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Modelling services continuance intention

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Modelling Services Continuance Intention: Evidence from Apps stores

Abstract

Purpose - The objective of this study is to examine the drivers of retail Apps satisfaction and continuance intention. An integrative theoretical framework was developed based on the IS success model, E-S-QUAL and Expectancy and Disconfirmation model to explain retail Apps users' satisfaction and continuance intention.

Design/methodology/approach - A total of 359 usable data were collected from the targeted Malaysian respondents who had experience in using retail Apps services. Data were analysed using the partial least squares technique.

Findings - The results indicate that system quality and e-service quality positively influence retail Apps usage satisfaction and have positive direct and indirect effects through satisfaction on continuance intention. The price level has a negative effect on retail Apps usage satisfaction. Even though price level has no direct effect on continuance intention to use retail Apps, it has an indirect effect on continuance intention through satisfaction.

Originality/value - Although the success of a marketing channel mainly depends on its continuance usage rather than first-time usage, few studies have paid attention to retail Apps services. This study contributes to the advancement of knowledge on retail Apps by explaining the roles of system quality, e-service quality and price level on retail Apps satisfaction and continuance intention. Interestingly, the findings of multi-group analysis imply that female Gen Y app users are more satisfied than males while such differences do not impact their continuance intention to use the retail Apps. The findings also suggested that frequency of using Apps has no relevance to retail Apps user satisfaction, but highly relevant to their continuance intention to use retail Apps services.

Keywords: Retail Apps Services; E-service Quality; System Quality; Apps Usage Satisfaction; Apps Continuance Intention

1. Introduction

The shopping activities of consumers are highly affected by the rapid adoption and extended usage of mobile devices such as tablets and smartphones. Consumers use mobile devices to do their pre-shopping activities such as searching for goods and services, comparing prices, reading reviews, finding directions and store hours and also conducting purchase transactions (Gera *et al.*, 2021; Rezaei *et al.*, 2016). Omar *et al.* (2021) argued that around half of online sales are through tablets and smartphones. The rapid mobile-shopping (m-shopping) penetration has motivated retailers to respond to this new trend and launch m-shopping portals which enable them to provide more targeted offers to their consumers (Chopdar *et al.*, 2018). However, in comparison to traditional web-based interfaces, the consumer checkout rate is significantly lower in mobile shopping (Chen, 2018; Han *et al.* 2016). Ghose *et al.* (2012) explained that as consumers mostly use m-shopping in the early stages of the purchase funnel to search for a product and assess their purchase fit, the conversation rate of m-shopping is lower. According to Zhou (2013), limitations in interface navigation are also a major factor that causes a low conversation rate in m-shopping. To address this issue, the retailers have invested in developing retail applications (Apps) to enhance consumer experience (Chopdar *et al.*, 2018). To be successful, the retail Apps service providers should understand and meet the consumer needs.

Retail Apps are applications that are available in repositories such as Google Play (for Android) and iTunes (for iOS) which consumers can install on their smartphones or tablets and use to search for products or services, read reviews, compare prices, and accomplish transaction (Rezaei *et al.*, 2016). Amazon Apps, eBay Apps, Lazada Apps, and Zara Apps are some examples of retail Apps that are currently available for consumers on mobile devices (iOS and Android) and PCs. While consumers can conveniently access retail Apps, many consumers that used retail Apps services for shopping purposes are unwilling to continuously use them and consequently the growth of retail Apps shopping is relatively slow (Chen and Chou, 2012). Due to the intense competition among retail Apps, low switching costs for retail Apps users (Gao *et al.*, 2015), the high acquisition cost, and low rate of continuance usage retaining and facilitating usage are critical for retail Apps. Although

acquiring new consumers is the first and important step toward a successful app, the long-term success of an information system depends on its continuance usage rather than first-time use (Iranmanesh *et al.*, 2022; Rezaei *et al.*, 2016). Retaining consumers and motivating them to continuously use them is essential for retailers as the cost of acquiring new consumers is five-time of keeping the existing ones (Al-Maghrabi and Dennis, 2011; Han, *et al.* 2016). Behl and Pereira (2021) found that hedonic and utilitarian motivations are conducive to continuance intention of mobile payment apps. In addition, other studies (Akdim *et al.*, 2022) also found a positive association between hedonic and utilitarian motivations and intention to use social media apps. However, although many studies have been conducted on the pre-adoption stage of retail Apps (Chopdar *et al.*, 2018; Taylor and Levin, 2014), few studies have focused on users' continuance behaviour.

To address the above-mentioned gap, we employed the information success (IS) success model, which has illustrated high exploratory power in explaining continuance behaviour (Abbasi *et al.*, 2022; Yang, 2021), in the conjunction with Expectancy and Disconfirmation model to understand the impacts of system quality and e-system service on retail Apps users' satisfaction and continuance intention behaviour. This study investigated the determinants of continuance usage intention instead of actual continued usage due to four reasons. First, measuring repeating usage, as an indicator of actual continued usage, is difficult. Second, measuring continuance intention allows a timely investigation of consumers' continued usage willingness and enables us to collect more data. Sample size has a significant effect on the accuracy of results (Danks *et al.*, 2020). Third, the inability of respondents to recall a past behaviour is one of the main issues that may influence the power of behavioural intention in reflecting actual behaviour (Cheng *et al.*, 2005). As the items of continuance intention in the study measure future behaviour of consumers, recall bias is not the concern. Fourth, many studies in marketing and information system have found behavioural intention as a good predictor of actual continued usage (Shiferaw and Mehari, 2019; Testa *et al.*, 2019).

There is growing empirical evidence that price is a critical determinant of satisfaction and continuance shopping behaviour (Antwi, 2021; Yokoyama *et al.*, 2022). Thus, the current study attempts to enrich the IS success model by including cost as a predictor variable to improve our

ability to understand retail Apps users' satisfaction and continuance usage intention. Furthermore in this study, gender was considered as a control variable as previous studies have shown that male and female consumers are heterogeneous in shopping behaviour (Brown, 2003; Small *et al.*, 2007) and using technology (Zhou *et al.*, 2014).

