship behaviours: The role of subjective norm, internal values, and attitudes. *Journal of Retailing and Consumer Services*, 71. <https://doi.org/10.1016/j.jretconser.2022.103190>
- Van, H. N., Pham, L., Williamson, S., Huong, V. T., Hoa, P. X., & Trang, P. L. H. (2020). Impact of perceived risk on mobile banking usage intentions: trust as a mediator and a moderator. *International Journal of Business and Emerging Markets*, 12(1), 94-118. <https://doi.org/10.1504/ijbem.2020.10027345>
- Varzaru, A. A., & Bocean, C. G. (2021). A two-stage SEM–artificial neural network analysis of mobile commerce and its drivers. *Journal of Theoretical and Applied Electronic Commerce Research*, 16(6), 2304-2318. <https://doi.org/10.3390/jtaer16060127>
- Wang, L., Wang, X., Wang, Z., & Zhao, Y. (2023). Influence mechanism of implementation intentions from the perspective of time and space in mobile shopping. *International Journal of Human–Computer Interaction*, 39(8), 1675-1689. <https://doi.org/10.1080/10447318.2022.2070106>
- Widiar, G., Yuniarinto, A., & Yulianti, I. (2023). Perceived ease of use's effects on behavioral intention mediated by perceived usefulness and trust. *Interdisciplinary Social Studies*, 2(4), 1829-1844. <https://doi.org/10.55324/iss.v2i4.397>
- Yahaya, S., Hamid, S. N. A., & Nafi, S. N. M. (2022). Determinants for m-commerce adoption in Malaysian SMEs: A conceptual framework. *International Journal of Business and Economy*, 4(1), 138-149. <https://myjms.mohe.gov.my/index.php/ijbec/article/download/17655/9294/>
- Yang, C. C., Yang, S. Y., & Chang, Y. C. (2023). Predicting older adults' mobile payment adoption: An extended TAM model. *International journal of environmental research and public health*, 20(2), 1391. <https://doi.org/10.3390/ijerph20021391>
- Ye, P., & Liu, L. (2021). Effects of interactivity on consumer behavioral intention in mobile social commerce in China. *Information Resources Management Journal (IRMJ)*, 34(3), 21-40. <https://doi.org/10.4018/IRMJ.2021070102>