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PREDICTING CONTINUANCE INTENTION AND USE OF MOBILE SHOPPING APPS WITH PLS-SEM AND NECESSARY CONDITION ANALYSIS IN TANDEM

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ABSTRACT

The adoption of multi-channel strategies by retailers, encompassing both online and offline modalities, has fundamentally transformed consumer shopping behaviors, resulting in a significant increase in mobile shopping. Nonetheless, the long-term success of mobile shopping apps is heavily dependent on consumers' continuous use. Regrettably, the existing studies on this area remain vague and require further exploration. This study aims to close this gap by examining Malaysian consumers' continuance intention and continuance use of mobile shopping through the lens of ISSM in the context of mobile shopping apps. We utilised a quantitative approach and successfully collected 369 responses from Klang Valley, using purposive sampling techniques. The predictive hypotheses developed were validated using Partial Least Square – Structural Equation Modelling (PLS-SEM) and were further supplemented with Necessary Condition Analysis (NCA) to determine must-have factors based on necessary logic. The PLS-SEM results confirmed the association between continuance intention and continuance use. The findings revealed that service quality and system quality are associated with satisfaction, but not information quality. Additionally, service quality, system quality, and information quality, together with satisfaction, trust and incentive have a positive significant influence on Malaysians' mobile shopping app continuance intention. However, the NCA results indicated that system quality is the sole must-have factor that contributes to satisfaction. Meanwhile, service quality, system quality, information quality, satisfaction, trust, and incentive are the must-have predictors for mobile shopping app continuance intention. The study sheds light on previously unexplored aspects namely, continuance intention and continuance use, within the framework of the ISSM in the context of mobile shopping. By doing so, it offers more refined and actionable insights to improve consumer experience and foster sustained engagement with mobile shopping apps. Simultaneously, it contributes to the advancement of knowledge regarding the foundational constructs and their interconnectedness, thereby enhancing theoretical development in this domain.

Keywords: *mobile shopping, continuance intention, incentive, satisfaction, trust*

INTRODUCTION

In this day and age of technological advancements, almost everyone can afford to own a smartphone and enjoy uninterrupted access to the Internet. Smartphones have evolved into personal shopping assistants, allowing consumers to easily browse, compare prices, and make purchases by providing personalised services at any time and from any location (Jain et al., 2021; ShopSphere, 2023). Besides, mobile shopping enables consumers to conveniently search, acquire products, pay and monitor order fulfilment via shopping apps. As a result, mobile shopping is rapidly replacing in-store shopping. This is supported by the data from JanBask (2023), which indicated that nearly 70% of customers downloaded retail apps, and 91% of them used smartphones to make online purchases.

It is worth noting that the COVID-19 pandemic in 2020 reshaped consumer markets and consumer behaviour significantly. Due to the various movement control orders imposed on the public, it was difficult for consumers to engage in offline physical shopping. Consumers had to substitute physical shopping with online shopping (PWC, 2020). As a result, the usage of mobile shopping apps had become a norm and turned into a trend in a short span of time (Pasupuleti et al., 2021). According to Statista, (2023), in 2021, purchases made through mobile shopping apps increased by 48% globally. However, as the pandemic receded and individuals are able to shop physically, they may engage in retaliatory buying and revert to offline shopping (Blue, 2020), or they may completely change their retail channel preferences and maintain online shopping habits in the future (Gupta & Mukherjee, 2022). In this setting, the behaviour intention to continue and use mobile shopping apps to buy goods is uncertain.

Furthermore, the switch to mobile shopping by consumers also leads to increased competition among mobile shopping platform providers. To keep up with the pace of the competitive environment, companies have developed mobile shopping apps as an effective business strategy. In this situation, retaining consumers' intention to continue shopping with mobile shopping apps and maintaining their sustainability has become a challenge in today's emerging economies. Therefore, with the ongoing shift to the new normal and the influence of technological innovation, the factors that affect consumers' continuance intention and continuance use of mobile shopping apps may change with time, so it is worth studying.

Although there is a substantial literature on continuance intention, Yan et al. (2021) claimed that the study into the causes and consequences of intention-behaviour (i.e., continuance use and actual use) of online technology is insufficient. This is likely due to the dynamic nature of emerging trends and environmental changes in the post-Covid era, which may constitute unforeseen changes in consumer behaviour. Furthermore, according to Maduku and Thusi (2023) and Vo and Wu (2022), studies on the determinants of mobile shopping continuance intention are still scarce, and the studies conducted were confined to consumers in developed countries (e.g. United States of America) or in China. It will be greatly beneficial to mobile shopping service providers and developers to evaluate the potential challenges imposed on mobile shopping apps. This can be achieved by examining the causes and consequences of the intention-behaviour of the usage of these apps which would reveal how they can impact on business success and sustainability (Yan et al., 2021).

A review of the previous studies shows that the majority of them focused on pre-adoption and post-adoption of mobile shopping. The common theories applied in these studies include the Unified Theory of Acceptance and Use of Technology (UTAUT) (Chopdar et al., 2018; Pasupuleti et al., 2021), Expectation-Confirmation model (EMC) (Maduku & Thusi, 2023; Shang & Wu, 2017) and Technology Continuance Theory (TCT) (Jain et al., 2021). The relevance of these models to mobile technology research is debatable. For instance, UTAUT focuses on pre-

adoption of mobile shopping apps by examining the importance of the perception of potential consumers on the system's usefulness and ease of use in influencing their decision to adopt these apps. However, the importance of these factors is less significant today as existing app user interface (UI) and systems are usually well designed, and smartphone users also possess the basic technical skills to operate mobile apps. EMC and TCT are similar in some aspects as both models consider the impact of technology factors on satisfaction, which in turn leads to continuance intention (Jain et al., 2021). Both models also include a confirmation factor to measure the impact of consumer expectations on satisfaction. However, Brown et al. (2008) claimed that although expectation is associated with experience, at the same time, it also weakens satisfaction. In addition, most of the research studies conducted are limited to determining behavioural intentions, resulting in an intention-behaviour gap in which intention may not be able to accurately predict actual behaviour in some circumstances (Yan et al., 2021).

Due to the above reasons, the Information Systems Success Model (ISSM) was applied in this study. ISSM is widely used to understand and identify the factors contributing to the success of a system. ISSM offers a comprehensive model examining the success factors of continuance intention and use. According to DeLone and McLean (2016), future research should include intention to use and actual use to examine the success of an information system. Besides, the adoption of ISSM to mobile shopping post-adoption research receives limited attention among scholars (Tamilmani et al., 2020; Tseng et al., 2022), particularly in Malaysia.

The ability to retain consumers in mobile shopping is crucial to the success of shopping innovation (Maduku & Thusi, 2023). Prior research had mostly focused on the continuance intention of mobile shopping apps (Chopdar & Sivakumar, 2019). If the app is poorly designed and does not meet the needs of consumers during the shopping process, they will not have the intention to use the app. On this premise, it is worth to examine the impact of quality factors of mobile shopping apps in Malaysia on consumers' satisfaction and their continuance intention. Therefore, it is necessary to analyse the mediating effect of satisfaction in this study.

Trust and incentives can play an important motivational role in mobile shopping. A study by Yan et al. (2021) confirmed that trust has a positive influence on online technology continuance intention. Meanwhile, Tamilmani et al. (2020) claimed that trust is a promising predictor in determining mobile shopping continuance intention. However, trust is temporary and develops over time. Bøe et al. (2021) argued that incentives are one of the critical factors influencing the use of an information system. However, the studies conducted on the influence of incentives on the continuance intention of mobile shopping apps are limited (Bøe et al., 2021), particularly in the context of Malaysian consumers. Therefore, it is necessary to validate the impact of both trust and incentives on continuance intention which leads to continuance use of mobile shopping apps.