In Malaysia, based on the statistics, Gen-Y is the largest segment which is accounted for 36.2% of the total population (Vafaei-Zadeh *et al.*, 2022). The majority of the retail Apps usage population comprised Gen-Y although it is relatively low compared to developed countries. Thus, this segment has the highest portion of the market share currently, which shows the importance of Gen-Y in the retail Apps industry. As such, the focus of this study is on Gen-Y. While there are many arguments on the Gen-Y age range, many researchers have accepted Gen-Y to be those born between 18 to 35 years (San *et al.,* 2015). As a "financially powerful generation, Gen Y consumers are capable of influencing the spending habits of their parents" (Valaei and Nikhashemi, 2017, p. 523) and peers. Therefore, Gen Y is a significant generational cohort to be studied.

The findings of this study will enable retailers to develop more efficient marketing strategies in enhancing competitive advantage to drive consumer engagement and attract in-store traffic in the fierce competition and ultimately aid in generating more sales and profitability. This study is among few attempts in modelling the satisfaction and continuance intention of retail Apps among Generation Y. Thus, the findings address the lack of evidence and agreement among scholars regarding the impact of system quality, e-service quality and price on Apps usage satisfaction and continuance intention towards using retail Apps among Malaysian Gen-Y" (Wang *et al.,* 2015).

The study is prearranged into six separate sections. The first section provides an introduction to the study. The section addressed the need for research to understand the determinants of retail Apps usage satisfaction and continuance intention among Gen-Y in Malaysia. The second section is a literature review and in the third section the model was conceptualised and the hypotheses were supported by the literature. The research approach and methods were discussed in the methodology

section. The fifth section contains the result. Lastly, the final section ties up the discussion and conclusion of the whole study and covers practical recommendations.

2. Literature Review

2.1 Retail Apps Services

Applications (Apps) are transforming the world of the retail industry and the practices of marketing management (Bruwer *et al.*, 2021). Over the past decade, the evolution of technology has changed the business environment from conventional websites to new Apps. With the ubiquitous characteristic of mobile internet technology reaching users access to the internet anywhere and anything, retailers have now been able to interact with their consumers in a new way (Pentina *et al.*, 2016), known as retail Apps. Rezaei *et al.* (2016. p. 409) defined retail Apps as "a platform that enables users to search for goods and services, read reviews, compare prices, and accomplish transactions using Apps". Retail Apps may offer consumers a variety of benefits, such as providing location-based information, product information, reviews, and store locations (Iranmanesh *et al.,* 2022). Through retail apps, retailers can increase consumer awareness of promotions, products, and prices, and offer experiential benefits (e.g., consumer engagement rewards) (Rosenbloom, 2013). Consumers can use Retail apps to read reviews, compare prices, search for goods and services, decide which products and services to purchase, and make a purchase (Newman *et al.,* 2018).

According to a recent industry study, mobile internet penetration worldwide has resulted in the rise of retail Apps users (Michalikova *et al.*, 2022). Therefore, with the growing popularity of Apps (Pentina *et al.*, 2016), this trend makes researching usage satisfaction and continuous use of retail Apps very important. As the extent of the study, a retail app is an application for end-users to run on mobile devices like smartphones or tablets for shopping purposes. According to Nielson (2015), Malaysia is witnessing rapid growth in the number of consumers who purchase online via retail Apps from two million in 2014 to 3.7 million in 2015, with almost 57% of the total population. However, the research on retail Apps in Malaysia is still in its infancy stage compared to developed countries such as Japan and South Korea.

While M-shopping refers to any purchase-related activity conducted by smartphones or tablets through the mobile Internet (Gao *et al.*, 2015) but retail Apps refers to shopping through application (Rezaei *et al.,* 2016). The previous studies have investigated the drivers of m-shopping adoption (Groß, 2018; Ko *et al.,* 2009) and also m-shopping continuance usage intention (Gao *et al.*, 2015; Groß, 2016). The focus of these studies was on using mobile devices to access the shopping sites of retailers through web browsers and not retail Apps. The studies on retail Apps mostly focused on the pre-adoption stage (Chopdar *et al.,* 2018; Taylor and Levin, 2014) except for Rezaei *et al.* (2016) who studied determinants of retail Apps continuance behaviour using the extended model of IT continuance and theory of information overload as a theoretical foundation. However, previous studies have shown that system quality and service quality are important drivers of users' decision to continue using a mobile App (Gao *et al.*, 2015; Watson *et al.*, 2013). As such, in this study IS success model was selected to test the impacts of system quality and e-service quality on retail Apps users' satisfaction and continuance intention.

2.2 IS success model

DeLone and McLean's IS success model has been broadly used to explain the impact of quality on satisfaction and continuance intention since its first introduction in 1992. The IS model is an information systems theory that provides a framework for identifying and measuring the interrelationships between the six most critical dimensions of success applied in previous studies (Hossain, 2016; Chen, 2018). This model first consists of system quality and information quality in the original IS model (DeLone and McLean, 1992). After some research in the last decade, service quality has been proposed as one important dimension and formed an updated IS success model (Delone and McLean, 2003) as a foundation for empirical online research to reflect the importance of services in the online context as suggested by Pitt *et al.* (1995). However, a study by DeLone and McLean (2003) utilized five dimensions of the SERVQUAL by Parasuramen *et al.* (1988) to measure consumer perceptions of service quality. Subsequently, a study has found that SERVQUAL ignored the interactions between users and the App sites as it measures only conventional service quality (Fang *et al.*, 2011). Therefore, a noticeable development in the measurement instrument of e-service quality is the 4-dimensional E-S-QUAL scale which Parasuramen *et al.* (2005) recommended as the

measurement of e-service quality in the online retail success model.

Chatterjee *et al.* (2009) examined the effect of success factors in healthcare mobile work by conducting a qualitative study. Gao and Bai (2014) used this model to study mobile social networking services on continuance intention. Zhou (2011, 2013) focused on the context of mobile payment service to study the critical success factor of mobile website satisfaction and continuance intention by drawing on the IS model. As evidenced by these studies, although this model has been receiving much attention among researchers (Stefanovic *et al.*, 2016), it has rarely been tested in the context of App retailing in the format of quantitative research. According to Chakraborty and Sengupta (2013), price is more likely to affect satisfaction and continuance intention as individuals usually take into consideration the price to evaluate the value of an acquired product or service, consequently, the price factor should not be ignored. Hence, to close the gap in the literature, this study integrated only two dimensions based on IS success model, namely e-service quality and system quality with price to investigate the impact on satisfaction and continuance intention towards the retail Apps use.

