

Motives of mobile payment adoption during COVID-19 pandemic in Sri Lanka: a holistic approach of both customers' and retailers' perspectives

Motives of
mobile
payment
adoption

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Abstract

Purpose – This study aims to investigate the motives of mobile payment adoption from both customers' and retailers' perspectives in Sri Lanka during the COVID-19 pandemic period. It also aims to compare the motives of mobile payment adoption across rural and urban contexts.

Design/methodology/approach – The study employs a mixed-method approach with a concurrent research design. Both a survey of customers and in-depth interviews of managers in retail companies are used.

Findings – The study discloses that performance expectancy and facilitating conditions (PEFC), Hedonic motivation (HM) and perceived technology security (PTS) as significant motives for customers to adopt mobile payment during this pandemic period. Such findings are confirmed by the four challenges disclose by the retailers. The unfamiliarity of customers, lack of employees' knowledge on mobile payment systems, poor management orientation and lack of computer literacy of customers are the main challenges from the retailers' perspectives. Further, it shows, though PEFC is a common motive, other motives are different across rural and urban.

Practical implications – The findings of the study are helpful for retailers and policymakers. Retailers can develop strategies to enhance mobile payment adoption through PEFC, HM and PTS by giving special attention to the rural community. The main motive possible to use in both rural and urban contexts is PEFC. Further, retailers should take the initiatives to uplift the technological know-how of their employees while inculcating supportive management orientation. Policymakers can use this study to develop policies to enhance the community's familiarity with mobile payment technology and computer literacy.

Originality/value – To the best of the authors' knowledge, this is the first study to investigate motives for adopting mobile payments from both customers' and retailers' perspectives while being the first scrutiny to compare rural and urban scenarios. The use of mixed methods with concurrent research design also contributes to originality.

Keywords Adoption, Challenges, COVID-19, Mobile payment/m-payment, Mixed methods, Sri Lanka

Paper type Research paper



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Introduction

The world has experienced global pandemics in recent times, namely, SARS, H5N1 and H1N1 leading to a downturn in the worldwide economy (Chung, 2015). The present situation is that the whole world was affected by the COVID-19 (Corona) pandemic, and it has caused uncountable problems for the people. As a precaution for this severe problem, the world is practicing fewer contacts among people and social distancing as recommended by WHO (Tang *et al.*, 2020; WHO, 2021). The impact of COVID-19 on the Asian region is considered significant, and the impact is the same in considering Sri Lanka's situation. Therefore, the whole world, including Sri Lanka, is taking action to mitigate the effect of COVID-19, by focusing special attention on social distancing among each other as recommended by WHO (2021).

When considering the impact of the COVID-19 pandemic, it has already impacted almost all areas of the world (e.g. Amankwah-Amoah *et al.*, 2021; Hung *et al.*, 2021; Ravens-Sieberer *et al.*, 2021; Škare *et al.*, 2021). Among these impacted areas, the retail industry is severely affected area, and thus, it has led to the way that the retail industry operates in the world of business (Pantano *et al.*, 2020). Among the different objects that transform the Coronavirus, money (paper/coins) is considered one of the WHO's main things and other medical experts. As a result of such a phenomenon, people move to online purchases rather than physical money transactions (Trong and Tran, 2021). It is an obvious fact that consumers are engaging with online payment methods to prevent COVID-19. And the lockdown period has motivated businesses to shift to the new normal, where e-commerce solutions tend to be a better platform to overcome physical barriers (Sreelakshmi and Prathap, 2020). Hence, online payment is a spot-on method to maintain social distancing among the general public.

The use of mobile payments (m-payment) during the COVID-19 pandemic has increased since it gives safety benefits to customers and also there is a direct and positive influence on the internet and mobile banking services due to the COVID-19 pandemic (Baicu *et al.*, 2020; Cao, 2021). But even before the COVID-19 pandemic occurred, usage of m-payments has increased all over the world, including in the Asian region (Dahlberg *et al.*, 2008; Thakur and Srivastava, 2014; Tam and Oliveira, 2017). Sri Lanka is also a developing country (The World Bank, 2020) that has adopted the m-payment facility in the recent past (Lal and Sachdev, 2015). The use of m-payment is increasing at present, especially during the COVID-19 period. Anyway, though the usage of m-payments has risen in a developing country like Sri Lanka, it has not been studied adequately by scholars. The need to investigate these contexts is highlighted through previous studies (e.g. Cao, 2021). Further, scholars have underscored the need to study m-payments among rural people (Rahman *et al.*, 2020).