This study focuses on consumers' post-adoption of mobile shopping. The first objective of this study is to investigate the factors influencing Malaysian consumers' continuance intention and continuance use of mobile shopping apps. Secondly, it further determines the must-have factors influencing mobile shopping app continuance intention and continuance use. This study assists mobile shopping apps players to strategically develop shopping apps and services which are aligned with consumers' needs to maximise shopping experience. Notably, a successful mobile shopping app, achieved through customer satisfaction, would guarantee continuance intention and use. In addition, the extended ISSM applied in this study can enhance the explanation and prediction of the continuance intention and continuance use of mobile shopping apps in the new normal and contribute to the knowledge literature.

This paper is arranged as follows. First, it introduces the theoretical foundation, hypotheses development and methodology of this research, followed by the PLS-SEM measurement and

structural model assessment. The results of PLS-SEM and NCA are explained in the next section. Lastly, the discussion, implications, and conclusion are presented.

Theoretical Foundation and Hypotheses Development

Information Systems Success Model (ISSM)

ISSM is commonly used to assess the use and success of information systems (DeLone & McLean, 2016). According to ISSM, service quality, information quality, and system quality are the antecedent factors influencing satisfaction and behaviour intention to use (Hariguna & Ruangkanjanases, 2020). Satisfaction is conceptualised as a consumer's response to an overall system experience. Satisfaction facilitates behaviour intention to use. System quality assesses the desired features of an information system (e.g., speed of response, reliability); information quality measures the completeness and relevance of the system's content; and service quality refers to the overall support offered by the system (DeLone & McLean, 2004). While DeLone and McLean (1992) argued that direct measurement of the success of an information system may not always provide accurate prediction, behaviour intention to use serves as a helpful proxy for assessing the likelihood of system usage. System use measures the frequency of use, and the actual use of the system is facilitated by behaviour intention to use (DeLone & McLean, 1992).

ISSM has been applied in various studies, such as sport-branded app acceptance (Won et al., 2023), online banking (Almaiah et al., 2022), O2O mobile shopping (Kim et al., 2021), and mobile banking (Sharma & Sharma, 2019). Besides, Won et al. (2023) asserted that ISSM has a sufficient theoretical foundation to explain consumer behaviour, i.e., intention to use, and system use of mobile apps. Therefore, ISSM also allows practitioners to gain better insight into ways to optimise consumer experience based on quality dimensions and their impact on continuance intention, which lead to continuance use.

Mobile shopping continuance intention and continuance use

According to Chan et al. (2022), behaviour intention is an individual's likelihood of engaging in a specific act. In the context of information system use, continuance intention is the post-adoption behaviour that reflects a continuous usage of a system (Chopdar & Sivakumar, 2019; Shang & Wu, 2017). Tang et al. (2022) defined continuance use as a future action plan to accomplish an action on an ongoing basis. In comparison, Groß (2018b) referred to continuance use of a mobile shopping app as a strong and consistent commitment shown by a loyal consumer to re-use it in the future. In short, mobile shopping continuance intention implies that a consumer's future behaviour is determined by his post-purchase consumption experience. Meanwhile, continuance use is the result of continuance intention, which corresponds to the extent to which a consumer uses the underlying information system capability (Afira &Yuliati, 2019; Tamilmani et al., 2020). It is vital to highlight that continuance use also refers to the behaviour of expanding and continuing to engage in an app after its initial adoption (Zhou et al., 2019). As such, continuance use involves the usage of a mobile shopping app to repeat purchases of goods and services (Afira & Yuliati, 2019). Therefore, securing continuance intention is critical to guarantee continuance use which would maintain and/or increase business profitability, competitive advantage, and business sustainability (Thi et al., 2022).

Hypothesis development

Continuance intention and continuance use

Continuance intention is a post-adoption behaviour that can accurately predict continuance usage (Amoroso et al., 2017; Chopdar & Sivakumar, 2019; Veeramootoo et al., 2018). The impact of continuance intention on continuance use has been confirmed in relation to virtual learning (Liu et al., 2020) and mobile payment (Koloseni & Mandari, 2017). Similarly, studies on mobile shopping have confirmed that continuance intention has a significant influence on continuance use (Chopdar & Sivakumar, 2019; Yan et al., 2021). Amoroso et al. (2017) asserted that continuance intention substantially increases the inertia of established habits against changing, hence leading consumers to reuse the same app. Meanwhile, Zhou et al. (2019) contended that the continuation of intention is the motivator which leads to continued use. Nonetheless, this causal relationship received less attention in the Malaysian mobile shopping literature. Therefore, there is a strong need to affirm this relationship.

H1: Continuance intention has a significant influence on continuance use.

Trust and continuance intention

In this study, trust is conceptualised as a consumer's belief in the ability, benevolence, and integrity of mobile shopping players and sellers to keep their promises and obligations (Tarhini et al., 2019). Trust is essential in every online transaction including mobile shopping, to predict behavioural intention (Miyapuram et al., 2020; Wu et al., 2017). Similarly, Garrouch (2021) examined the continuance intention of mobile payment and discovered that trust is strongly associated with continuance intention. According to the theory of trust transfer, trust can be transmitted from mobile shopping platform players to sellers, thereby influencing consumer behavioural intentions (Putri et al., 2024). Since mobile shopping apps record information related to transactions, reviews, and ratings of the sellers, which can be reviewed and checked whenever necessary, a greater amount of trust is developed, leading to the continuance intention to shop. Moreover, mobile shopping app players have developed rules and policies to protect the consumers throughout the entire order fulfilment process which results in further enhancement of trust contributing to the formation of an intention to continue using the shopping app (Miyapuram et al., 2020; Odusanya et al., 2020). Therefore, it is posited that when consumers' trust is promoted throughout the entire shopping journey, they are more likely to have a higher mobile shopping continuance intention.

H2: Trust has a significant influence on continuance intention.

Incentive and continuance intention

Incentives refer to the rewards given to participants who participate in an activity (Chen & Ha, 2019). According to Bøe et al. (2021), incentives can be in monetary or non-monetary form. Cashback, discounts, vouchers, loyalty points, and special discounts are examples of incentives in the context of mobile shopping. It has been demonstrated that the provision of incentives promotes the likelihood of continuance intention to use (Bøe et al., 2021). Similarly, a study by Malik et al. (2019) discovered that incentives were the strongest factor influencing consumers towards mobile payment. This is expected because regular incentives or offers can stimulate impulsive behaviour, which increases app usage among consumers (Chopdar& Balakrishnan, 2020). In addition, Chopdar and Balakrishnan (2020) asserted that incentives can result in value recognition for mobile shopping apps, hence promoting continuance intention. Therefore, it is argued that when more incentives or a higher frequency of incentives are offered, consumers would form a perception that shopping via a mobile shopping app would reward them with

greater benefits. As such, it would be more likely for them to have a strong continuance intention to purchase products using such an app.

H3: Incentives have a significant influence on continuance intention.

Satisfaction and continuance intention

According to ISSM, satisfaction refers to a user's post-cognitive evaluation of an information system (Groß, 2018). Customer satisfaction is referred to as previous consumption experiences that met or exceeded their expectations (Hariguna & Ruangkanjanases, 2020). Similarly, Chiu et al. (2019) argued that in the multi-attribute model of satisfaction, the judgment of satisfaction is attributed to the formation of the overall satisfaction. Satisfaction has been found to have a significant influence on continuance intention when the intended goal is achieved (Hariguna & Ruangkanjanases, 2020; Jain et al., 2021; Koloseni & Mandari, 2017; Shang & Wu, 2017; Tang et al., 2022). This is in line with the conceptualisation of satisfaction. In the context of mobile shopping, satisfaction can be achieved when a mobile shopping app meets or surpasses consumer expectations in relation to mobile shopping activities (Groß, 2018; Tamilmani et al., 2020). In a similar study, Koloseni and Mandari (2017) asserted that consumers' intention to continue using mobile payment was prolonged when they were satisfied with the mobile payment app. Furthermore, given that new users will always cognitively compare the app experience with their expectations, satisfaction arises when the app experience exceeds their expectations (Hariguna & Ruangkanjanases, 2020). Their high satisfaction results in them being more likely to continue using the app. Therefore, it is posited that the more satisfied customers are with mobile shopping apps, the more likely they are to form a continuance intention to use these apps.

