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The role of mobile shopping service quality in enhancing customers M-satisfaction, M-loyalty, and E-word of mouth

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Abstract

With the increasing prevalence of mobile shopping (m-shopping) apps, service quality (SQ) has been recognized as a prominent factor in distinguishing the best apps available online. As limited studies have explored how to estimate mobile SQ, this study attempts to expand our understanding of the primary dimensions that shape customer judgments of the overall mobile SQ related to m-shopping activity by validating the mobile SQ (M-S-QUAL) scale in a new cultural setting, e.g., Egypt. It also examines the interrelationships between mobile SQ and three outcome variables: mobile satisfaction (m-satisfaction), mobile loyalty (m-loyalty), and electronic word of mouth (e-WOM). The results support the validity of using the M-S-QUAL scale to assess the mobile SQ of m-shopping platforms. Moreover, the findings emphasize the role of m-shopping SQ in enhancing consumers' m-satisfaction, thereby improving m-loyalty and increasing favorable e-WOM. The results also show that responsiveness and efficiency are the primary driving forces underlying the SQ dimensions of the investigated outcome variables.

Keywords m-shopping, Service quality, m-satisfaction, m-loyalty, e-WOM

Graphical abstract

Introduction

The retail business has substantially evolved over the last two decades due to the emergence of online shopping via websites, followed by the expansion of mobile channels and social networking sites [81]. Because of the

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accelerated growth in the use of mobile devices globally, customers have become highly dependent on their smartphones for shopping activities [33]. Indeed, global mobile retail sales increased to nearly three-quarters (i.e., 72.9%) of all retail e-commerce sales in 2021 [70]. The uptake of mobile shopping, commonly referred to as "m-shopping," has risen more rapidly than other types of mobile commerce [51]. The number of mobile platforms enabling consumers to shop continues to rise every year [36]. Several electronic vendors (e-vendors) have expanded their current business to mobile applications to take advantage of this market expansion and gain new clients [16, 23, 33, 78].

Due to the high cost of establishing and executing apps, businesses must ensure customers' satisfactory experience with their shopping apps to encourage continuous usage and avoid shoppers losing interest in their apps and switching to competitors [12]. The level of service quality (SQ) associated with mobile platforms has been acknowledged as among the primary forces of client satisfaction [14, 41, 66, 80]. Therefore, companies are becoming more aware of the importance of concentrating on SQ to strengthen their competitive position and gain customer loyalty in this intensely competitive market [17, 60]. Hence, it has become increasingly imperative to recognize digital consumers' perceptions and expectations of SQ toward new purchasing channels, such as m-shopping.

Limited research exists on how to estimate mobile SQ, despite its significance for businesses in detecting and boosting their apps' SQ [45]. Although appraising e-SQ for a conventional e-commerce environment has been emphasized, current studies on mobile SQ are characterized by fragmentation and single-study observational approaches [35]. Some attempts were made to introduce a measure for assessing different SQ-related characteristics regarding m-commerce in diverse settings, such as mobile network operators [15] and mobile brokerage services [45]. As these measures have little in common, additional research is required to establish a scale that can estimate overall mobile SQ efficiently. This motivated us to test a scale recently developed specifically for assessing m-shopping, namely the mobile service quality (M-S-QUAL) scale introduced by Huang et al. [31], which proposed four items to estimate mobile SQ for physical goods shopping: contact, responsiveness, fulfillment, and efficiency. Responding to Huang et al. [31], who seek to apply the scale across various countries and cultures to validate the M-S-QUAL scale, this study applied the model in an emerging market setting to create a realistic impression of mobile customers and marketplaces in these regions, which constitute a large fraction of the globe's population and economic growth [65]. Customers' behavioral patterns regarding their m-commerce activities, including m-shopping, are impacted by cultural variances [47]. National cultural characteristics substantially influence consumers' perceptions and preferences regarding m-commerce [28],hence, consumers in developed and emerging markets have different expectations from and views on the perceived quality of m-commerce activities [49]. Due to varying levels of advancement of e-commerce markets and in customer behavior across contexts, applying and generalizing the results of previous studies conducted primarily in Asian and Western countries to the contexts of emerging countries would be dubious without first attempting to understand these issues in their contexts [46]. Therefore, exploring mobile SQ dimensions fostering favorable customer behaviors is essential in emerging markets that are still poorly understood. This is particularly crucial in the context of m-shopping, as promoting the long-term success of this shopping technology requires an awareness of the factors that explain post-adoption behavior, such as mobile SQ [46]. In this regard, this paper aims to capture the elements used for evaluating the SQ of m-shopping platforms and investigate how they can improve mobile customers' satisfaction and consequently enhance their mobile loyalty (m-loyalty) and increase positive electronic word of mouth (e-WOM) among shoppers from the perspective of emerging-market consumers. A qualitative approach was used to collect data via a paper-based survey to achieve these goals. Next, the proposed model was tested using structural equation modeling (SEM) on a convenience sample of actual mobile shoppers (m-shoppers).

This research contributes to the literature in three main ways. First, it extends our understanding of the dimensions that shape customer judgments of the overall mobile SQ related to m-shopping activity. Second, it explores how the investigated factors may contribute to increasing shoppers' m-satisfaction, thereby gaining their m-loyalty and motivating them to generate positive e-WOM. Third, it extends the existing literature to establish a comprehensive framework for mobile SQ assessment by validating the M-S-QUAL scale [31] and applying it to another market with different attributes, like the Egyptian marketplace, which is regarded as the largest market in the Middle East and North Africa, to check its validity in diverse cultures and states. The Egyptian market was chosen specifically because it is regarded as one of the most promising markets for m-commerce in developing countries. In 2021–2022, the proportion of consumers using the Internet to search for goods and services reached approximately 72.7%, whereas the percentage of consumers who use the Internet to buy goods and services reached around 50.1% [19]. Despite the high

prevalence of online shopping in the Egyptian market, Egyptian customers are known for their unpredictable purchasing habits and lack of loyalty to digital commerce, which present substantial challenges for digital vendors [2]. Therefore, identifying factors that can increase Egyptian consumers' satisfaction and loyalty to m-shopping app providers is essential.

The remainder of this article is organized as follows. Section "Literature review" presents a literature overview of m-shopping and mobile SQ. Section "Research model and hypothesis development" outlines the research framework and hypotheses, and Sect "Methods" explains the current study methods. Section "Data analysis and results" provides the research analysis results, and Sect. "Discussion" reviews the major conclusions and limitations of this research.

Literature review

Mobile shopping

M-shopping refers to "the purchase of goods or services from mobile devices such as smartphones and tablets via a wireless network" [32], p. 165). This is a potent medium for linking consumers to retailers, thereby increasing sales and improving merchant revenue. It empowers corporations to have closer communications with their clients [38] and contributes to increasing customers' purchase frequency as it allows them to obtain information and execute transactions without limitations to time or location [33]. It offers retailers and companies an opportunity to fulfill the needs of specific clients, recognize seasonal purchases, make tailored recommendations, promote novel goods, send promotions, and start new purchases. Therefore, various businesses have released m-shopping apps to reap these benefits [51].