3. Theoretical Model and Hypotheses Development

Satisfaction and continuance intention studies have been explained in prior empirical studies which largely drawn on many theories in various contexts. For instance, Kaewkitipong *et al.* (2016) tested the impact of the selected variables from the Unified Theory of Acceptance and Use of Technology (UTAUT) by Venkatesh *et al.* (2003) on students' satisfaction and continuance intention to use social medial in a field trip. Joo *et al.* (2014) investigated the effect of user satisfaction and intention to use mobile learning in cyber universities based on the Technology Acceptance Model (TAM) proposed by Davis (1989). Chen and Chou (2012) used the fairness theory by Huseman *et al.* (1987) to measure satisfaction and continuance intention toward B2C online shopping. Some research used Expectation Disconfirmation Theory (EDT) (Oliver, 1977) to explain and predict consumers' satisfaction and continuance intention to reuse blogs (Hsu *et al.*, 2016).

According to (Li and Fang, 2019, p. 1), "information system initial adoption is different from the postadoption behaviour", such as continuance intention, and previous studies mainly examined the initial adoption of Apps relying on the theory of planned behaviour (Cheung and To, 2017, Wu and Song, 2021), value-based adoption model (Erdmann *et al.*, 2021), technology acceptance model

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(Oyman *et al.*, 2022), and unified theory of acceptance and use of technology (Lin, 2022). The aforementioned studies were not studied on retail Apps service delivery and the literature lacks a solid model on the continuance intention of retail Apps services.

DeLone and McLean's (1992, 2003) IS success model has rarely been tested in the context of app retailing in the format of quantitative research. However, the research about the measurement of IS success model of Apps retailing usage satisfaction and continuance intention is very limited. This study integrates the E-S-QUAL, Expectancy and Disconfirmation model, and IS success model with the price based on a literature review to form a comprehensive framework to examine their relative influences on retail Apps usage satisfaction and continuance intention among Malaysian Gen-Yers.

3.1 Apps Usage Satisfaction and Continuance Intention

Apps usage satisfaction is a concept that was widely debated in consumer behaviour literature (Michalikova *et al.*, 2022). The expectancy and disconfirmation model explained Apps usage satisfaction as retail Apps users' responses to the congruency between expectations and performance of a retail App (Oliver, 1981). Within the consumer behaviour framework, Hunt (1977) broadly defined Apps usage satisfaction as a qualitative evaluation of the retailing Apps experience against the actual perceived performance. In the context of online retailing, Zeithaml *et al*. (2006) described usage satisfaction as an assessment of the user about whether the offer delivered by the retailer has met their demands and expectations. In addition, Apps usage satisfaction is the feeling that the Apps users obtain when they are happy with the retailing Apps of online retailers (Kashif *et al.*, 2015).

Continuance intention is defined as retail Apps users' intention to continue using the retail Apps in the future (Bhattacherjee, 2001). Park (2014) also defined it as the intention of an individual to participate in an activity again after having previously adopted it. This construct is crucial for realising the success of a retailing App as a retailer has invested a lot of effort and resources in releasing a retailing App, hence in return will help the company recovers these costs and achieve success (Gao and Bai, 2014). Therefore, retailers should drive consumers' continuance intention to revisit their retail Apps as retaining existing consumers are cheaper than acquiring new consumers (Bhattacherjee, 2001). In the retail world, continuance intention is viewed as consumers' loyal

relationship with retailers that aid to increase sales and profitability (Gao *et al.*, 2015). In a systematic literature review on the antecedents of information systems' continuance intention, Yan *et al.* (2021) provide four categories of psychological, technological, social, and behavioural where a few studies were reviewed on mobile apps and none of the reviewed articles have considered the proposed model of this study (Figure 1).

Based on Expectancy Disconfirmation Theory (Oliver, 1980), continuance is primarily determined by Apps usage satisfaction with prior experience in a retail App. Previous literature found that the dominant predictor of continuance intention to use is satisfaction (Kumar *et al.*, 2022). In addition, satisfaction has also been found to be a significant driver of continuance intention positively in numerous empirical studies of knowledge sharing (Selim et al., 2022) and virtual communities (Chen, 2007). Drawing on a sample of 397 health app users in China, Yan *et al.* (2021b) found that continuance intention is resorted to perceived usefulness, perceived ease of use, flow, and behavioural change techniques. In addition, Aydınlıyurt *et al.* (2021) examined the post-adoption behaviours in gamified mobile apps amongst Turkish users and they found that reward responsiveness and fun-seeking have the main effects on users' continuance intention. In the context of social mobile Apps services research, satisfaction strongly influences Apps users' continuance intention, in which satisfied users are more likely to continue to use social mobile Apps (Akdim *et al.*, 2022). According to Lin *et al.* (2014), satisfaction significantly and positively affects continuance intention in general social networks. Lu et al. (2022) indicated satisfaction has a significant and positive impact on continuance intention in mobile health applications. Based on the past research, we hypothesis:

H1. There is a positive relationship between retailing Apps usage satisfaction and continuance intention.

3.2 System quality

Drawing upon research by Chang and Chen (2009), system quality is defined as the overall excellence and effectiveness of the retail Apps in conveying information to users and information retrieval. It

aims to evaluate the retail Apps in certain aspects such as system usability and functionality, including reliability, responses spend, ease of use and navigation (Yeung and Law, 2004). Davis (1989) applied the TAM model in research and further argues that perceived ease of use is the most common measure of system quality, in which free effort retail Apps are more likely to induce a positive feeling toward it. This construct has also been shown to be an important attribute of success that influences Apps usage satisfaction and continuance intention in m-commerce in the context of IS recently, in such a way that individuals will be more satisfied and revisit a retail App to make a purchase online if they receive factual information, quick service and more user-friendly experience from using the retail Apps (Wangpipatwong et al., 2015).