H4: Satisfaction has a significant influence on continuance intention.

Service quality and continuance intention

Service quality refers to the ability of an information system to meet consumers' needs and expectations. In the context of mobile shopping, the services provided by mobile shopping apps are measured by service quality in terms of responsive feedback, ability to support and answer personalised enquiries and needs, and competency in providing solutions throughout the entire order fulfilment process. Service quality was found to be an important factor influencing a consumer's continuance intention of an IT service (Jain et al., 2021), mobile payment system (Raman & Aashish, 2021), and mobile food apps (Hariguna & Ruangkanjanases, 2020). When service quality exceeds one's expectations, satisfaction is naturally promoted (Raman & Aashish, 2021). However, service quality was found not to be significant in influencing e-filing system continuance intention (Veeramootoo et al., 2018). According to Veeramootoo et al. (2018), the main purpose of using an e-filing system is to complete a specified task, hence system capabilities and performance are more important factors to consider compared to service quality. Since there are inconsistent findings on the relationship between service quality and continuance intention, further examination is required.

H5: Service quality has a significant influence on continuance intention.

Information quality and continuance intention

Information quality refers to the ability to provide sufficient, accurate, relevant, and up-to-date information from reliable sources (DeLone & McLean, 2004). Lee et al. (2019) defined information quality as a system's ability to provide accurate, useful, and significant information for decision-making. According to Lee et al. (2019), information quality reflects buyers' and sellers' basic capability to communicate. This factor is important in encouraging and assisting consumers to

complete their shopping transactions via a mobile shopping app (Tarhini et al., 2019). If such apps provide accurate, relevant and sufficient product information, they generate greater value and promote continuance intention to use (Lee et al., 2020). The continuance intention is also strengthened if consumers view that high quality information is more valuable in the process of using these apps (Chen and Tsai, 2019). As such, it will be more likely for consumers to form mobile shopping continuance intention in their subsequent shopping journey.

H6: Information quality has a significant influence on continuance intention.

System quality and continuance intention

According to DeLone and McLean (2004), a high-quality information system is reliable, intuitive, and has a quick response time. From consumers' perspective, a high-quality system embedded in a mobile shopping app shall possess the ability to generate quick response upon any search conducted and tracking of order fulfilment after payment is made. A low-quality system of such an app would cause a bad shopping experience and disappointment. The risk of rejection of the app by consumers becomes imminent. Similarly, the lack of system quality will reduce system performance, which will increase the difficulties for users and result in them losing interest to continue to use the system (Sharma & Sharma, 2019). Previous studies in e-learning management systems (Sharma et al., 2017) and e-filing services (Veeramootoo et al., 2018) supported this relationship. However, in a similar study by Chan et al. (2022) and Lee et al. (2020), it was found that system quality has no association with continuance intention. It is argued that when apps are optimised to be easy to understand and use, as well as quick in terms of transaction execution, the effect of system quality is weakened (Lee et al., 2020). Based on the preceding discussion, the finding is, however, inconclusive, thus requiring further examination.

H7: System quality has a significant influence on continuance intention.

Service quality and satisfaction

In line with ISSM, improved service quality leads to higher consumer satisfaction. According to Almaiah et al. (2022), a system's responsiveness and competent support directly reflect service quality, influencing consumer satisfaction. Consumers perceive that a mobile shopping app provides high service quality when the system is responsive, reliable, and competent. Sharma and Sharma (2019) argued that service quality influences user experience and contributes to consumer satisfaction with the app. In other words, excellent service quality delivered by mobile shopping apps would fulfil consumers' expectations and needs, thereby enhancing their experience and directly influencing their level of satisfaction (Chan et al., 2022). Previous similar studies in relation to banks' chatbot services (Nguyen et al., 2021), mobile payment systems (Raman & Aashish, 2021), and e-filing systems (Veeramootoo et al., 2018) have confirmed this relationship. Therefore, it can be deduced that a high service quality can promote satisfaction.

H8: Service quality has a significant influence on satisfaction.

Information quality and satisfaction

One of the main disadvantages of mobile shopping is the lack of ability to feel and touch the desired products, which is possible in a physical shopping environment. To make up for this flaw, mobile shopping apps shall ensure the availability and accuracy of information relating to products on sale. Almaiah et al. (2022) and Sharma and Sharma (2019) claimed that information quality has a direct impact on user experience, resulting in varying levels of satisfaction. The high-quality information provided by mobile shopping apps meets expectations, allowing consumers to effortlessly evaluate products and confirm their purchases, leading to satisfaction.

Explicit contents (complete, highly accurate and relevant information) provided by these apps would reduce the information gaps between sellers and consumers and reduce perceived risks and uncertainties in the making of a purchase decision, leading to better satisfaction (Kim et al., 2021; Nguyen et al., 2021). As such, it is posited that information quality enjoyed by consumers can lead to greater satisfaction of these apps.

H9: Information quality has a significant influence on satisfaction.

System quality and satisfaction

According to Chan et al. (2022), service quality is directly associated with system performance. A mobile shopping app that has high system quality would always be able to meet consumers' needs and requirements, thus enhancing their satisfaction (Tarhini et al., 2019). A poor system performance that falls short of consumers' expectations would result in a bad experience which could lead to an increase in complaints and dissatisfaction (Tamara et al., 2021). In relation to a mobile shopping app, system quality reflects its performance in terms of simplicity of use, reliability, and responsiveness in searching and displaying the desired products on the search results page, which are vital factors contributing to satisfaction. Veeramootoo et al. (2018) and Zhou (2013) confirmed the positive impact of system quality on satisfaction. On the contrary, in research conducted in relation to banks' chatbot service, Nguyen et al. (2021) explained that a system quality is less important because it is a basic requirement that chatbots have to carry out online conversations effortlessly. Therefore, further investigation into the influence of system quality on satisfaction is required.

H10: System quality has a significant influence on satisfaction.

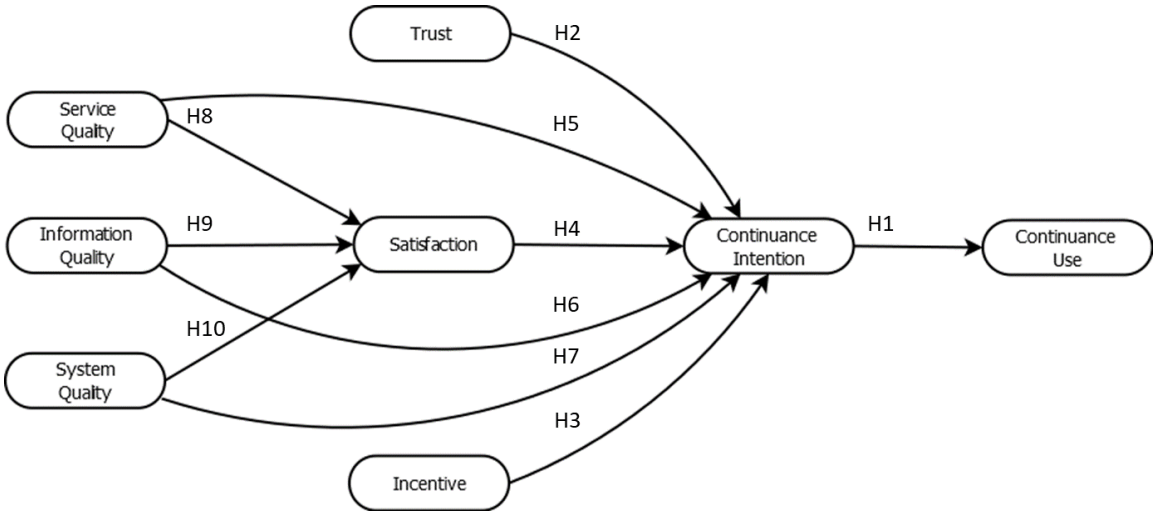

Figure 1: Proposed conceptual model.