M-shopping has gone mainstream among digital consumers [32] because it affords interaction, is easily accessible at any time and place, saves cost and time, and enables quick access to information [68]. Digital consumers mainly find that shopping through mobile apps rather than conventional websites requires less effort in terms of searching for information, placing orders, and executing transactions. They favor using mobile platforms rather than mobile websites because they are more convenient, quicker, and simpler to navigate [51]. Clients can utilize m-shopping stores to perform various shopping activities such as looking for items and prices, comparing goods, making purchases, preparing shopping lists, and executing various post-purchase tasks [69, 73]. Additionally, customers living in areas with limited accessibility to offline retailers can purchase their essentials using m-shopping apps to offset the high costs of offline shopping [16].

M-shopping platforms enrich customers' shopping experiences by promoting discussion about purchased items, which allows clients to recommend items to others through social media, empowers consumers to obtain immediate and continuous notifications about the latest offers, as well as provide individualized product information [51]. Customers may even receive emotional benefits via the mobile channel that are not provided by conventional electronic channels, such as feelings of psychological comfort and reassurance. Such emotional benefits related to mobile phone consumption make shoppers more comfortable and assured about their purchase choices [81]. M-shopping can also offer consumers hedonic (e.g., joy and immersion) and social benefits (e.g., recognition, self-esteem, and social identification) [23].

Despite these benefits, the pace of m-shopping penetration varies between markets because customers are motivated by diverse values, desires, and experiences [26]. For example, evidence reveals that a large number of customers in African countries do not shop with their mobile phones compared with other parts of the world [46]. In this setting, it is imperative that we examine post-adoption client behavior toward m-shopping, including clients' views and judgments of SQ across various marketplaces, to enhance its future diffusion.

M-shopping in the Egyptian market

Today, Egypt is among the pioneering states in the Middle East that possess a well-developed e-commerce setting and a sophisticated information technology infrastructure [2]. Indeed, it is regarded as one of the most appealing markets for m-shopping due to the significant proliferation level of mobile device usage in the Egyptian market, which represents around 101.02 million mobile users (out of a total population of 109.3 million) and the increasing number of mobile Internet subscribers, which was over 62 million (out of 101.02 million mobile users) in September 2021 [18].

Egypt's population features several young people who are more inclined to embrace and participate in m-shopping activities than older customers because today's younger generation relies heavily on the Internet and mobile devices for most of their activities [62].

For these reasons, the penetration rate of m-shopping activities in the Egyptian marketplace rises every year. A total of 40.1% of Internet consumers bought items online using their mobile phones during the third quarter of 2020 [71]. In fact, the e-SQ of m-commerce apps is a critical factor in shaping Egyptian consumer satisfaction [50], and potential m-commerce adopters in Egypt are extremely sensitive to SQ issues [20]. Accordingly, businesses and digital retailers must consider mobile SQ

factors when developing mobile shopping apps to ensure success in the Egyptian market. In the following sections, we will discuss SQ in both e-commerce and m-commerce contexts.

SQ in an e-commerce environment

SQ represents a customer's opinions and perspectives about the relative excellence or weakness of a corporation and its services [7]. Customers mainly determine the SQ level by comparing their former expectations to current service performance [25]. SQ includes various service elements and features desirable to customers. These elements vary among business environments and individuals and cannot be assessed or detected directly [82]. Therefore, scholars have proposed approaches for estimating SQ. The SERVQUAL scale pioneered by Parasuraman et al. [56, 58] is the most popular method in this regard, which proposes five dimensions for evaluating consumers' expectations of SQ in service and retail companies: tangibles, reliability, responsiveness, assurance, and empathy.

With emerging online business channels, traditional SQ measures such as the SERVQUAL model had to be reformulated to reflect the features of SQ specific to the digital environment [1]. In an online context, e-SQ is characterized as a customer's assessments and impressions of the quality and performance of the e-service acquired through a digital marketplace [63]. E-SQ evaluates an entire transaction conducted online, including website functionality, purchasing procedures, privacy rules, client support communications, returns handling, shipping, and order fulfillment [8].

The business success of an e-firm relies heavily on e-SQ. Most consumer complaints regarding e-retailers are attributed to poor e-SQ, so e-organizations should provide clients with an outstanding service experience to protect their reputation and acquire customer loyalty [24]. In this respect, many researchers have endeavored to establish novel methods for estimating e-SQ that specifically reflect the characteristics of e-commerce. Some examples of these scales include SITEQUAL, introduced by Yoo and Donthu [79], who developed four SQ determinants for online shopping sites: ease of use, aesthetic design, processing speed, and security. Meanwhile, Barnes and Vidgen [4] proposed WebQual, wherein they identified five factors for measuring the SQ of e-commerce websites: tangibles, reliability, responsiveness, assurance, and empathy. Moreover, Wolfinbarger and Gilly [77] developed ETailQ and suggested four factors to predict the quality of online retailers: website design, fulfillment/reliability, privacy/security, and customer service. E-S-QUAL was presented by Parasuraman et al. [57], who suggested four constructs to estimate the SQ offered by online consumer shopping websites: efficiency, fulfillment, system availability, and privacy. Bauer et al. [5] introduced ETransQual and identified five dimensions for measuring SQ online: functionality/design, enjoyment, process, reliability, and responsiveness. The following section discusses additional models for estimating SQ in an m-commerce environment.

Mobile SQ in m-commerce

With the subsequent advent of m-commerce, it became obvious that it has its own features and characteristics that distinguish it from e-commerce [54]. M-commerce platforms can afford services based on location, individualization, client, and context [76]. Mobile channels provide more portability due to the modest size and mobility of devices. This provides suitability and temporal and spatial flexibility advantages over conventional electronic channels [81]. In the context of m-commerce, specifically m-shopping, mobile SQ can be defined as "the extent to which a mobile channel facilitates efficient and effective shopping, purchasing, and delivery of products and services" [54], p. 3).

Because of the unique features of m-commerce, e-SQ measures are insufficient to explain the overall mobile SQ associated with m-commerce platforms. In fact, some aspects of these measures are incompatible with the m-commerce context. For example, dimensions related to m-commerce apps should replace the website design dimension, which refers to all elements of the consumer experience on the website in the eTailQ model [77], and the system availability dimension, which refers to the site's proper technical functioning in the E-S-QUAL model [57]. Moreover, some new dimensions have emerged to evaluate SQ in the m-commerce environment, such as Kaatz's [35] dimension of service ubiquity, which describes the retailer's ability to make offers based on location and time. Therefore, mobile SQ measures should include elements and dimensions that are specific to m-commerce.

As mentioned earlier, investigations into mobile SQ are not extensive. The literature has recently been striving to develop a comprehensive framework to estimate mobile SQ in an m-commerce setting. For example, depending on fuzzy set theory, Choi et al. [15] proposed a method for assessing mobile SQ among customers of mobile network operators comprising six aspects: network, device, security, convenience, content, and customer support. Another example is Lu et al. [45] who suggested a measurement scale for mobile SQ regarding mobile brokerage services that includes three key elements, namely interaction, environment, and outcome quality. The same approach was adopted by Wang et al. [76] for a study on mobile communication platforms that emphasized the

significant indirect impact of two factors—interaction and environmental quality—on a client's intention to continue the service.