Many empirical studies using IS success model have found system quality as the most critical element that every organization should consider as it leads to higher value creation within the system (Abbasi et al., 2022). Ali (2016) supported that system quality has a positive impact on travellers' satisfaction. Stefanovic et al. (2016) supported that excellent system quality will positively influence user satisfaction with e-government systems from an employee perspective. In the online context, the system functionality of the industrial plays an important role in shaping Apps usage satisfaction (Bao and Zhu, 2021). Fang et al. (2011) and Mohammadi and Dickson (2021) further supported the notion that system quality positively affects satisfaction in the context of online shopping. When consumers encounter function problems like system crashes while using retail Apps to purchase or browse products and services online, this can leave users waiting a long time to find out the information or receive the service. Such occurrence will lead to an unpleasant and unsatisfying shopping experience (Collier and Bienstock, 2006). Fang et al. (2011) found that users have a satisfying shopping experience when browsing PCHome's online shopping website has no function problems and is easy to load. The direct relationship between system quality and continuance intention toward technology IS systems has been shown in previous studies (Abbasi et al., 2022; Chiu et al., 2021). Azwar et al. (2021) found that satisfaction mediates the association between system quality and behavioural intention. Thus, the following hypotheses are developed.

H2. There is a positive relationship between system quality and usage satisfaction with retailing Apps.

H3. There is a positive relationship between system quality and continuance intention towards retailing Apps.

H4. System quality has a positive indirect effect on continuance intention through satisfaction.

3.3 E-Service Quality

Service quality is mostly defined as a comparison of an individual's expectations about a service with perceived performance (Hung *et al.*, 2021). However, many researchers indicated e-service hugely differs from traditional service (Fang *et al.*, 2011). Traditional service encounters occur with human interaction to gain experience face-to-face, whereas e-service encounters occur with the interaction between humans and technology (Zeithaml *et al.*, 2002). Santos (2003) further defined service quality in the online context as the overall evaluation of services provided in the virtual marketplace between consumers' expected service and perceived service. Park and Kim (2003) posit that the study of e-service quality is essential as it could stimulate satisfaction and maintain good relationships with consumers and subsequently increases a firm's profitability. According to Lim *et al.* (2016), the satisfaction of Gen-Y consumers was most likely to be affected by service quality because they have a level of education and they always have high expectations of the service quality.

Lwoga (2013) found e-service quality based on SERVQUAL as an insignificant predictor of user satisfaction in Library Web 2.0. A review of SERVQUAL literature discovered several criticisms directed toward this scale (Kandulapati and Shekhar Bellamkonda, 2014). Thus, it is generally agreed on the research proposed by Fang *et al.* (2011) which acknowledged SERVQUAL lacks items aiming to embrace the unique facts of e-service quality because e-service is very problematic to measure since it is intangible and perishable, and thus argued the important of E-S-QUAL model provides better results and proposed e-service quality significant effect consumers' satisfaction in e-commerce. E-S-QUAL scale developed by Parasuraman *et al.* (2005) has been broadly utilized in the measurement scales of e-service quality, which consist of efficiency, fulfilment, system availability, and privacy.

Efficiency is referring to the basic accessibility and usability of the Apps site (Parasuraman *et al.*, 2005). Santouridis *et al*. (2012) asserted convenience and time saving are the major concerns

online shoppers have nowadays as they will enhance their e-service quality perception and lead to satisfaction. In the e-commerce website context, efficiency has proved to be the highest-ranked dimension that significantly affects perceived overall service quality in Greece (Ranganathan and Ganapathy, 2002), however, it was also found efficiency is the least impact in the study by Kurt and Atrek (2012). Sabiote *et al.* (2013) supported that efficiency significantly influences the perceived quality and caused the occurrence of satisfaction.

Past research defined fulfilment as how well a retail App has delivered on its promises regarding delivery time and stock availability (Parasuraman *et al.*, 2005). Fulfilment is the most vital element related to retail Apps judgments, in such a way that consumers are happier with retail Apps that deliver accurate order fulfilment to them (Wolfinbarger and Gilly, 2003). Zeithaml *et al.* (2002) supported that consumers perceived the quality of service as good when the products are delivered by the time promised and the promised products are available. Akinci *et al.* (2010) further indicated that precise order fulfilment and keeping service promises increase consumers' perception of service quality. Therefore, fulfilment has been shown to have a strong impact on overall e-service quality and leads to satisfaction of online shoppers in Turkey (Kurt and Atrek, 2012) and internet banking services in Iran (Zavareh *et al.*, 2012).

System availability refers to the extent to which a retail App can function properly (Parasuraman *et al.*, 2005). Sheng and Liu (2010) indicated system availability has positive effects on perceived overall quality in e-commerce settings. Kumar and Lata (2021) mentioned function issues of a website like non-working buttons and broken links lead to frustration which causes the occurrence of dissatisfaction. Parasuraman *et al.* (2005) found system availability dimension has the strongest impact on consumer perceived service quality. Therefore, system availability has a significant impact on perceived e-service quality and significantly impacts e-satisfaction in Internet Banking.

Akinci *et al.* (2010) defined privacy as the risk and danger free when using the retail Apps to make a purchase. Tran and Nguyen (2022) further mentioned privacy is a critical concern in retail Apps as it involves monetary transactions. An app that protects consumer information from potential hackers and is safe to use could prevent users' dissatisfaction (Ranganathan and Ganapathy, 2002).

The impacts of privacy on overall e-service quality in online retailing have been shown by many researchers (Rita *et al.*, 2019; Tabash *et al.*, 2019). Most researchers indicated all four dimensions, including efficiency, fulfilment, system availability and privacy affect consumers' perceived e-service quality and consequently impact satisfaction (Wang and Kim, 2019). Kandulapati and Shekhar (2014) proposed that consumers are satisfied when high-quality e-service is provided in India based on the E-S-QUAL model. Previous studies have also found that service quality is a driver of behavioural intention and loyalty (Cristobal *et al.*, 2007; Lee and Lin, 2005). Khan *et al.* (2019) found that e-service quality has a positive effect on both satisfaction and loyalty in the context of online shopping. Rizal et al. (2018) found that satisfaction mediates the relationship between e-service quality and behavioural intention. Therefore, we hypothesized:

H5. There is a positive relationship between e-service quality and satisfaction with retailing Apps.

H6. There is a positive relationship between e-service quality and continuance intention.