METHODS

The present study utilized a cross-sectional study design. Cross-sectional studies obtain population data at a single point in time, allowing researchers to study prevalent behaviours and

traits, and generate insights at that moment in time (Thomas, 2023). The quantitative technique fits the principles of positivist philosophy, which employs statistics to seek empirical evidence to explain the association or phenomena investigated (Yannis & Nikolaos, 2018).

Targeted population and data collection

In this study, purposive sampling technique was applied. With the use of purposive sampling, researchers can examine and describe the primary factors for a particular population of interest. An online survey was conducted via Google form to obtain responses from the targeted population in the Klang Valley, Malaysia. Online surveys are more efficient since they reduce both time and cost on data collection. Furthermore, respondents may participate in the survey at their own convenience. The Klang Valley was chosen as it is a conglomerate-centric city with a dense population with diverse cultures (Tang et al., 2022, 2023; Tang & Huam, 2023). Furthermore, since the Klang Valley is Malaysia's economic hub and is the most populated urban area, any observation of consumer behaviour here can better reveal any possible emerging behavioural shift for the whole country (Ariffin et al., 2023; Marzouk, 2019).

Two screening questions were included in the questionnaire, i.e., to verify the location they reside, and whether they currently own any mobile shopping app account, such as Lazada, Shopee, Taobao, etc. The screening questions guaranteed that the respondents are Klang Valley residents as well as active mobile shopping app users who can contribute to a comprehensive understanding of the current trend in mobile shopping.

Sample size

*G**Power statistical power was used as a supplement to calculate the minimal sample size (Memon et al., 2020). With a effect size of 0.15, at 95 percent alpha value, 0.8 probability and 6 predictors, a minimum sample size of 98 respondents was estimated. Subsequently, 369 responses were collected, which surpassed the recommended minimum sample size.

Instrument

There was a total of 33 measurement items. The respondents' attitudes, experiences, and opinions in relation to each of these constructs were solicited using a five-point Likert scale.

The measurement of *continuance intention* consisted of three items developed by Oertzen and Odekerken-Schröder (2019). It measures the likelihood of continuance use of mobile shopping apps (Chopdar & Sivakumar, 2019). The sample item includes "I would like to discontinue use of the mobile shopping app.", and it reported a composite reliability (CR) of 0.819.

Continuance use was operationalised as "I use the mobile shopping app intensively". It is defined as the subsequent usage behaviour of an app (Chopdar & Sivakumar, 2019). The measurement item consists of four items and were adopted from Koloseni and Mandari (2017). The CR for continuance use was 0.823.

Satisfaction is defined as an evaluation of the overall consumption experience, which consists of four measurement items. A sample item for this variable includes "I am satisfied with the experience of using a mobile shopping app", which was developed by Hsu et al. (2006). This variable had the highest CR of 0.899 compared to others.

Trust has six measurement items developed by Groß (2018b). Trust measures the honesty, ability, integrity, and benevolence of mobile shopping apps. An example of the items includes, "Based on

my experience with mobile shopping apps in the past, I think that the app is trustworthy". The CR value for trust was 0.849.

The *incentives* have three measurement items as developed by Malik et al. (2019). It measures the monetary benefits awarded to users for continuing using the mobile shopping app. An example of the measurement items for incentives includes, "I use the mobile shopping app as it provides me with various discounts". The CR value of the incentive was 0.796.

Service quality measures the responsiveness, reliability, accuracy, and competency of mobile shopping apps. This study adopted the measurement items developed by Yang et al. (2017) which has four measurement items. An example of the items includes, "The customer service provided by mobile shopping apps is reliable". This variable had a CR value of 0.823.

System quality measures the responsiveness, reliability, accuracy, and competency of mobile shopping apps. It has five measurement items developed by Budiardjo et al. (2017). A sample of the measurement items includes "the mobile shopping app is easy to use". The CR of system quality was 0.840.

Information quality has four measurement items developed by Zhou (2013). Information quality measures the content adequacy, timeliness, relevancy, and sufficiency provided by mobile shopping apps. A sample of the measurement items includes, "The mobile shopping app provides me with accurate information". The CR of information quality was 0.807.

The survey questions were modified to reflect the current study's setting. To improve the questionnaire's construct representativeness and clarity, pre-testing and pilot tests were conducted (Memon et al., 2017). First, two academic staff who specialise in marketing and one industry expert were invited to review and provide feedback on the questionnaire (Memon et al., 2023). Based on the feedback received, questions were revised to improve the comprehension of the respondents. A pilot test was conducted, and the results achieved were above Cronbach's alpha value of 0.7. Thus, it can be assumed that the results satisfied the internal reliability requirement.

Demographic Profile

There are 369 usable samples collected for data analysis. Referring to Table 1, there were 150 male respondents (40.65%) and 219 female respondents (59.35%). According to Crosby (2022) and, Mulder and de Bruijne (2019), females constitute the majority of online users who are more willing to communicate, maintain interpersonal relationships, contribute contents, and participate in surveys. This explains why the majority of the respondents in this study females were. The majority of the respondents were between 18 to 24 years old, which accounted for 56.37%, followed by 25 to 29 years old, which was 22.49%. Besides, the Chinese were the majority of respondents in this study, followed by Malays, which was 58.54% and 27.37% respectively. The imbalance demographic profile in terms of age and ethnicity may affect the results of this study. Among the respondents, 212 of them possessed an undergraduate degree (57.45%), 85 of them were diploma holders (23.04%), 26 completed secondary education (Year 11) (7.05%), and 21 had completed foundation, STPM, or A-level education (5.69%). Lastly, when asked about their frequency of mobile shopping in the past three months, the majority of them shopped 4 to 6 times (35.89%), followed by 1 to 3 times (30.89%), 7 to 10 times (20.87%), and more than 11 times which accounted for 12.47%.

Common method bias

The researchers applied a statistical approach to determine common method bias. A full multicollinearity test to examine any possibility of common method bias as suggested by Kock (2015) was conducted. Such bias is likely to be present if the variance inflation factor (VIF) is more than 3.3. The VIF values of the data from this research ranged from 1.471 to 2.208. This indicated that the constructs of this research did not affect the relationship between variables, thus confirming the reliability of the results.

Table 1: Respondents' demographic profile (*N*=369)

Attribute	Value	Frequency	%
Gender	Male	150	40.65
	Female	219	59.35
Age	Below 17 years old	8	2.17
	18 – 24 years old	208	56.37
	25 – 29 years old	83	22.49
	30 – 34 years old	44	11.92
	35 – 39 years old	16	4.34
	Above 40 years old	10	2.71
Ethnicity	Malay	101	27.37
	Chinese	216	58.54
	Indian	49	13.28
	Others	3	0.81
Education Level	Secondary school	26	7.05
	Foundation/STPM/A-level	21	5.69
	Diploma	85	23.04
	Undergraduate	212	57.45
	Postgraduate	25	6.78
Mobile shopping frequency (in the past 3 months)	1 – 3 times	114	30.89
	4 – 6 times	132	35.77
	7 – 10 times	77	20.87
	More than 11 times	46	12.47

DATA ANALYSIS AND RESULTS

The PLS-SEM and NCA approaches were used to investigate the hypotheses of this study. The data analysis was divided into two stages. First, the data was examined by applying the Partial Least Square Structural Equation Modelling technique with SEMinR in R to determine the relationship between the variables (Chuah et al., 2021). Second, the NCA package in R was used to examine the sufficiency logic among the variables to discover the different impact of the predictors on the outcome variable (Richter et al., 2020). This analysis was imperative because though the predictors are sufficient, but they do not necessarily produce the outcome.