Although these studies aimed to develop an instrument to evaluate mobile SQ, the specifics of their setting and methodology limit their generalizability to evaluate mobile SQ in general [31]. Accordingly, it is critical to develop a comprehensive and robust framework for measuring the overall mobile SQ associated with m-commerce apps [78]. The M-S-QUAL scale proposed by Huang et al. [31], to the authors' knowledge, is the first and only comprehensive and solid model to assess the mobile SQ of m-shopping platforms. Compared to other models, this scale incorporates SQ aspects unique to the m-shopping context from the perspective of actual customers. This approach suggests four major constructs for physical goods shopping: contact, responsiveness, fulfillment, and efficiency; privacy was added as a fifth construct when measuring virtual product shopping. This scale has been empirically validated by Omar et al. [54] in the UK. This study attempts to validate the scale in another country with a different culture and economic conditions.

Research model and hypothesis development

The current study attempts to provide empirical support for the M-S-QUAL method in an emerging country context, like the Egyptian market, to respond to Huang et al. [31] request for the scale to be applied to diverse marketplaces with distinct cultures to enhance its generality and reliability. It examines the potential impact of suggested aspects of M-S-QUAL on the outcome variables, which include m-satisfaction, m-loyalty, and e-WOM, as demonstrated in the hypothesized model depicted in Fig. 1.

This study relies on the M-S-QUAL scale for physical goods shopping, which involves four variables: contact, responsiveness, fulfillment, and efficiency. According to Huang et al. [31], contact describes the extent to which telephone and online agents are available to provide support. Responsiveness relates to the efficacy of the m-shopping app's problem-solving procedure and return policy. Fulfillment refers to the degree to which the m-shopping app keeps its promises concerning order delivery and product availability. Efficiency describes the extent to which the m-shopping app is fast and easy to use.

Relation between mobile SQ and m-satisfaction

In the new era of m-commerce, client satisfaction is a critical component of corporate success. It plays an important role in gaining market share and revenue and preserving existing clients for m-commerce companies [62]. Mobile satisfaction (m-satisfaction) refers to the total response to the consistency between the anticipated and actual functioning of m-commerce [47]. A client's m-satisfaction with an m-shopping app can be described as "the post-utilization stage that results from a cognitive evaluation process, by which individual consumer expectations regarding m-shopping experiences serve as the baseline to gauge their level of satisfaction" [26], p. 151).

Many studies in the e-business area have revealed that e-SQ is a primary motivation for e-satisfaction [5, 8, 9, 24, 37, 43, 60, 61, 74]. Mobile SQ is proven to have a considerable impact on a customer's m-satisfaction with m-commerce in the domains of mobile payment [80], mobile banking [66], m-shopping [41], and augmented reality retail apps [14]. Therefore, we hypothesize the following:

Fig. 1 The research framework

H1 M-shopping SQ positively influences shopper m-satisfaction.

Furthermore, to examine the impact of the individual aspects of m-shopping SQ (contact, responsiveness, fulfillment, and efficiency) on m-satisfaction, we hypothesize the following:

H2 M-shopping SQ aspects (H2a) contact, (H2b) responsiveness, (H2c) fulfillment, and (H2d) efficiency positively influence shopper m-satisfaction.

Relation between m-satisfaction and m-loyalty

Establishing consumer loyalty is a key strategic target for any organization [64] as it represents an organization's most valuable asset, through which a corporation may create a long-term mutually beneficial and profitable connection with its clients [59]. Loyalty is described as a profound commitment to repurchase an item continuously, regardless of situational effects or promotional activities that may modify a customer's behavior [53]. It reflects the urge to rebuy, tolerance for a higher price, and willingness to acquire additional items from the same corporation [11]. This stems from a client's belief that the value gained from a certain vendor or brand surpasses that given by a rival firm [73]. In this study, mobile loyalty (m-loyalty) can be characterized as an m-shopper's obligation to buy items from the same m-shopping app.

A review of prior studies reveals the beneficial and primary role of e-satisfaction in creating and retaining online consumer loyalty [37, 39, 61]. This suggests that once a firm's clients are satisfied, they are more likely to have a favorable impression and perception of the firm, show loyalty to its brand and products, and even engage in positive e-WOM [64]. In the same way, m-satisfaction is observed to be a crucial predictor of a customer's m-loyalty with mobile payment apps [80], mobile telecommunications services [21], m-commerce [42], mobile advertising [44], and m-shopping [26, 41, 73]. Based on these findings, we suggest the following hypothesis:

H3 M-satisfaction positively influences shopper m-loyalty.

Relation between m-satisfaction and e-WOM

E-WOM represents any dynamic and continuous evaluation by a former, present, or potential customer about the goods, services, or brands that are accessible to various people, businesses, and communities online [55]. Customers often pursue e-WOM for several reasons, such as minimizing search and assessment efforts, mitigating risk regarding their purchase decisions, and better identifying the sellers and products that perfectly match their requirements and desires [72].

In a virtual environment, businesses are unable to control the generation and transmission of e-WOM because dissatisfied consumers can simply share their unwelcoming experiences, unfavorable sentiments, and negative opinions about goods or services online. They can propagate negative e-WOM through various digital channels such as online review sites, corporation websites, and social networks [40]. Satisfied clients tend to recommend the company to others [21]. For companies, favorable e-WOM gives them an opportunity to engage new customers and expand their market share [64]. Therefore, companies are concerned with identifying the factors leading to favorable e-WOM.

In an online business context, customer e-satisfaction has been identified as a major driver of e-WOM by the previous literature (e.g., [34, 60]). With respect to m-commerce, the link between m-satisfaction and e-WOM has been confirmed in various settings such as m-shopping [62], mobile apps [75], mobile healthcare [6], mobile telecommunication services [21], mobile social media services [55], mobile location-based "check-in" services [30], and social commerce platforms [48]. Accordingly, we propose the following hypothesis:

H4 Shopper m-satisfaction positively influences e-WOM.

Methods

Questionnaire design

The survey employed to test the proposed model relies on measurement scales derived from the existing literature. As shown in Table 1, the four factors comprising the M-S-QUAL scale (contact, responsiveness, fulfillment, and efficiency) were derived from Huang et al. [31], Omar et al. [54], and Parasuraman et al. [57]. M-satisfaction was adapted from Rodríguez et al. [61] and Wang et al. [76], whereas m-loyalty was derived from Groß [26] and Omar et al. [54], and E-WOM was adapted from Meilatinova [48] and San-Martín, et al. [62]. As this research targets Egyptian consumers who speak Arabic, the survey was translated into Arabic by the author, revised by two bilingual Egyptian researchers, and re-translated into English to verify the consistency of the instrument items throughout the two versions of the questionnaire, as recommended by Brislin [10].