H7. E-service quality has a positive indirect effect on continuance intention towards retailing Apps through satisfaction.

3.4 Price Level

Price plays a key factor in user decision making because the price is believed can be powerful enough to attract or repel consumers to shop online with the retail Apps (Salem and Alanadoly, 2022). From the consumer's viewpoint, price is what they scarify to obtain a particular product or service (Parasuraman *et al.*, 1988). However, consumers' perception of price is a psychological element that critically affects their reaction (Chenavaz *et al.*, 2021). These prices, which are fixed cost charges for all individuals, are perceived differently by every consumer. According to Ferguson and Elle (2013), most consumers will compare the actual market price with their expected prices. The expected price is the consumers' perception of possible expenses in their minds that vary according to how much they are willing to pay for the particular products or services (Wilson *et al.*, 2021). If the actual price is lower than the expected price, which could mean the original market price in retailing Apps will contribute to user satisfaction (Chakraborty and Sengupta, 2013). Therefore, this study assumed the

price analysis offered in Apps retailing from the perspective of Malaysian Gen-Y retail Apps users is of vital importance to understanding the effects on Apps usage satisfaction.

Dorce *et al.* (2021) mentioned that price is a function of an indicator that best represents the quality of the products and services. In the restaurant industry context research, Kaura *et al.* (2015) analysed if a company charge a higher price, consumers will expect a high level of quality and thus they are harder to be satisfied. However, the results can be questioned as the nature of retailing Apps is more complicated than conventional retail shops, prices include not only common charges but also the shipping, handling, credit cards transaction fee and tax rates charged and paid (Meng, 2011). Price can be used as a resource to increase both profits and consumer satisfaction in such a way that consumers' purchase behaviour tends to be repeated when consumers see a product's price is fair. Riquelme *et al.* (2021) found a negative association between perceived price unfairness and consumer satisfaction. Ahmed *et al.* (2022) also identified price as a significant determinant of satisfaction in the context of the restaurant industry. Choi *et al.* (2008) found price has a negative impact on user satisfaction in e-commerce. The indirect effect of price on behavioural intentions through satisfaction has been proven in the literature (Polas *et al.*, 2020; Shen and Yahya, 2021). On this basis, it can be hypothesized,

H8. Price level has a negative influence on satisfaction with retail Apps.

H9. Price level has a negative influence on continuance intention towards retail Apps.

H10. Price level has a negative indirect effect on continuance intention towards retail Apps through satisfaction.

3.5 The impacts of Gender and Frequency of Using Apps

Drawing on social role theory (Archer, 1996), it suggests that different groups of people behave differently in various social situations and take on different roles, which typically can be discussed in the context of gender stereotypes. Venkatesh *et al.* (2022) studied the effects of gender and suggested its crucial role in online shopping intention. Small *et al.* (2007) also found that males and females differ in their consumers' shopping behaviour in such a way that females are more price-conscious

than males. In addition, Shankar and Behl (2021)'s study on customer experience of mobile wallet platforms revealed that age, gender, and level of education moderates the relationship between privacy and security and customer experience. Hence, gender is categorized as a consumer characteristic and supported satisfaction level changes differently from one gender type to another (Zeithaml *et al.,* 2006). In particular, gender refers to a set of characteristics differentiating between males and females. In the past, the results of the impact of gender on consumer satisfaction have been conflicting. For instance, some studies found it is easier to satisfy women than men while the results of other studies yielded opposite outcomes (Jung *et al.*, 2007). Brown *et al*. (2003) found gender as a predictor of online continuance purchase intentions. A recent study by Chen and Qi (2015) investigated gender significantly influences the relationship between satisfaction and continuance intention of knowledge sharing in academic virtual communities. Accordingly, in this study, gender was considered as a controlling factor to examine how it affects the results.

Furthermore, giant companies hugely invested in brand building through their Apps to communicate and engage with consumers (Kim *et al.*, 2013). Increasing the frequency of using shopping Apps is one of the critical factors to increase the experiential value of buyers (Dacko, 2017, Valaei *et al.*, 2022). According to Khan *et al.* (2022), keeping the retail app's users more engaged will diminish the shopping cart abandonment; and increase intention to use Apps (Tarute *et al.*, 2017). Chances are that engaged heavy app users are most satisfied with retail Apps than those who barely use them. There are empirical and population gaps to examine the extent to which the frequency of using retail Apps would shape the degree of satisfaction and continuance intention amongst Gen Y buyers. Therefore, the frequency to use retail Apps services should also be considered as a control variable.

4. Methods and Procedures

4.1 Questionnaire design

This study is quantitative in nature and data were collected through a survey instrument. The

questionnaire comprised three sections. The first part is general questions comprising questions on respondents' actual Apps retailing behaviour such as frequency and types of Apps retailing used. The second section is developed to collect information about the constructs, namely e-service quality, system quality, price, Services Apps usage satisfaction and continuance intention. The last part of the questionnaires covers demographic questions, including age, gender, education level, name of the university and monthly allowance. To ensure content validity, the construct items were adapted from previous studies. The items of e-service quality (Parasuraman *et al.*, 2005), system quality (Ali, 2016), price level (Bansal *et al.*, 2004; Choi *et al.*, 2008), satisfaction (Sheng and Liu, 2010) and continuance intention (Hossain, 2016) were adapted from previous studies respectively. For all the measures, a 5-point Likert scale was used with anchors ranging from (1= strongly disagree, to 5=strongly agree). The common method variance (CMV) as a possible threat in survey methodologies (Reio, 2010; Williams and Soutar, 2009) was considered in two stages including the design of the questionnaire and statistical analysis after followed by Podsakoff et al. (2003). To test the reliability of constructs, a pilot study was carried out before the main data collection. The questionnaire was pilot tested with 60 respondents using an online survey to reveal questionnaire errors and improve upon the study design to undertake an errorless and perfect full-scale research project. The reliability of the scale was measured by Cronbach's alpha, provided all Cronbach's alpha values in the pilot study were greater than the acceptable value of 0.6, which showed good internal consistency (Bonett and Wright, 2015).