The NCA approach steps in to resolve this weakness as it can identify the extent of a specific condition required to contribute to an outcome (Richter et al., 2020). Thus, researchers can determine the must-have and should-have predictors which can produce the best outcome. In this study, the relationships to the outcome variables were tested by applying the CE-FHD (Ceiling Environment – Free Disposal Hull) lines, a default discrete data analysis technique in the NCA.

This technique assumes the ceiling is non-decreasing in the Free Disposal Hull (FDH) data environment in order to obtain ceiling approximation. In an XY scatter plot, it calculates the empty space and draws the ceiling line on the top of the data. A large empty space indicates that a high value of Y cannot be obtained with a low value of X (Sorjonen et al., 2017). Furthermore, we examined the effect size and significant results. The NCA effect size, which ranges from 0 to 1, indicates the size of empty space relative to total space and is widely used to test a hypothesis. However, hypothesis testing based on effect size may result in an unjustified conclusion; therefore Dul et al. (2020) suggested that the statistical test based on the p-value should be adopted instead.

Measurement model assessment

First, the measurement model was assessed to ensure that the constructs met the required internal consistency, composite reliability and convergence reliability (Ramayah et al., 2018). Table 2 shows the results of constructs' item factor loading, Cronbach Alpha, composite reliability (CR) and Average Extracted Variance (AVE). All the items' factor loadings were above the threshold value of 0.7 except for item Trust5 which had a factor loading less than 0.6. Nonetheless, items which had a factor loading between 0.6 and 0.7 were retained as the values of CR and AVE were above the 0.5 threshold value. The constructs' discriminant validity was further analysed based on the Heterotrait-Monotrait (HTMT) (see Table 3). These results showed that good internal consistency reliability, and discriminant validity were established.

Structural model assessment

As presented in Table 4, nine out of ten hypotheses posited in this study are supported except for hypothesis 9 i.e. information quality (β=0.013, p-value >0.05) has no association with satisfaction. The results show that continuance intention (β=0.629, p-value <0.001) has a significant relationship with continuance use. Thus, hypothesis 1 is supported. Hypothesis 2 to hypothesis 8 and hypothesis 10 are also supported, which includes trust (β = 0.132, p-value < 0.01), incentive (β= 0.158, p-value <0.001), satisfaction (β = 0.174, p-value < 0.001), service quality (β = 0.144, p-value < 0.01), information quality (β = 0.223, p-value <0.001), and system quality (β =0.161, p-value < 0.01). These factors are found to have a positive significant relationship with the endogenous variable, i.e., continuance intention. In addition, service quality (β = 0.111, p-value < 0.05) and system quality (β=0.415, p-value <0.001) are found to have a positive significant relationship with satisfaction. Notably, information quality (β=0.223) has the highest standardised beta weight followed by satisfaction (β=0.174), system quality (β=0.161), and incentives (β=0.158) in predicting continuance intention. Lastly, system quality (β=0.415) has the highest standardised beta weight associated with satisfaction. Figure 2 shows the PLS path model and estimation result.

The result shows that satisfaction has an R^2 value of 0.244, while continuance intention has an R^2 value of 0.579, and continuous use has an R^2 value of 0.384. Results also indicate that system quality (f^2 = 0.129) has a small effect size on satisfaction, while service quality (f^2 = 0.010) and information quality (f^2 = 0.000) do not affect satisfaction. It also proves that service quality (f^2 = 0.026), system quality (f^2 = 0.027), information quality (f^2 = 0.062), incentive (f^2 = 0.032), trust (f^2 = 0.023), and satisfaction (f^2 = 0.44) have a small effect on continuance intention.

Necessary Condition Analysis (NCA)

Table 5 highlights the results of NCA of the outcome variables, i.e., satisfaction, continuance intention, and continuance use. The results indicate that, except for system quality (d = 0.125, p < 0.001), both service quality (d = 0.019, p > 0.05) and information quality (d = 0.051, p > 0.05)

are not the necessary conditions for satisfaction as they achieve a small effect size. However, according to PLS-SEM results, service quality has a significant impact on satisfaction, but it is not a necessary condition as seen in the NCA results. This indicates that though service quality can play a part in generating satisfaction, it is not a necessary condition to guarantee satisfaction.

Table 2: Reliability, Composite Reliability (CR) and Average Variance Extracted (AVE)

Construct	Items	Loading	Cronbach alpha	CR	AVE
ServQ	ServQ1	0.775	0.717	0.823	0.538
	ServQ2	0.747			
	ServQ3	0.670			
	ServQ4	0.739			
SysQ	SysQ1	0.656	0.761	0.840	0.514
	SysQ2	0.666			
	SysQ3	0.761			
	SysQ4	0.828			
	SysQ5	0.658			
InfoQ	InfoQ1	0.659	0.683	0.807	0.511
	InfoQ2	0.766			
	InfoQ3	0.685			
	InfoQ4	0.745			
Inc	Inc1	0.634	0.624	0.796	0.568
	Inc2	0.795			
	Inc3	0.819			
Trust	Trust1	0.810	0.777	0.849	0.530
	Trust2	0.763			
	Trust3	0.726			
	Trust4	0.670			
	Trust6	0.661			
Sat	Sat1	0.841	0.850	0.899	0.690
	Sat2	0.843			
	Sat3	0.823			
	Sat4	0.815			
ContInt	ContInt1	0.739	0.676	0.819	0.604
	ContInt2	0.881			
	ContInt3	0.701			
ContUse	ContUse1	0.672	0.720	0.823	0.539
	ContUse2	0.783			
	ContUse3	7.768			
	Contuse4	0.707			

Table 3: Discriminant Analysis – HTMT

	ServQ	SysQ	InfoQ	Inc	Trust	Sat	ContInt	ContUse
ServQ								
SysQ	0.715							
InfoQ	0.803	0.825						
Inc	0.671	0.776	0.761					
Trust	0.736	0.774	0.733	0.726				
Sat	0.433	0.605	0.427	0.617	0.584			
ContInt	0.778	0.840	0.860	0.848	0.782	0.649		
ContUse	0.522	0.654	0.576	0.688	0.685	0.626	0.821	

Note 1: Below HTMT$_{.90}$

Table 4: Bootstrapped path coefficient

	Paths	Beta	Std. Error	*t*	LLCI	ULCI	Result
H1	ContInt→ContUse	0.619	0.031	19.754	0.560	0.682	Supported
H2	Trust →ContInt	0.133	0.051	2.622	0.035	0.232	Supported
H3	Inc → ContInt	0.157	0.044	3.580	0.071	0.242	Supported
H4	Sat → ContInt	0.178	0.040	4.437	0.100	0.255	Supported
H5	ServQ→ContInt	0.140	0.044	3.177	0.049	0.227	Supported
H6	InfoQ→ContInt	0.221	0.046	4.772	0.128	0.313	Supported
H7	SysQ→ContInt	0.161	0.050	3.204	0.062	0.259	Supported
H8	ServQ→Sat	0.111	0.058	1.927	0.002	0.229	Supported
H9	InfoQ→Sat	0.013	0.062	0.207	-0.105	0.133	Not Supported
H10	SysQ→ Sat	0.415	0.056	7.465	0.304	0.521	Supported