As a preparatory step before gathering data, a pilot study was conducted to assess the questionnaire's validity and ensure the clarity of its items. It involved 23 participants who were college students at a public university in Egypt, as well as a focus group of four academics in the marketing field. Their recommendations

Table 1 Survey items

Construct	Item	Statement	References
Contact	Con1	The customer service agents of an m-shopping app consistently provide beneficial advice to the customers	[31, 54, 57]
	Con2	The customer service agents of an m-shopping app are friendly and willing to help when receiving complaints	
	Con3	The customer service agents of an m-shopping app can rapidly fix problems if they exist	
	Con4	The customer service agents of an m-shopping app are polite and reassuring	
Responsiveness	Res1	The m-shopping app offers convenient options for returning products	
	Res2	The m-shopping app has a clear process for handling returns	
	Res3	The m-shopping app offers a meaningful guarantee	
	Res4	The m-shopping app presents clear information on what to do if a problem arises	
Fulfillment	Ful1	The m-shopping app makes products available for delivery within a suitable timeframe	
	Ful2	The m-shopping app sends out the products that have been ordered	
	Ful3	The m-shopping app delivers orders when promised	
	Ful4	The m-shopping app contains accurate stock information and only displays products that are currently available	
Efficiency	Eff1	The m-shopping app enables me to access it quickly	
	Eff2	The m-shopping app allows me to complete a transaction quickly	
	Eff3	The m-shopping app has quick loading time	
	Eff4	It is easy to navigate to any area of the m-shopping app	
	Eff5	Information about the m-shopping app is laid out logically	
M-satisfaction	Sat1	My overall satisfaction with m-shopping app services is good	[61, 76]
	Sat2	The m-shopping app met all my expectations	
	Sat3	My decision to purchase from an m-shopping app was a wise one	
	Sat4	My experience with the m-shopping app is very pleasing	
	Sat5	The m-shopping app does a satisfactory job of fulfilling my needs	
M-loyalty	Loy1	I will continue to use m-shopping apps to purchase new apparel	[26, 54]
	Loy2	In the near future, I plan to shop more often using m-shopping apps than I do today	
	Loy3	When I need to buy new clothes, an m-shopping app will be my first choice	
	Loy4	I will prefer m-shopping when I need to shop again	
	Loy5	Even if another m-shopping app offers something cheaper, I will still purchase from the same m-shopping app	
E-WOM	WOM1	I will recommend shopping using an m-shopping app to anyone who seeks my advice	[48, 62],
	WOM2	I will recommend m-shopping apps to my friends or acquaintances	
	WOM3	I will say positive things about buying through m-shopping apps to others	
	WOM4	I will provide others with information about a purchase made on an m-shopping app	
	WOM5	I will highlight the positive aspects of buying through m-shopping apps to anyone who criticizes them	

Contact: Con; responsiveness: Res; fulfillment: Ful; efficiency: Eff; M-satisfaction: Sat; M-loyalty: Loy; electronic word of mouth: E-WOM

and opinions were considered, and the questionnaire was improved according to their feedback. The final survey used for this study features three sets of questions. The first set contained items pertaining to former purchasing experiences with m-shopping apps. Consistent with the research model, the second set contained 32 statements assessed using a 5-point Likert-type scale that measured the seven endogenous and exogenous variables used in the research framework. The last set involved questions referring to a participant's sociodemographic attributes (e.g., age, gender, and educational level).

Sample design and selection

The present study's target population includes consumers aged 18 years or older who have purchased clothing via an m-shopping platform at least once in the last six months. Clothing purchases were specifically targeted because apparel is one of the most common types of merchandise purchased online in most countries [67]. As no sample frame was available, a convenience sampling approach was employed to gather data from visitors to seven different shopping malls in Cairo, the capital of Egypt. The subjects were initially asked if they had ever utilized an m-shopping app on their mobile phones. Only those who confirmed that they had previously engaged in m-shopping activities were invited to participate in the survey. The entire questionnaire was disseminated

to participants in a paper-based form. The survey was performed over an eight-week period from December 15, 2021, to February 13, 2022. After eliminating 14 invalid questionnaires that had missing values from the 275 responses obtained, our analysis included 261 valid responses.

As shown in Table 2, most of the respondents were aged 18–30 years (85.8%), whereas those between 31 and 40 accounted for 11.9% of participants, and only 2.3% were aged 41–50 years. The age distribution reveals that most participants are younger individuals under the age of 30. This gap exists be because the younger generation is more likely to adopt novel technologies like m-shopping apps than the older age groups, who may be unfamiliar with or uninterested in such apps and still favor conventional shopping. A large portion of the sample comprised women (69%), whereas men constituted 31%.

Table 2 Respondent profile

Measure	Items	(n = 261)	
		N	%
Gender	Male	81	31
	Female	180	69
Age	18–30 years	224	85.8
	31–40 years	31	11.9
	41–50 years	6	2.3
	≥ 51 years	0	0
Education	High school diploma or lower	0	0
	High school degree or equivalent	24	9.2
	Undergraduate school degree	213	81.6
	Graduate school degree or above	24	9.2
Frequency of use (within the last year)	Less than once per quarter	153	58.6
	Quarterly	54	20.7
	Monthly	44	16.9
	Weekly	8	3
	Daily	2	0.8
M-shopping experience	< 1 year	97	37.2
	1–2 years	68	26.1
	2–3 years	51	19.5
	> 3 years	45	17.2

Most of our respondents (81.6%) held a bachelor's degree or equivalent. Additionally, the participants had varying levels of experience with m-shopping apps. Of the respondents, 37.2% had less than one year of experience, 26.1% had 1–2 years, 19.5% had 2–3 years, and 17.2% had more than 3 years of experience with m-shopping apps.

Data analysis and results

This research employed SEM using Amos v. 24 software to verify the validity and reliability of the measurement model and examine the causal links postulated.

Assessing the measurement model

The dataset was screened for normality. All skewness and kurtosis test values for the variables (contact, responsiveness, fulfillment, efficiency, satisfaction, loyalty, and WOM) were less than + 3 and − 3, indicating that all the variables were normally distributed. A first-order confirmatory factor analysis (CFA) was conducted for the four factors that constituted the M-S-QUAL scale to assess its validity. Then, a second-order CFA in which all the first-order factors were loaded onto one higher-order factor (MSSQ). An additional second-order CFA was conducted, including all the model constructs (MSSQ, satisfaction, loyalty, and WOM). The overall goodness of fit indices for the CFA analyses indicated an adequate fit of the models (see Table 3).

As shown in Table 4, the standardized factor loading values for all the indicators were above the acceptable level of 0.5 [3]. Cronbach's alpha (α) and composite reliability (CR) were also above 0.7, as suggested by Hair et al. [27] and Nunnally and Bernstein [52]. The average variance extracted reached or exceeded the recommended level of 0.5, except for contact and fulfillment, which were 0.480 and 0.490, respectively. The convergent validity for both constructs was considered adequate as their CR exceeded the threshold value as reported by Fornell and Larcker [22]. Thus, convergent validity and reliability were confirmed for the measurement models.