4.2 Data Collection and the Sample

The population of this study consists of Malaysian Gen-Y respondents who had experience in using retail services Apps to purchase products online. A total of 380 questionnaires were collected using both online and offline methods. Out of 380 questionnaires, 21 questionnaires were not considered because respondents answered they have never used a retail App. To test the equivalence between online and offline collected data, we conducted a t-test and the mean values of all items were compared. As there was no significant difference between the mean values of items, the online and offline data were merged for further analysis. To examine sample size efficiency, the sample size criterion is determined through power analysis for SEM (Hair Jr *et al.*, 2021). This study uses an a-

priori sample size calculator for SEM based on power analysis to ensure that the theoretical research model can detect any effect. Based on the required information such as a 0.05 probability level, 9 latent variables of this research, 37 measurement items, 95% statistical power level, as well as an anticipated high effect size of 0.5, the medium effect size of 0.3, and a small effect size of 0.1, the required number of sample size for these effect sizes are 96, 96, and 96 respectively. Therefore, the sample size of 359 is above the requirement to detect effect. Table 1 shows the descriptive statistic of a total of 359 respondents. Males accounted for 187 of the respondents (52.1%) and females accounted for 172 of the respondents (47.9%).

Please Insert Table 1 here

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5. Results

Partial Least Squares (PLS) was used to assess the measurement (construct validity) and structural model (hypotheses testing), using SmartPLS version 3. PLS was preferred to Covariance Based Structural Equation Modeling (CB-SEM) as the proposed model is predictive in nature, the number of constructs is above six and model is complex, and the data are not normally distributed (Hair *et al.*, 2019). Furthermore, PLS was selected over Ordinary Least Square (OLS) due to its ability to measure the effect of each item under a construct (Nazim and Ahmad, 2013). According to Nitzl (2016), the results of OLS are not accurate and, in some cases, its standard error is 100 times more than PLS. Following Hair *et al.*'s (2016) guideline, the model was tested in a two-step. In the first step, the validity and reliability of constructs were tested and in the second step, the structural model was evaluated.

5.1 Measurement Model

To test the validity and reliability of constructs, factor loadings, average variance extracted (AVE), composite reliability (CR) and the Heterotrait–Monotrait (HTMT) ratio of correlations were evaluated

(Hult *et al.*, 2018). The factor loadings of all items were above 0.7, the CR values of all first order-construct were above 0.7, and the AVE values were above 0.5, as can be seen in Table 2, which indicates a satisfactory convergent validity (Hult *et al.*, 2018).

Please Insert Table 2 here

To evaluate discriminant validity, the HTMT ratio of correlations was assessed (Henseler *et al.*, 2015). The HTMT values were less than 0.90 (Table 3) and the discriminant validity is fulfilled (Hult *et al.*, 2018). Henseler *et al.* (2015) suggest the Heterotrait-Monotrait ratio of correlations (HTMT) as a statistical technique for the evaluation of discriminant validity. As Table 3 shows, the values of HTMT were found to be no larger than 0.90, thus verifying the discriminant validity of the model (Kline, 2011).

Please Insert Table 3 here

The validity and reliability of the second-order construct, namely e-service quality, were evaluated using the two-stage approach recommended by Becker *et al.* (2012). Table 4 shows that e-service quality is valid and reliable and meets the cut-off points suggested by Hult *et al.* (2018).

Please Insert Table 4 here

5.2 Structural Model

As discussed above, all constructs were reliable and valid, thus the second step involves the evaluation of structural model results. The proportion of variance explained was used to determine the accuracy of the model's predictions. In the present study, the R^2 values of retail Apps usage satisfaction and continuance intention were 0.605 and 0.642 respectively. In addition to R^2, the Stone-Geisser Q^2 cross-validated redundancy value was reported and since the cross-validated redundancy was 0.225 and considerably higher than zero, our model displays a high predictive relevance (Chin, 2010). We used non-parametric bootstrapping to examine the structural model with 2,000 replications (Wetzels *et al.*, 2009). As shown in Table 5, all hypotheses were supported except hypothesis 9 (the relationship between price and continuance intention).

Please Insert Table 5 here

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6. Discussions

Drawing on the IS success model, this study aims to theoretically develop and empirically test the structural relationship between e-service quality, system quality, price level, Apps usage satisfaction and retail Apps continuance intention among Malaysian Gen-Y. The results show that system quality and e-service quality have both direct and indirect effects on retail Apps' continuance intention. Although the price has an indirect effect on Apps retail services continuance intention through satisfaction, it has no direct effect on continuance intention. The impacts of all three proposed factors on satisfaction were supported.

Firstly, the findings showed satisfaction with retail Apps is an important driver of Malaysian Gen-Y's continuance intention. This finding was found similar to previous studies (Kaewkitipong *et al.,* 2016). In another word, Gen-Y consumers in Malaysia are most likely to continue using the retail Apps when they are satisfied with their overall experience with the retail Apps. The strong effect of satisfaction on continuance intention may be explained by the fact Gen-Y consumers base their choices on a wide range of information acquired from different sources and not only rely on their previous experiences (Oosterloo *et al.*, 2010). Consequently, satisfaction has a strong effect on Malaysian Gen-Y consumers' continuance intention. Interestingly, the findings of multi-group

analysis imply that female Gen Y app users are more satisfied than males while such differences do not impact their continuance intention to use the retail Apps. The findings also suggested that retail Apps user satisfaction has no relevance to the frequency of using Apps, while the more frequently they are used, the users will continue using them in the future. Perhaps there are some psychological factors that trigger such behaviour.

Based on the findings, this study showed that system quality is regarded as the most important determinant of retail Apps usage satisfaction among Gen-Y in Malaysia. Hence, the satisfaction level of Gen-Y consumers in Malaysia was most likely to be affected by system quality. The impact of system quality on satisfaction provides additional support for previous studies (Bao and Zhu, 2021; Mohammadi and Dickson, 2021). Furthermore, the results showed that system quality has direct and indirect effects on continuance intention through satisfaction. It suggests that satisfaction can explain the relationship between system quality and continuance intention. However, as the direct effect still is significant, satisfaction is not the only reason and future studies can investigate the other potential intermediate factors such as trust and flow experience of using retail Apps.