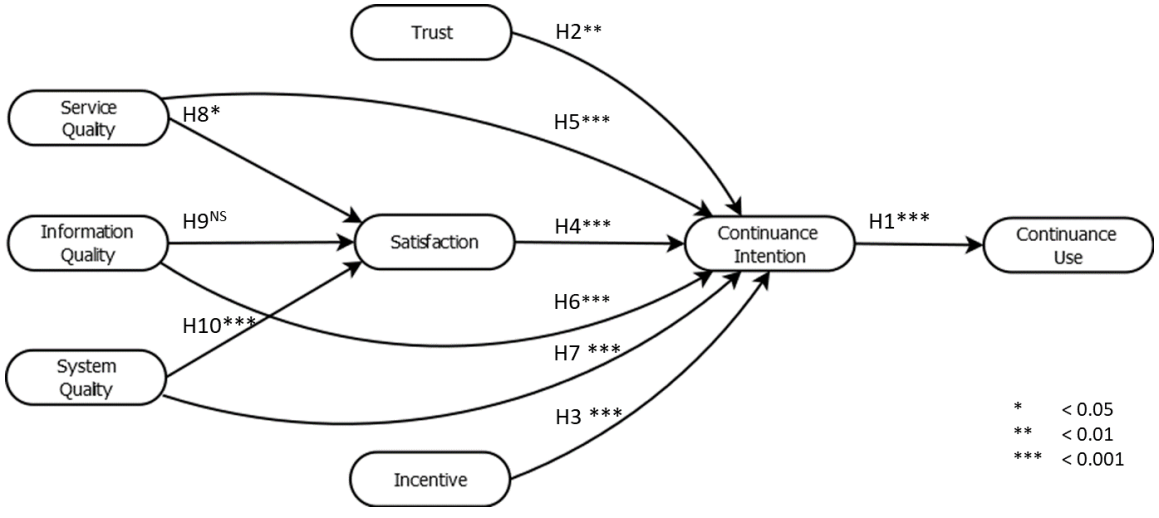

Figure 2: Structural Model

In relation to the outcome variable of continuance intention, all the predictors are necessary factors with a p-value less than 0.001. Incentives ($d = 0.348$, $p < 0.001$) have a large effect size on continuance intention and the highest effect size among the predictors. This is followed by satisfaction ($d = 0.343$, $p < 0.001$) and service quality ($d = 0.316$, $p < 0.001$). Thus, these three predictors have a large effect size. Meanwhile, system quality ($d = 0.276$, $p < 0.001$), trust ($d = 0.276$, $p < 0.001$), and information quality ($d = 0.275$, $p < 0.001$) have a medium effect size on continuance intention. We further examined the necessary conditions for continuance use and found that continuance intention ($d = 0.221$, $p < 0.001$) has a medium effect size on continuance use.

Table 6 shows the bottleneck analysis which specifies the level at which the necessary condition should occur in order to achieve a certain level of outcome variable, i.e., satisfaction and continuance intention. The results indicate that to reach a 50% level of satisfaction, system quality needs 9.3% in place. Likewise, to reach a 50% level of continuance intention, service quality shall be at no less than 32.6%, while system quality, information quality, incentive, trust and satisfaction are required at no less than 18.5%, 22.1%, 27.9%,28.3% and 41.7%, respectively. Figure 3 illustrates the scatter plots of these effects.

Table 5: NCA effect size

Determinant	Outcome	Ceiling lines	Effect size (d)	P-value
ServQ	Sat	CE_FDH	0.019	0.529
SysQ	Sat	CE_FDH	0.125	0.000
InfoQ	Sat	CE_FDH	0.051	0.068
ServQ	ContInt	CE_FDH	0.316	0.000
SysQ	ContInt	CE_FDH	0.276	0.000
InfoQ	ContInt	CE_FDH	0.274	0.000
Inc	ContInt	CE_FDH	0.348	0.000
Trust	ContInt	CE_FDH	0.276	0.000
Sat	ContInt	CE_FDH	0.343	0.000
ContInt	ContUse	CE_FDH	0.221	0.000

Note: $0 < d < 0.1$ = small effect; $0.1 \leq d < 0.3$ = medium effect; $0.3 \leq d < 0.5$ = large effect; $d \geq 0.5$ = very large effect

DISCUSSION

Hypothesis 1 is supported. The findings are consistent with Chopdar and Sivakumar (2019), Asiaei and Nor (2019) and Koloseni and Mandari (2017), in which mobile shopping app continuance intention is associated with continuance use. Based on the results from the PLS estimation, the association strength is high, and the influence of intention on continuance use is moderate ($R^2 = 0.384$), with strong explanatory power ($f^2 = 0.623$). Similarly, the NCA results show that intention to continue has a moderate effect and significantly proves to be a necessary factor for the success of continuance use of mobile shopping apps. It can be inferred that consumers will continue using mobile shopping apps when their intention to continue is high. Furthermore, when consumers are enthusiastic to explore the app, their intention to continue using it increases, which influences their continuance use (Asiaei & Nor, 2019). Given both theoretical and empirical evidence, it can be asserted that the intention to continue is the driving force behind initial mobile shopping users' continuance use of mobile shopping apps for subsequent purchases (Koloseni & Mandari, 2017; Sharma & Sharma, 2019).

Table 6: Bottleneck Table

	ServQ	SysQ	InfoQ	Inc	Trust	Sat
Bottleneck Satisfaction						
0	NN	NN	NN			
10	NN	NN	NN			
20	NN	NN	NN			
30	NN	NN	NN			
40	NN	NN	NN			
50	NN	7.9	NN			
60	NN	9.2	NN			
70	NN	29.1	10.0			
80	NN	29.1	10.0			
90	NN	29.1	10.0			
100	22.8	37.0	31.6			
Bottleneck Continuance Intention						
0	NN	NN	NN	NN	NN	NN
10	NN	NN	NN	NN	NN	NN
20	10.6	18.5	12.2	27.9	18.1	16.9
30	10.6	18.5	12.2	27.9	18.1	16.9
40	32.6	18.5	12.2	27.9	28.3	41.7
50	32.6	18.5	22.1	27.9	28.3	41.7
60	55.1	48.3	45.0	56.8	39.3	50.1
70	55.1	48.3	45.0	56.8	39.3	50.1
80	55.1	48.3	55.0	56.8	50.0	58.2
90	55.1	48.3	55.0	56.8	50.0	58.2
100	55.1	48.3	55.0	56.8	50.0	58.2
Bottleneck Continue Use						
0						NN
10						19.7
20						19.7
30						19.7
40						19.7
50						19.7
60						19.7
70						19.7
80						19.7
90						39.3
100						39.3