Discriminant validity was examined using the Heterotrait–Monotrait ratio (HTMT) method. All HTMT values for both the first-order MSSQ measurement model and second-order measurement model were less than the

Table 3 Model fit indices of the CFA

Model Fit Indices	CMIN/DF	TLI	CFI	RMSEA	SRMR
1st order CFA	2.018	0.931	0.943	0.063	0.065
2nd order CFA (MSSQ)	2.047	0.929	0.941	0.063	0.070
2nd order CFA (all constructs)	1.877	0.919	0.926	0.058	0.064
Recommended threshold	Between 1 and 3	> 0.90	> 0.90	< 0.08	< 0.08

Confirmatory factor analysis: CFA; mobile shopping service quality: MSSQ; minimum discrepancy/degree of freedom: CMIN/DF; Tucker–Lewis index: TLI; comparative fit index: CFI; root mean square error of approximation: RMSEA; standardized root mean square residual: SRMS

Table 4 Convergent validity and reliability of the measurement models

Construct	Items	α	1st order CFA			2nd order CFA (MSSQ)	2nd order CFA (All constructs)		
			SFL	CR	AVE	SFL	SFL	CR	AVE
Contact (MSSQ)	Con1	0.782	0.612	0.786	0.480	0.615	0.618	0.898	0.688
	Con2		0.746			0.736	0.739		
	Con3		0.714			0.702	0.706		
	Con4		0.692			0.709	0.701		
Responsiveness (MSSQ)	Res1	0.808	0.774	0.813	0.523	0.631	0.627		
	Res2		0.803			0.670	0.661		
	Res3		0.651			0.700	0.714		
	Res4		0.652			0.722	0.715		
Fulfillment (MSSQ)	Ful1	0.780	0.718	0.791	0.490	0.732	0.732		
	Ful2		0.685			0.688	0.679		
	Ful3		0.801			0.789	0.790		
	Ful4		0.578			0.571	0.581		
Efficiency (MSSQ)	Eff1	0.872	0.695	0.874	0.582	0.694	0.688		
	Eff2		0.768			0.771	0.766		
	Eff3		0.821			0.826	0.835		
	Eff4		0.775			0.767	0.766		
	Eff5		0.750			0.751	0.752		
Satisfaction	Sat1	0.908					0.790	0.909	0.666
	Sat2						0.768		
	Sat3						0.840		
	Sat4						0.862		
	Sat5						0.816		
Loyalty	Loy1	0.880					0.830	0.891	0.621
	Loy2						0.856		
	Loy3						0.778		
	Loy4						0.806		
	Loy5						0.655		
WOM	WOM1	0.901					0.874	0.902	0.649
	WOM2						0.863		
	WOM3						0.851		
	WOM4						0.697		

Cronbach's alpha: α; standardized factor loading: SFL; composite reliability: CR; average variance extracted: AVE

threshold of 0.9 (see Table 5), demonstrating that discriminant validity was established [29].

Assessing the structural model

The structural model was assessed to examine the causal links postulated in the study framework. The structural model showed an acceptable fit (CMIN/DF = 2.019, $P = 0.000$, TLI = 0.906, CFI = 0.914, SRMR = 0.067, RMSEA = 0.063). As seen in Table 6, MSSQ had a significant influence on m-satisfaction (β = 0.1.266, $P = 0.001$), which supports H1. The results also revealed that m-satisfaction has a significantly positive effect on m-loyalty and e-WOM (β = 0.844, $P = 0.001$ and β = 0.854, $P = 0.001$, respectively), thereby supporting H3 and H4.

To examine the effect of the individual aspects of m-shopping SQ on m-satisfaction, m-loyalty, and e-WOM, we ran a second structural model without the MSSQ factor as a higher-order factor. The model indices indicated an acceptable fit (CMIN/DF = 1.894, $P = 0.000$, TLI = 0.917, CFI = 0.925, SRMR = 0.059, RMSEA = 0.059). The results show that both responsiveness (β = 0.795, $P = 0.001$) and efficiency (β = 0.552, $P = 0.005$) have a significant impact on customer satisfaction, which supports H2b and H2d. Unexpectedly, contact and fulfillment did not have a significant influence on satisfaction, with values of (β = −0.007, $P = 0.964$) and (β = −0.336, $P = 0.264$), respectively, thereby rejecting H2a and H2c. These results provide partial support for H2. Satisfaction also shows

Table 5 Heterotrait–Monotrait ratio (HTMT) values for discriminant validity testing

	1st-order MSSQ measurement model			
	Con	**Res**	**Ful**	**Eff**
Con				
Res	0.730			
Ful	0.683	0.698		
Eff	0.597	0.470	0.866	
	2nd-order MSSQ measurement model			
	Sat	**Loy**	**WOM**	**MSSQ**
Sat				
Loy	0.886			
WOM	0.823	0.881		
MSSQ	0.789	0.626	0.686	

Table 6 Overview of the results of hypothesis testing

Hypotheses	Estimate	S.E	C.R	*P*-value	Result
H1: MSSQ– > Sat	1.266	0.151	8.358	***	Supported
H3: Sat – > Loy	0.844	0.086	9.764	***	Supported
H4: Sat – > WOM	0.854	0.074	11.468	***	Supported
H2a: Con– > Sat	−0.007	0.156	0.046	0.964	Rejected
H2b: Res– > Sat	0.795	0.205	3.882	***	Supported
H2c: Ful– > Sat	−0.336	0.301	−1.117	0.264	Rejected
H2d: Eff– > Sat	0.552	0.195	2.831	0.005	Supported

Standard error: S.E.; critical ratio: C.R., *** *P*-value 0.001

Table 7 Mediating model results

The indirect relationship	β	LB	UB	*P*
MSSQ → Sat → Loy	1.069	0.828	1.397	0.001
MSSQ → Sat → WOM	1.081	0.869	1.414	0.001
Con → Sat → Loy	−0.006	−0.365	0.273	0.975
Con → Sat → WOM	−0.006	−0.371	0.284	0.971
Res → Sat → Loy	0.676	0.386	1.335	0.002
Res → Sat → WOM	0.694	0.417	1.359	0.002
Eff → Sat → Loy	0.469	0.166	1.014	0.011
Eff → Sat → WOM	0.482	0.175	1.018	0.011
Ful → Sat → Loy	−0.285	−1.263	0.132	0.299
Ful → Sat → WOM	−0.293	−1.256	0.143	0.305

Beta: β; lower bound: LB; upper bound: UB; *P* value: *P*

a significant influence on mobile loyalty ($\beta = -0.849$, $P = 0.001$) and e-WOM ($\beta = 0.873$, $P = 0.001$). Table 6 presents an overview of the results of the hypothesis tests.

Using a bootstrapping method, we conducted an additional mediation analysis to verify the influence of MSSQ on m-loyalty and e-WOM via m-satisfaction (resampling 2000 and confidence interval 0.95). Table 7 shows that MSSQ had a significant indirect effect on m-loyalty and e-WOM via m-satisfaction, indicating that m-satisfaction mediates the links between MSSQ and both m-loyalty and e-WOM. Further mediation tests were performed throughout the model to examine the indirect links between the individual aspects of the MSSQ (contact, responsiveness, fulfillment, and efficiency) and m-loyalty and e-WOM via m-satisfaction. Table 7 shows the indirect effects of responsiveness on m-loyalty and e-WOM through m-satisfaction were significant. The indirect effects of efficiency on m-loyalty and e-WOM via m-satisfaction were also significant. This demonstrated that m-satisfaction mediated the links between responsiveness and the endogenous variables, as well as between efficiency and the endogenous variables. However, the indirect effects of contact on m-loyalty and e-WOM through m-satisfaction were not significant. The indirect effects of fulfillment on loyalty and e-WOM via satisfaction were also not significant. This indicates that the link between neither fulfillment and the endogenous variables nor contact and the endogenous variables is mediated by m-satisfaction.