As evidenced by this study, e-service quality has a positive effect on satisfaction and also a positive direct effect and an indirect effect through satisfaction on retail Apps continuance intention of Gen-Y consumers. Although the positive effect of e-service quality on satisfaction is inconsistent with previous studies as it was regarded as no relationship (Gao *et al.*, 2015; Tandi Lwoga, 2013), this result is roughly consistent with most studies including Khan *et al.* (2019) and Wang and Kim (2019) who revealed the significant relationship between e-service quality and Apps usage satisfaction. This can be best explained by Gen-Y consumers in Malaysia who are concerned about the e-service quality provided by the respective retailer in assessing the Apps retailing and consequently lead their reuse intention to continue using the retail Apps. The indirect effect of e-service quality on retail Apps continuance intention extends the finding of Hu *et al.* (2009) by proposing satisfaction as a potential reason that a higher level of e-service quality can lead to greater continuance intention.

Moreover, the negative impact of the price level and satisfaction also supports and is consistent with previous studies (Chakraborty and Sengupta, 2013; Choi *et al.,* 2008), who also claim that there is a negative relationship between price and Apps usage satisfaction. The inverse

relationships suggest that, if retailers charge much higher prices for goods and services compared to users' perception of price in their mind, they will tend to be the most dissatisfied. This can be best explained that Gen-Y consumers are price sensitive in Malaysia as most of them have relatively low monthly incomes of less than USD 250. Hence, when the price increases, the satisfaction with retail Apps decreases. However, this study rejected the direct relationship between the price level and continuance intention to reuse retail Apps in the future. As the direct effect of price level on continuance intention was not significant and the indirect effect through satisfaction was significant, we can conclude that dissatisfaction is one of the main reasons that charging higher prices can negatively affect consumers' continuance intention to reuse retail Apps.

6.1 Theoretical Implications

The study contributed to the literature in several ways. Although scholars have studied satisfaction and continuance intention in various contexts such as a learning management system (Kuadey *et al.*, 2022), health Apps (Yan *et al.*, 2021), and volunteer jobs (Bang, 2015), determinants of satisfaction and continuance intention have received less attention in retail Apps context. This study tested IS success model in the retail context and showed the power of this theory in explaining satisfaction and continuance intention towards retail Apps. According to the findings, system quality and e-service quality have a positive significant effect on satisfaction and continuance intention. Furthermore, most of the studies that have applied the IS success model considered service quality as a first-order construct (Sun *et al.*, 2021). This study measured the e-service quality construct based on four dimensions namely efficiency, system availability, fulfilment, and privacy. The results confirmed the acceptability of e-service quality as a second-order construct. Measuring e-service quality with four dimensions may reflect the meaning of this construct in a better way. The study also contributed to the literature by extending IS success model by adding price level to the model. The findings showed that although the price has a direct effect on satisfaction, it has no direct effect on continuance intention. The indirect effect of price on continuance intention through satisfaction was confirmed. Furthermore, this study illustrated that retail Apps usage satisfaction is a dominant role in building continuance intention. Lastly, the study proposed satisfaction as one of the factors that may explain the impacts of

system quality, e-service quality and price level on continuance intention. A logical sequence among the study variables has appeared by incorporating the IS successes model and EDT. This logical sequence indicates that continuance intention to use a retail app depends on the development of consumer satisfaction, which emerges as a result of the proper management of system quality, e-service quality, and price level. Overall, this study provided useful knowledge to the understanding of the determinants affecting retail Apps usage satisfaction and continuance intention among Gen-Y in Malaysia.

6.2 Practical Implication

From a practical perspective, as mentioned above, the results imply that Apps usage satisfaction is the dominants determinants in influencing users' continuance intention to reuse or revisit retail Apps for online purchase in the future. Hence, for sustainable retail Apps business and long-term growth and profitability, retailers must keep consumers satisfied to maintain their intention to continue using their retail Apps to purchase online. However, regarding the drivers of Apps usage satisfaction, the results suggest that retail Apps developers may need to improve and employ a better-combined strategy in terms of system quality, e-service quality and pricing.

As stated above, system quality has been found to have the strongest positive impact on Apps usage satisfaction, which indicated that a good user interface design system is a major prerequisite to driving satisfaction with retail Apps among Malaysian Gen-Y users. Hence, retailers should put priority to improve and provide better system quality in order to enhance satisfaction. For example, retail Apps should be designed in more user-friendly such as information provided in the retail Apps has to be easy to understand and ensure that their application can function well all the time without any functional problems such as a freeze in the retail Apps or difficult to load. Retailers are also suggested to advertise how to use their retail Apps efficiently and upload a short video on social media to teach the user to use their retail Apps. Hence, this may help users to build a base in using the retail Apps which can save their time in investigating the way to use them.

The results of this study show that providing good system quality is not sufficient, retailer should also provide a high-quality retail Apps service to further increase satisfaction and continuance

intention. An important way to improve the e-service quality they deliver is to ensure that they exhibit quality characteristics. Retailers should always fulfil promises to consumers and be truthful and fair-minded in handling consumer transactions as well as providing prompt service for consumers. Thirdly, retailers are also suggested to satisfy the needs of consumers at a reasonable price. Moreover, retailers may also provide attractive promotions such as free postage or product bundle promotions, to increase satisfaction and drive consumers' continuance intention. After providing excellent system and e-service quality and reasonable price to increase Apps usage satisfaction, retailers should then be able to drive continuance intention of Malaysian Gen-Y Apps users, thus ultimately generating greater sales and profits which aid in their future growth.

6.3 Limitations and Future Research Directions

Overall, e-service quality, system quality and price were confirmed as the determinants of Apps usage satisfaction while e-service quality, system quality and retail Apps usage satisfaction were confirmed as the determinants of continuance intention in Malaysia. In addition, this study supports the negative relationship between price and Apps usage satisfaction and gender moderates the effect between Apps usage satisfaction and continuance intention among Malaysian Gen-Y. Although the objectives were met and the generalisation of the findings should be undertaken with caution. First, the sample of the study was limited to Gen-Y. Although research suggested Gen-Y as most users of retail Apps in Malaysia, it presents constraints in terms of generalizing the findings to the whole Malaysian population. Hence, future studies can study all demographic groups such as Gen-X, Gen-Y and baby boomers in Malaysia to generalize the findings better. Second, to test the conceptual framework of the study, the data were collected from Malaysia. As the determinants of consumer behaviours depend on national culture (Iranmanesh *et al.*, 2022), the findings of the study may not apply to other countries. Hence, future studies are suggested to test the conceptual framework of this study in other countries as well as examining the reverse causality of the proposed hypotheses. Last, this study investigated determinants of continuance usage intention instead of actual continued usage. Although behavioural intention has been viewed as a good predictor of actual behaviour, intentions may not be a true reflection of actual behaviours. Besides behavioural intention, some other factors, such as perceived

behaviour control and habits, may directly influence actual behaviour which may lead to deviation of behavioural intention and actual behaviour. Therefore, future studies are recommended to test the determinants of actual continued usage.