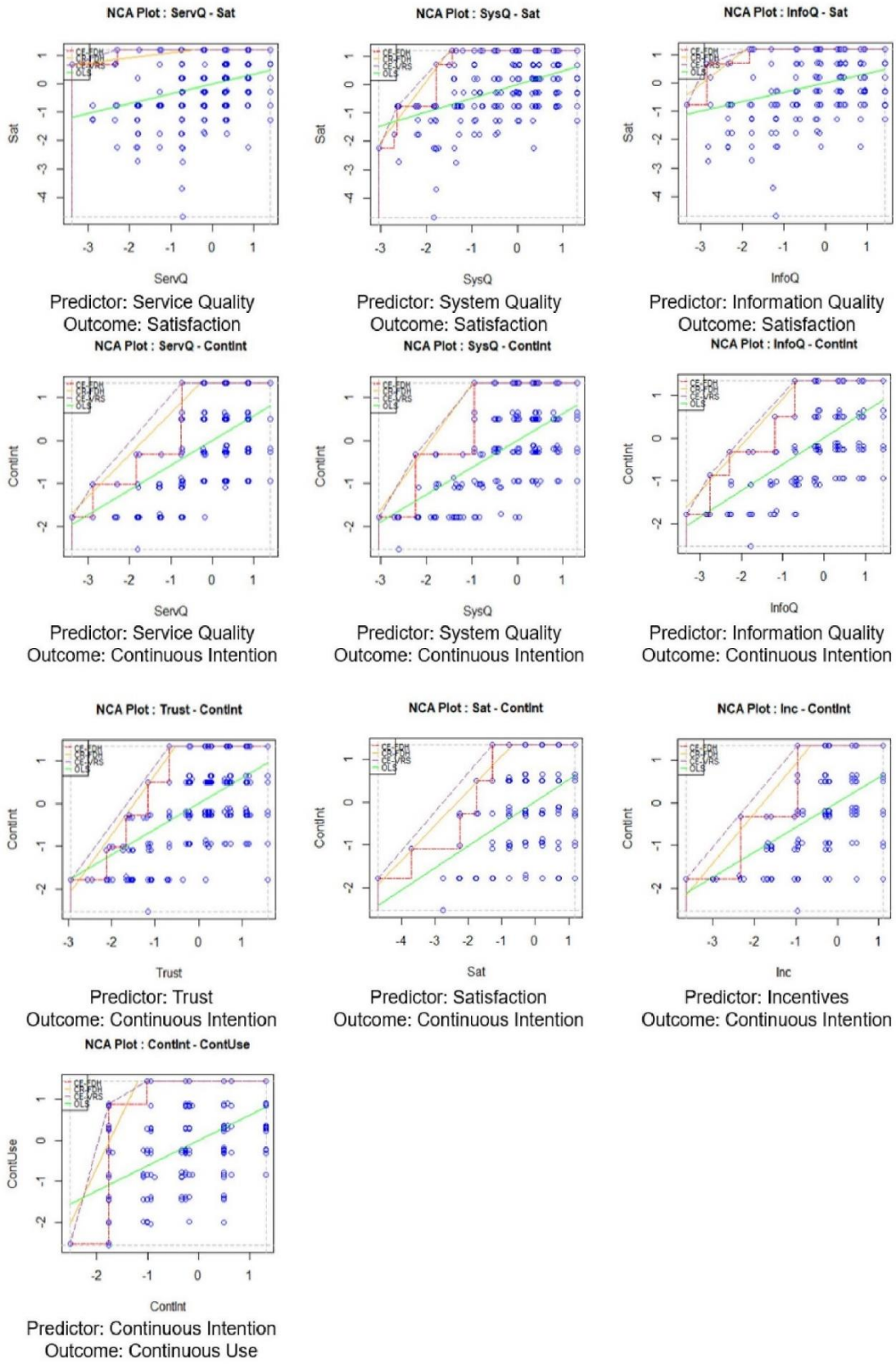

Figure 3: NCA Plot: Ceiling Line for satisfaction, continuous intention, and continuous use

Hypothesis 2 is supported. Trust has a positive significant relationship with continuance intention. According to the NCA analysis, trust is one of the critical characteristics that leads to continuance intention. This finding is consistent with the findings of prior studies in this area which discovered that trust has a significant influence on continuance intention of online shopping (Amoroso et al., 2017; Hidayat-ur-Rehman et al., 2016; Marinković et al., 2020). This is not surprising as it is expected that consumers are concerned about the security of payment systems, and the integrity and benevolence of online sellers. Yet, from the results, trust has the least effect size compared to the other predictors. A possible justification for this finding is that consumers perceive that their interest is already well-secured to a certain extent. Mobile shopping platforms readily mediates any dispute arising between their consumers and sellers in order to minimise bad publicity which ensues if these disputes are not handled appropriately. Besides, the government via the Consumer Protection Act (1999) had introduced the Tribunal for Consumer Claims, a speedy and cost-efficient method for consumers to redress their grievances against sellers over complaints of defective products or unethical business practices.

Hypothesis 3 is supported. Previous studies in e-learning technology (Bøe et al., 2021) and mobile payment apps (Malik et al., 2019) also produced similar outcomes. Based on the NCA results, incentives have the highest effect size in relation to continuance intention. This necessarily means that incentives are the must-have factor to promote the formation of continuance intention to use mobile shopping apps (Bøe et al., 2021). The finding also confirms that incentives is the primary driver which determines Malaysian consumers' continuance intention and continuance use of a mobile shopping app. Once consumers realise that the incentives offered by mobile shopping apps increase the value of their purchases, they are more likely to have a continuance intention using them (Chen & Ha, 2019; Chopdar& Balakrishnan, 2020). Besides, Cheng et al. (2022) claimed that incentives make it difficult for consumers to resist the temptation to buy, thus it is not surprising that incentives are the main reason driving continuance intention (Tamara et al., 2021).

Hypothesis 4 is supported. Satisfaction was found to have an association with continuance intention (H4). The findings supported by Chiu et al. (2019), Jain et al. (2021), Al-Hattami (2021), and Tseng et al. (2022), are suggesting that if consumers are satisfied with the apps, their continuance intention will prolong. The NCA results reveal that satisfaction remains an essential factor with a large effect size contributing to continuance intention after incentives. This implies that when a person's overall experience meets his expectations and goals, it promotes his enthusiasm to have a continuance intention (Tang et al., 2022). Studies by Tamilmani et al. (2020), Tamara et al. (2021), and Thi et al. (2022) proved that satisfaction is the most promising predictor of continuance intention. However, our study finds that satisfaction has lower standardised beta weight than information quality which differs from the findings of these three studies. Since online shopping is inherently risky, Malaysian consumers place a greater importance on accurate, relevant, and reliable product than satisfaction in influencing their continuance intention to use the app in their shopping journey. In summary, if a consumer is fully satisfied, he will continue to use the mobile shopping app for future transactions.

Hypothesis 5 is supported. Hypothesis 5 examines the relationship between service quality and continuance intention. The findings are aligned with the research conducted on mobile payment systems (Raman & Aashish, 2021), e-appointment apps (Lee et al., 2020), and massive open online course (MOOCs) (Yang et al., 2017). According to our NCA results, service quality is a must-have factor contributing to mobile shopping app continuance intention. These findings conclude that high service quality encourages users to inculcate a stronger intention to use a system continuously. As mentioned earlier, service quality does not affect the continuance intention for ERP systems (Jo & Bang, 2023) and e-filing systems (Veeramootoo et al., 2018). The complexity of different systems may explain why service quality has different effects on continuance intention. For more complicated systems, service quality is critical during the initial

implementation. However, as time passes, it is assumed that other factors may have a stronger influence on continuance intention (Yang et al., 2017) or dependency on support offered is reduced (Jo & Bang, 2023).

Hypothesis 6 is supported, which proves that information quality influences continuance intention. It is consistent with the research conducted in relation to e-appointment apps (Lee et al. (2020) and food delivery apps (Lee et al. (2019). However, the NCA reveals that information quality only had a medium effect size on the formation of mobile shopping app continuance intention when compared with the other predictors. This could be due to the availability of other sources of information which consumers may rely on to learn more about products and sellers such as family and friends and word of mouth through various social media platforms. Nonetheless, information quality remains an essential factor for consumers in selecting products as they would still rely on it to compare products before making a purchase (Lee et al., 2019). Consumers will only remain loyal and continue to use a mobile shopping app if it provides superior product information to enable them to evaluate and decide on their purchases.

Hypothesis 7 is supported. It posits that system quality is associated with continuance intention (H7), and this is affirmed by previous studies (Tseng et al., 2022; Veeramootoo et al., 2018; Yang et al., 2017). A mobile shopping app is a multi-faceted system that comprises product presentation, catalogue, transaction and order fulfilment, payment, customer service, and others. Ease of use, reliability, and quick response significantly contribute to the system's quality and considerably strengthen users' motivation to have a continuance intention of using it (Veeramootoo et al., 2018). A better system quality offered by mobile shopping apps would make it easier for consumers to adapt to the app. Besides, greater accuracy and reliability in product search, acquisition, payment, and product delivery would enhance consumers' experience leading to a higher possibility of forming mobile shopping app continuance intention. However, the NCA results demonstrate that system quality only has a medium effect size on continuance intention.This does not negate the importance of service quality as it must be remembered that the primary purpose of mobile shopping apps is to support consumers throughout their purchasing journey. As such, consumers are particularly concerned with the system performance, especially if the app is sophisticated, Lee et al. (2020). Thus, system quality is one of the must-have factors that strengthens mobile shopping app continuance intention.