Discussion

As m-shopping is still in its infancy in emerging markets, including Egypt, and consumers' perceptions of its SQ are not yet fully understood, mobile merchants should comprehend the perspectives and preferences of the first adopters to create a strategy that fulfills mobile buyers' needs and achieves success in this business. This study offers m-shopping merchants and digital marketers guiding principles for successfully running and developing m-shopping apps in today's highly competitive market. The M-S-QUAL scale gives stakeholders deeper insight into what aspects of SQ to emphasize on to improve the overall level of m-shopping app SQ. It will also help them

identify the specific factors of SQ valued by m-shoppers the most and results in the most satisfaction, thereby inspiring loyalty and prompting favorable e-WOM.

Our findings demonstrate that four aspects—contact, responsiveness, fulfillment, and efficiency—establish m-shopping SQ, indicating that the M-S-QUAL scale for physical goods is suitable for measuring what is proposed. This supports and extends the findings of Huang et al. [31] and Omar et al. [54].

This study's findings illustrate that m-shopping SQ directly enhances a shopper's m-satisfaction. This is supported by other researchers who concluded that the SQ related to m-commerce apps is a key determinant of mobile customer satisfaction with m-shopping [41], mobile payment [80], mobile banking [66], and augmented reality retail apps [14]. Therefore, administrators and developers of shopping apps must think creatively about how they can maximize the SQ of their platforms to boost client satisfaction.

The results indicate that both responsiveness and efficiency influence a consumer's m-satisfaction with an m-shopping app. Omar et al. [54] found that efficiency is the most significant driving force of all SQ dimensions in establishing customer satisfaction with an m-shopping platform. Chen et al. [13] emphasized the role of efficiency as a component of SQ in creating satisfaction with an AI chatbot. Relevant research has also indicated that responsiveness represents a key element of SQ for determining a consumer's satisfaction with an online shopping site [5].

An unexpected finding of our analysis is that contact and fulfillment do not increase a consumer's m-satisfaction. Consumers anticipate that m-shopping apps will fulfill their orders and provide appropriate contact as basic functions, so they do not contribute to increasing their overall satisfaction. However, improving the efficiency and responsiveness of such apps are critical issues to satisfy consumers.

The results support the positive association between consumer m-satisfaction and m-loyalty, which is consistent with studies on m-shopping [26, 41, 73], mobile payment apps [80], mobile telecommunication services [21], m-commerce [42], and mobile advertising [44].

These findings also affirm the relation between a customer's m-satisfaction and e-WOM. Research has shown that satisfaction plays a crucial role in boosting positive e-WOM in various m-commerce settings, including m-shopping [62], mobile health [6], mobile social media services [55], mobile location-based "check-in" services [30], and social commerce platforms [48]. This implies that keeping m-shoppers satisfied will cause them to recommend and advocate for m-vendors' apps in virtual communities. Their recommendations may encourage additional buyers to visit these applications because they are considered a very reliable source of information for other consumers [24].

Finally, the study's findings support the role of m-shopping SQ in improving consumer m-loyalty and e-WOM via m-satisfaction. This suggests that focusing mobile merchants' efforts on providing high levels of SQ will provide a pleasant experience for m-shoppers and keep them satisfied, leading to repeat purchases from the same platforms, sharing positive e-WOM, and recommending purchasing from these apps to others in the online environment.

Conclusions

Theoretical and practical implications

The present study offers various theoretical and practical implications for scholars and mobile retailers evaluating the SQ of m-shopping apps. Theoretically, it first expands on the existing literature on mobile SQ, which is still limited, by investigating the main determinants of m-shopping SQ using the M-S-QUAL model. Second, it validates the newly proposed M-S-QUAL scale for measuring m-shopping SQ in the emerging economics context. Third, it provides additional support for the positive associations between m-satisfaction, m-loyalty, and e-WOM in the context of m-commerce.

Practically, this study presents suggestions for managing and developing the SQ of m-shopping apps. First, m-shopping managers and application developers should consider improving their responsiveness and efficiency as these are the most prominent aspects of MSSQ that explain m-satisfaction. To improve the responsiveness of m-shopping platforms, managers should provide customers with a credible guarantee, respond rapidly to client issues, establish a clear procedure for handling returns, provide appropriate options for returning items, and present clear information about what they should do when they encounter a problem. To increase efficiency, managers and developers should work on accelerating client order processing, facilitating app navigation, and improving the functionality of app features. Second, this study encourages retailers and businesses to focus on improving customer satisfaction with their m-shopping platforms and make it a priority as it plays a significant role in improving consumer loyalty to such apps and motivating them to spread positive e-WOM, which is important because many consumers today rely on the opinions and recommendations of other consumers to make purchases.

Conclusion

This study builds on the existing literature to establish a comprehensive framework for assessing the mobile SQ

of m-shopping platforms by validating the novel M-S-QUAL scale for physical goods in an emerging market setting. It also provides guiding principles for m-shopping managers and application developers to successfully operate and develop such apps.

The study confirms the role of mobile SQ associated with m-shopping apps in improving consumer m-satisfaction, resulting in improved m-loyalty and positive e-WOM. The study also shows that responsiveness and efficiency are the primary driving forces behind the SQ dimensions of the investigated outcome variables. Thus, executives and developers of m-commerce apps should focus their efforts on improving their platforms' responsiveness and efficiency.

Limitations and suggestions for future research

This research features some limitations. The younger age group was overrepresented in the research sample compared to the other age groups. So, future studies should use a more age-diverse population in which all the age categories are well represented. Although this study depends on actual m-shopping consumers, it relies on a convenient sampling approach due to the difficulty of obtaining a sample of the target population. Future research should utilize other random sampling approaches to improve the generalizability of the results. Future research should investigate the moderating impact of gender, age, and income variables while studying present relationships. More studies are needed to validate the M-S-QUAL scale using other samples from various cultures.

Abbreviations

SQ	Service quality
M-S-QUAL	Mobile service quality
M-Shopping	Mobile shopping
M-Satisfaction	Mobile satisfaction
M-Loyalty	Mobile loyalty
E-WOM	E-word of mouth
CFA	Confirmatory factor analysis
SFL	Standardized factor loading
CR	Composite reliability
AVE	Average variance extracted
HTMT	Heterotrait–monotrait ratio
Sat	Satisfaction
Loy	Loyalty
Con	Contact
Res	Responsiveness
Ful	Fulfillment
Eff	Efficiency

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Author contributions

The author affirms sole responsibility for the following: study conception and design, study methods, data collection, analysis and interpretation of results, and manuscript preparation.

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Availability of data and materials

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Declarations

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Consent for publication

Not applicable.

Competing interests

The author declares that she has no competing interests.