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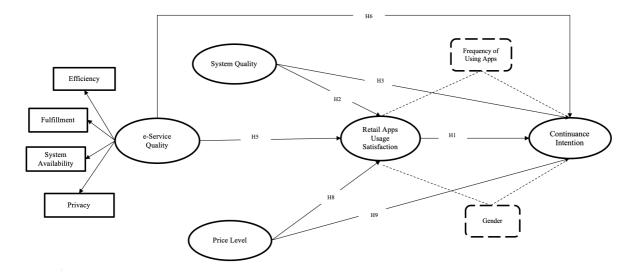
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Figure 1: Theoretical research model

Note: H4, H6, H10 are indirect paths.

Table 1: Summary of Demographic Characteristics of Respondents

Measure	Characteristics	Frequency	Percentage (%)
Gender	Male	187	52.1
	Female	172	47.9
Age	Between 18 and 21 years	271	75.5
	Between 22 and 25 years	58	16.2
	Between 26 and 29 years	30	8.4
Education Level	SPM	12	3.3
	Diploma	52	14.5
	Foundation	51	14.2
	Bachelor Degree	237	66
	Master	3	0.8
	Other	4	1.1
Name of University	Taylor's University	170	47.4
	Sunway University	25	7.2
	Inti University	24	6.7
	USCI University	60	16.7
	Monash University	38	10.6
	Others	41	11.4
Monthly allowance	Below RM 1000	225	62.7
	Between RM 1001 and RM 2000	89	24.8
	Between RM 2001 and RM 3000	30	8.4
	RM 3001 and above	15	4.2
Frequency to use Retail Apps services	Once a month	30	8.4
	Twice a month	60	16.7
	3 times a month	224	62.4
	4 times a month	16	4.5
	More than 5 times a month	29	8.1

Table 2. Assessment of Measurement Model for First-Order Constructs

First-Order Constructs	Items	Factor Loadings	CR	AVE
System Quality (SQ)	SQ_1	0.775	0.871	0.576
	SQ_2	0.778		
	SQ_3	0.768		
	SQ_4	0.713		
	SQ_5	0.757		
Efficiency (EFF)	EFF_1	0.817	0.886	0.610
	EFF_2	0.793		
	EFF_3	0.773		
	EFF_4	0.890		

Construct	Item	Loading	CR	AVE
	EFF_5	0.730		
System Availability (SA)	SA_1	0.701	0.875	0.639
	SA_2	0.839		
	SA_3	0.825		
	SA_4	0.823		
Fulfilment (FUL)	FUL_1	0.842	0.917	0.689
	FUL_2	0.838		
	FUL_3	0.837		
	FUL_4	0.839		
	FUL_5	0.792		
Privacy (PRI)	PRI_1	0.905	0.924	0.803
	PRI_2	0.904		
	PRI_3	0.878		
Price Level (PR)	PR_1	0.834	0.917	0.649
	PR_2	0.803		
	PR_3	0.823		
	PR_4	0.785		
	PR_5	0.812		
	PR_6	0.775		
Apps Usage Satisfaction (AUS)	AUS_1	0.851	0.916	0.687
	AUS_2	0.815		
	AUS_3	0.830		
	AUS_4	0.826		
	AUS_5	0.821		
Continuance Intention (CI)	CI_1	0.778	0.887	0.663
	CI_2	0.851		
	CI_3	0.809		
	CI_4	0.816		

Table 3. Heterotrait-Monotrait (HTMT)

	SQ	EFF	SA	FUL	PRI	PR	AUS	CI
SQ								
EFF	0.707							
SA	0.515	0.693						
FUL	0.592	0.681	0.603					
PRI	0.593	0.619	0.583	0.709				
PR	0.613	0.485	0.432	0.382	0.408			
AUS	0.887	0.668	0.422	0.598	0.512	0.396		
CI	0.898	0.665	0.466	0.576	0.614	0.484	0.865	

Table 4. Assessment of Measurement Model after Generating Second Order Construct.

Construct	First-order construct*	Loadings	CR	AVE
E-Service Quality (E-SQ)	EFF	0.846	0.888	0.665
	SA	0.754		
	FUL	0.845		
	PRI	0.815		

Notes: *t-values = 2.58 (significance level =1%)

Table 5. Structural relationships and hypothesis testing

Hypotheses	Relationships	Path Coefficients	T Values	P Values	Decision
H1	AUS -> CI	0.391	4.970***	0.000	Supported
H2	SQ -> AUS	0.678	13.332***	0.000	Supported
H3	SQ -> CI	0.329	4.126***	0.000	Supported
H4	SQ -> AUS -> CI	0.265	4.068***	0.000	Supported
H5	E-SQ -> AUS	0.217	4.955***	0.000	Supported
H6	E-SQ -> CI	0.152	2.411**	0.008	Supported
H7	E-SQ -> AUS -> CI	0.085	3.911***	0.000	Supported
H8	PL -> AUS	-0.096	2.670**	0.004	Supported
H9	PL -> CI	0.035	0.899	0.185	Not Supported
H10	PL -> AUS -> CI	-0.038	2.445***	0.007	Supported
Control Variables: Gender and Frequency of Using Retail Apps					
-	Gender -> AUS	0.332	2.303*	0.022	-
-	Gender -> CI	0.025	0.805	0.211	-
-	Frequency of Using Retail Apps -> AUS	0.045	0.605	0.277	-
-	Frequency of Using Retail Apps -> CI	0.234	1.764*	0.049	-

Note: *p<0.05; **p<0.01; ***p<0.001 (one-tail)