Hypothesis 8 is supported. Hypothesis 8 posits that service quality has a significant relationship with satisfaction. Our findings support this hypothesis, which is similar to the studies conducted by Jain et al. (2021), Kim et al. (2021) and Nguyen et al. (2021); which show that the service quality level of a system determines the overall satisfaction of consumers. The capability of a mobile shopping app to respond to enquiries promptly and provide relevant answers and solutions will allow consumers to perceive its service quality favourably, thus promoting their satisfaction. However, in contrast with the PLS results, the NCA results suggest that service quality is not a must-have factor contributing to satisfaction. This could be due to the ability of all mobile shopping apps to include comprehensive support features that allow consumers to report and communicate their difficulties directly to the app provider or seller via the chat system. Furthermore, when the app is developed effectively and intuitively, system reliability increases, and consumer's shopping pain points are eliminated (Lee et al., 2020). As a result, service quality is not a must-have factor in this case.

Hypothesis 9 is not supported. The results show that information quality does not have a significant relationship with satisfaction. This result contradicts ISSM and other studies by Kim et al. (2021), Nguyen et al. (2021), Almaiah et al. (2022), and Tseng et al. (2022). These studies argued that information quality affects user experience and, results in satisfaction. However, from our study, information quality is associated with continuance intention but not with satisfaction. One plausible explanation is that the product information is presented according to the

requirements imposed by each shopping app and is almost identical among the different apps and sellers, making it nearly impossible to distinguish product characteristics (Amsl et al., 2023). Moreover, in mobile shopping, the quality of information may not be a main concern to promote satisfaction because the apps have implemented a system of rating sellers and the best-recommended or preferred seller will always appear at the top of the list in the search results. This enables consumers to shop confidently. As a result, the impact of information quality on satisfaction is reduced and this is further confirmed by the NCA.

Hypothesis 10 is supported. It investigates the relationship between system quality and satisfaction. According to the PLS results, system quality is the strongest predictor of mobile shopping app satisfaction which is consistent with Tamara et al. (2021). Similarly, the NCA results demonstrate that, when compared with service quality and information quality, system quality is the only must-have factor that contributes to customer satisfaction. The finding supports this hypothesis. Mobile shopping apps are more complex than chatbot services. Hence, system quality is still crucial to improve satisfaction. The impact of quality system would be less significant if the app is simple and straightforward (Nguyen et al., 2021). The finding again confirms that a high system quality of a mobile shopping app can eliminate the difficulties and frustrations faced in conducting product search, selection, payment, and order fulfilment monitoring, thus improving consumer satisfaction. Nowadays, consumers demand an easy-to-use app that allows them to quickly conduct product search and acquisition, as well as with an intuitive design and fast response time. Consumers no longer tolerate poor system quality apps (Tamara et al., 2021); therefore, system quality has a direct impact on their satisfaction.

Theoretical Contributions

First, this study significantly extends the Information System Success Model (ISSM) by incorporating previously unexplored dimensions related to mobile shopping. Specifically, we introduced incentives and trust as critical factors within the model. By addressing gaps in the existing literature, our research contributes to a more comprehensive understanding of mobile shopping behaviour.We further validated the ISSM by applying the Necessary Condition Analysis (NCA). This approach enhances the robustness of our findings. These insights contribute to theory-building and provide a deeper understanding of user behaviour. To the best of our knowledge, the use of PLS-SEM and NCA to validate ISSM in a mobile shopping-related study is scarce. Our research bridges this gap and sheds light on the factors driving continuance intention and continuance use in the mobile shopping context.

Practical Implications

Apart from the theoretical contributions, the findings of this study can provide valuable practical recommendations to practitioners. The findings demonstrate that incentive, trust, system quality, service quality, information quality, and satisfaction are must-have factors influencing continuance intention, which leads to continuance use of a mobile shopping app in the new normal era. In addition, continuance intention is found to contribute a medium effect size on continuance use.

Both service quality and system quality have a significant positive influence on consumer satisfaction, which lead to continuance intention and subsequently, mobile shopping app continuance use. Based on the results obtained from the NCA, system quality is the only critical factor contributing to satisfaction. Nevertheless, it only has a small effect on satisfaction. In other words, system quality is more crucial compared to service quality in promoting satisfaction in mobile shopping. High-quality mobile shopping software alleviates customer purchasing pain points in searching, comparing, evaluating, and even deciding which product to purchase. Thus,

mobile shopping app developers are advised to incorporate app features that can enhance consumer experience by expediting their shopping journey and ensuring that their app is user-friendly, to promote satisfaction. Smooth navigation with clear menus and categories, responsive design for different mobile devices, simplified customer service with quick links or in-app chat, transparent dispute and claim procedures, and seamless integration from the website and third-party apps are all examples of features that can improve system, information, and service quality.

The findings show that among the six factors, incentives are the most fundamental factor that contributes to mobile shopping continuance intention, followed by satisfaction, and service quality. All these three factors have a large effect size. This implies that incentives in the form of coupons, limited flash discounts, and cash rewards are the primary reason preventing consumers from leaving the app, as incentives create high switching costs. Mobile shopping app players can leverage various forms of incentives to retain their loyal consumers during certain seasonal or shopping festivals. The findings also indicate that satisfaction is an important factor and a must-have factor in maintaining business competitiveness. Mobile shopping players and app designers should focus on the steps to improve the satisfaction of early adopters to convert them into loyal consumers, which leads to continuance intention and continuance use for long-term sustainability. First, in order to improve service quality, app developers shall design systems which can provide a quick response, right solution and assistance in resolving consumer concerns relating to product, payment, and delivery. Customer service via chatbot should be enhanced as this allows consumers to effortlessly connect and seek customer support and assistance to resolve any issues faced. Subsequently, the social customer relationship management system can be used to further improve business relationships and reduce customer churn.

Meanwhile, the NCA results also show that system quality, information quality, and trust have a medium effect on continuance intention. A good and reliable system is an important factor in supporting consumers effectively and efficiently in their shopping journey to promote satisfaction and continuance intention. Mobile shopping app developers must carry out routine maintenance and system optimisation to maintain the reliability and quality of their system and information. The information offered by a mobile shopping app should be relevant to the consumers' needs and able to distinguish between different products and aid in product selection. Mobile shopping app players and developers can personalise information needs based on consumers' activities and preferences. To strengthen consumer trust, badges that distinguish trustworthy or official sellers from others, as well as third-party authentication services such as VeriSign or TRUSTe, can be employed.

CONCLUSION

The findings obtained from the PLS-SEM data analysis have confirmed that service quality and system quality are associated with satisfaction. Consistent with other studies, the results also show that service quality, system quality, information quality, satisfaction, incentives, and trust have a positive significant relationship with mobile shopping continuance intention. Through the NCA, the must-have predictors that contribute towards continuance intention are further identified. The combination of the two approaches in this study enables researchers to identify sufficient and necessary factors that contribute to mobile shopping continuance intention. Incentives, satisfaction, and service quality are the critical factors with a large effect on continuance intention. Meanwhile, continuance intention has a medium effect on continuance use.

Certain limitations of this study might be addressed in future research. First, the sample might have caused some degree of bias as the majority of the respondents were between 18 to 24 years old and are Chinese who reside in Klang Valley, Malaysia. Future research should include

respondents from a wider geographical location, age, and ethnicity. Secondly, this study applied ISSM with additional predictors such as incentives and trust. We suggest that researchers integrate ISSM with flow theory to better understand how customers are motivated to engage in mobile shopping.

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