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References

1. Acquila-Natale E, Iglesias-Pradas S (2020) How to measure quality in multi-channel retailing and not die trying. J Bus Res 109:38–48
2. Agag G, El-Masry AA (2016) Understanding the determinants of hotel booking intentions and moderating role of habit. Int J Hosp Manag 54:52–67
3. Bagozzi RP, Yi Y (1988) On the evaluation of structural equation models. J Acad Market Sci 16(1):74–94
4. Barnes SJ, Vidgen R (2001) An evaluation of cyber-bookshops: the web-qual method. Int J Electron Commer 6(1):11–30
5. Bauer HH, Falk T, Hammerschmidt M (2006) eTransQual: a transaction process-based approach for capturing service quality in online shopping. J Bus Res 59:866–875
6. Birkmeyer S, Wirtz BW, Langer PF (2021) Determinants of mHealth success: an empirical investigation of the user perspective. Int J Inf Manage 59:102351
7. Bitner MJ, Hubbert AR (1994) Encounter Satisfaction versus Overall Satisfaction versus Quality: The Customer's Voice. In: Rust RT, Oliver RL (eds) Service Quality: New Directions in Theory and Practice. SAGE Publications Inc, Thousand Oaks, CA, pp 72–94
8. Blut M (2016) E-service quality: development of a hierarchical model. J Retail 92(4):500–517
9. Bressolles G, Durrieu F, Senecal S (2014) A consumer typology based on e-service quality and e-satisfaction. J Retail Consum Serv 21:889–896
10. Brislin R (1986) The wording and translation of research instruments. In: Lonner WJ, Berry JW (eds) Field methods in cross-cultural research. Sage, Beverly Hills, CA
11. Chang C-C (2015) Exploring mobile application customer loyalty: the moderating effect of use contexts. Telecommun Policy 39:678–690
12. Chen JV, Tran A, Nguyen T (2019) Understanding the discontinuance behavior of mobile shoppers as a consequence of technostress: an application of the stress-coping theory. Comput Hum Behav 95:83–93
13. Chen Q, Gong Y, Lu Y, Tang J (2022) Classifying and measuring the service quality of AI chatbot in frontline service. J Bus Res 145:552–568
14. Chiu CL, Ho H-C, Yu T, Liu Y, Mo Y (2021) Exploring information technology success of augmented reality retail applications in retail food chain. J Retail Consum Serv 61:102561
15. Choi C, Kim C, Sung N, Park Y (2007) Evaluating the quality of service in mobile business based on fuzzy set theory. In: Fourth International Conference on Fuzzy Systems and Knowledge Discovery. (FSKD 2007). https://doi.org/10.1109/FSKD.2007.277
16. Cui X, Zhu T, Chen Y (2024) March) Where you live matters: the impact of offline retail density on mobile shopping app usage. J Retail 100(1):41–55
17. Egedigwe E (2015) Service Quality and Perceived Value of Cloud Computing-Based Service Encounters: Evaluation of Instructor Perceived Service

Quality in Higher Education in Texas (Doctoral dissertation). Available from ProQuest Dissertations & Theses Global database. (UMI No. 3712278)
18. Egypt ICT Indicators Monthly Report (2021, October). Retrieved Decmber 8, 2021, from http://www.egyptictindicators.gov.eg/en/Pages/default33.aspx
19. Egypt ICT Indicators Quarterly Bulletin (2022, December). Retrieved February 14, 2023, from http://www.egyptictindicators.gov.eg/en/Pages/default33.aspx
20. Elsaadany O, Kadry M (2014) Evaluation of the Factors That Affect the Mobile Commerce in Egypt and Its Impact on Customer Satisfaction. In: Sobecki J, Boonjing V, Chittayasothorn S (eds) Advanced Approaches to Intelligent Information and Database Systems. Springer International Publishing, Cham, pp 213–224. https://doi.org/10.1007/978-3-319-05503-9_21
21. Fierro JC, Polo IM, Oliván FJ (2014) From dissatisfied customers to evangelists of the firm: a study of the Spanish mobile service sector. BRQ Bus Res Q 17:191–204
22. Fornell C, Larcker D (1981) Evaluating structural equation models with unobservable variables and measurement error. J Mark Res 18(1):39–50
23. Garrouch K, Ghali Z (2023) On linking the perceived values of mobile shopping apps, customer well-being, and customer citizenship behavior: moderating role of customer intimacy. J Retail Consum Serv 74:103396
24. Gounaris S, Dimitriadis S, Stathakopoulos V (2010) An examination of the effects of service quality and satisfaction on customers' behavioral intentions in e-shopping. J Serv Mark 24(2):142–156
25. Grönroos C (1984) A service quality model and its marketing implications. Eur J Mark 18(4):36–44
26. Groß M (2018) Mobile shopping loyalty: the salient moderating role of normative and functional compatibility beliefs. Technol Soc 55:146–159
27. Hair J, Black W, Babin B, Anderson R (2010) Multivariate Data Analysis, 7th edn. Prentice Hall, New Jersey
28. Hassan HE, Wood VR (2020) Does country culture influence consumers' perceptions toward mobile banking? A comparison between Egypt and the United States. Telemat Inform 46:101312
29. Henseler J, Ringle CM, Sarstedt M (2015) A new criterion for assessing discriminant validity in variance-based structural equation modeling. J Acad Mark Sci 43(1):115–135
30. Hsieh J-K (2020) The effects of transforming mobile services into mobile promotions. J Bus Res 121:195–208
31. Huang EY, Lin S-W, Fan Y-C (2015) M-S-QUAL: mobile service quality measurement. Electron Commer Res Appl 14:126–142
32. Huang G-H, Korfiatis N, Chang C-T (2018) Mobile shopping cart abandonment: the roles of conflicts, ambivalence, and hesitation. J Bus Res 85:165–174
33. Huang L, Lu X, Ba S (2016) An empirical study of the cross-channel effects between web and mobile shopping channels. Inf Manag 53:265–278
34. Jung NY, Seock Y-K (2017) Effect of service recovery on customers' perceived justice, satisfaction, and word-of-mouth intentions on online shopping websites. J Retail Consum Serv 37:23–30
35. Kaatz C (2020) Retail in my pocket– replicating and extending the construct of service quality into the mobile commerce context. J Retail Consum Serv 53:101983
36. Kapoor AP, Vij M (2021) Following you wherever you go: Mobile shopping 'cart-checkout' abandonment. J Retail Consum Serv 61:102553
37. Khan FN, Arshad MU, Munir M (2023) Impact of e-service quality on e-loyalty of online banking customers in Pakistan during the Covid-19 pandemic: mediating role of e-satisfaction. Futur Bus J 9:23
38. Kim C, Li W, Kim DJ (2015) An empirical analysis of factors influencing m-shopping use. Int J Hum-Comput Int 31:974–994
39. Kim J, Jin B, Swinney JL (2009) The role of etail quality, e-satisfaction and e-trust in online loyalty development process. J Retail Consum Serv 16:239–247
40. Kim SJ, Wang RJ-H, Maslowska E, Malthouse EC (2016) "Understanding a fury in your words": the effects of posting and viewing electronic negative word-of-mouth on purchase behaviors. Comput Hum Behav 54:511–521
41. Kim Y, Wang Q, Roh T (2021) Do information and service quality affect perceived privacy protection, satisfaction, and loyalty? Evidence from a Chinese O2O based mobile shopping application. Telemat Inform 56:101483
42. Lee WO, Wong LS (2016) Determinants of mobile commerce customer loyalty in Malaysia. Procedia Soc Behav Sci 224:60–67
43. Li F, Lu H, Hou M, Cui K, Darbandi M (2021) Customer satisfaction with bank services: the role of cloud services, security, e-learning and service quality. Technol Soc 64:101487
44. Lu C-C, Wu I-L, Hsiao W-H (2019) Developing customer product loyalty through mobile advertising: affective and cognitive perspectives. Int J Inf Manage 47:101–111
45. Lu Y, Zhang L, Wang B (2009) A multidimensional and hierarchical model of mobile service quality. Electron Commer Res Appl 8(5):228–240
46. Maduku DK, Thusi P (2023) Understanding consumers' mobile shopping continuance intention: new perspectives from South Africa. J Retail Consum Serv 70:103185
47. Marinao-Artigas E, Barajas-Portas K (2020) Precedents of the satisfaction of mobile shoppers. A cross-country analysis. Electron Commer Res Appl 39:100919
48. Meilatinova N (2021) Social commerce: factors affecting customer repurchase and word-of-mouth intentions. Int J Inf Manage 57:102300
49. Morgeson FV, Sharma PN, Hult GT (2015) Cross-national differences in consumer satisfaction: mobile services in emerging and developed markets. J Int Mark 23(2):1–24
50. Morsi S (2026) Evaluation of e-service quality and its impact on customer satisfactions for mobile commerce applications in Egypt. Arab J Adm 46(1):1–18
51. Natarajan T, Balasubramanian SA, Kasilingam DL (2018) The moderating role of device type and age of users on the intention to use mobile shopping applications. Technol Soc 53:79–90
52. Nunnally J, Bernstein I (1994) Psychometric Theory, 3rd edn. McGraw-Hill, New York
53. Oliver RL (1999) Whence consumer loyalty? J Mark 63:33–44
54. Omar S, Mohsen K, Tsimonis G, Oozeerally A, Hsu J-H (2021) M-commerce: the nexus between mobile shopping service quality and loyalty. J Retail Consum Serv 60:102468
55. Pang H (2021) Identifying associations between mobile social media users' perceived values, attitude, satisfaction, and eWOM engagement: the moderating role of affective factors. Telemat Inform 59:101561
56. Parasuraman A, Zeithaml VA, Berry LL (1985) A conceptual model of service quality and its implications for future research. J Mark 49(4):41–50
57. Parasuraman A, Zeithaml VA, Malhotra A (2005) E-S-qual: a multiple-item scale for assessing electronic service quality. J Serv Res 7(3):213–233
58. Parasuraman A, Zeithaml V, Berry L (1988) SERVQUAL: a multiple- Item Scale for measuring consumer perceptions of service quality. J Retail 64:12–40
59. Rahul T, Majhi R (2014) An adaptive nonlinear approach for estimation of consumer satisfaction and loyalty in mobile phone sector of India. J Retail Consum Serv 21:570–580
60. Rita P, Oliveira T, Farisa A (2019) The impact of e-service quality and customer satisfaction on customer behavior in online shopping. Heliyon 5:02690
61. Rodríguez PG, Villarreal R, Valino PC, Blozis S (2020) A PLS-SEM approach to understanding E-SQ, E-Satisfaction and E-Loyalty for fashion E-Retailers in Spain. J Retail Consum Serv 57:102201
62. San-Martín S, Prodanova J, Jiménez N (2015) The impact of age in the generation of satisfaction and WOM in mobile shopping. J Retail Consum Serv 23:1–8
63. Santos J (2003) E-service quality: a model of virtual service dimensions. Manag Serv Qual Int J 13(3):233–246
64. Shaikh AA, Karjaluoto H, Häkkinen J (2018) Understanding moderating effects in increasing share-of-wallet and word-of mouth: a case study of Lidl grocery retailer. J Retail Consum Serv 44:45–53
65. Sharma P, Luk ST, Cardinali S, Ogasavara MH (2018) Challenges and opportunities for marketers in the emerging markets. J Bus Res 86:210–216
66. Sharma SK, Sharma M (2019) Examining the role of trust and quality dimensions in the actual usage of mobile banking services: an empirical investigation. Int J Inf Manage 44:65–75
67. Silva SC, Rocha TV, Cicco RD, Galhanone RF, Mattos LT (2021) Need for touch and haptic imagery: an investigation in online fashion shopping. J Retail Consum Serv 59:102378

68. Singh S, Jang S (2022) Search, purchase, and satisfaction in a multiple-channel environment: How have mobile devices changed consumer behaviors? J Retail Consum Serv 65:102200
69. Sohn S (2017) A contextual perspective on consumers' perceived usefulness: the case of mobile online shopping. J Retail Consum Serv 38:22–33
70. Statista (2021a) Retrieved November 25, 2021, from https://www.statista.com/statistics/806336/mobile-retail-commerce-share-worldwide/
71. Statista (2021b) Retrieved Decmber 8, 2021, from https://www.statista.com/statistics/1190637/online-shopping-with-mobile-devices-in-egypt-and-south-africa/
72. Tapanainen T, Dao TK, Nguyen TT (2021) Impacts of online word-of-mouth and personalities on intention to choose a destination. Comput Hum Behav 116:106656
73. Thakur R (2016) Understanding customer engagement and loyalty: a case of mobile devices for shopping. J Retail Consum Serv 32:151–163
74. Udo GJ, Bagchi KK, Kirs PJ (2010) An assessment of customers' e-service quality perception, satisfaction and intention. Int J Inf Manage 30:481–492
75. Verkijika SF, Wet LD (2019) Understanding word-of-mouth (WOM) intentions of mobile app users: the role of simplicity and emotions during the first interaction. Telemat Inform 41:218–228
76. Wang W-T, Ou W-M, Chen W-Y (2019) The impact of inertia and user satisfaction on the continuance intentions to use mobile communication applications: a mobile service quality perspective. Int J Inf Manage 44:178–193
77. Wolfinbarger M, Gilly MC (2003) eTailQ: dimensionalizing, measuring and predicting etail quality. J Retail 79:183–198
78. Yao K-C, Yang J-J, Lo H-W, Lin S-W, Li G-H (2023) Using a BBWM-PROMETHEE model for evaluating mobile commerce service quality: a case study of food delivery platform. Res Transp Bus Manag 49:100988
79. Yoo B, Donthu N (2001) Developing a scale to measure the perceived quality of an Internet shopping site (SITEQUAL). Qtrly J Electron Commer 2(1):31–45
80. Yuan S, Liu L, Su B, Zhang H (2020) Determining the antecedents of mobile payment loyalty: cognitive and affective perspectives. Electron Commer Res Appl 41:100971
81. Zhang Y, Voorhees CM, Lin C, Chiang J, Hult GM, Calantone RJ (2022) Information search and product returns across mobile and traditional online channels. J Retail 98(2):260–276
82. Zhou Q, Lim FJ, Yu H, Xu G, Ren X, Liu D, Wang X, Mai X, Xu H (2021) A study on factors affecting service quality and loyalty intention in mobile banking. J Retail Consum Serv 60:102424

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