Therefore, this study investigates the adoption of m-payments as a comparative study between rural and urban consumers in the Sri Lankan context. Hence, this study intends to fill the gaps in surveying m-payments in a developing country (Cao, 2021) and rural people (Rahman *et al.*, 2020). Further, scholars have suggested the need to study m-payments by incorporating quantitative and qualitative aspects (Rahman *et al.*, 2020). Also, researchers and practitioners have devoted a lot of time to studying the adoption and use of mobile payments. Their efforts, however, have been skewed because they have mostly focused on customers rather than businesses as users (Dahlberg *et al.*, 2015). Thus, many studies are from a mono-perspective, while this study focuses on both customers' and retailers' perspectives. Thus, this study adopts both quantitative and qualitative approaches. The objectives of this study are (1) to investigate the motives of adopting m-payments with the comparison of urban and rural consumers; (2) examine the usage of m-payment for different retailing activities; and (3) explore the challenges faced by retailers when adopting m-payments by the consumers in Sri Lanka. Objectives 1 and 2 are achieved through a

quantitative approach, while Objective 3 is achieved through a qualitative approach. Hence, this study uses a mixed-methods design.

Literature review

Pandemic

Among the different pandemics that occurred in the past COVID-19 pandemic is a new type of coronavirus, and it is spreading worldwide by leading the world to put under many problems like changing human behaviour and economic activity (Bartik *et al.*, 2020; Chetty *et al.*, 2020; Nicola *et al.*, 2020). Because of the high risk involved in the COVID-19 pandemic, the WHO declared it a public health emergency of international concern, stating that it would create an increased risk for the countries, especially vulnerable health systems (Sohrabi *et al.*, 2020). The probability of being faced with the COVID-19 and being infected is high when people touch infected objects or surfaces. Therefore, all the authorities have recommended the practice of social distancing to reduce the spread of the pandemic (Chang *et al.*, 2020; Eikenberry *et al.*, 2020).

Conventional payment methods in retailing (cash and debit/credit card) in Sri Lanka

A well-functioning payment system is the main requirement for the financial stability and the economic prosperity of a country since it links the efficient exchange of goods and services between the buyer and the seller (Hanegraaf *et al.*, 2020). With industry 4.0, people's lives are digitalized, and people have started using digital technology for their day-to-day activities. Due to this improvement in technological field payment patterns, individuals have also changed significantly in the recent past (Fan *et al.*, 2018). The usage of cash, credit cards and debit cards is at a precedent level in the retailing sector of Sri Lanka. However, the researchers revealed that the use of m-payments was at a superficial level because it cannot be observed a promising and increasing level of e-commerce adoption by Sri Lankans (Kariyawasam and Jayasiri, 2016). But with the COVID-19 pandemic, the usage of m-payments has increased to a greater level, and the same phenomena can be observed both in developed and developing countries (Mansour, 2021; Zhao and Bacao, 2021). However, there is such an improvement in the adoption of m-payments in developing countries. Therefore, there is a lacuna in studying the adoption of m-payments compared to rural vs. urban usage in a developing country (Rahman *et al.*, 2020; Cao, 2021). And also, when it comes to retailing though there are different sectors associated with items like food, textiles, banking, etc., it cannot be observed the adoption of m-payments in retailing. Therefore, the need to do a study to understand such comparison emerges.

Mobile payments (m-payments)

Scholars have given different definitions for m-payments in the past. For example, Dewan and Chen (2005) defined m-payment as making payments via mobile devices such as wireless handsets, personal digital assistants, radiofrequency devices and near-field communication-based devices. And also, the concept of m-payments is further defined as the method of using Internet connectivity and mobile devices for processing payments when purchasing goods or services by the customers (Di Pietro *et al.*, 2015). m-payments can also be defined as transactions or money transfers from one person to another or from person to merchant using a mobile device (Mallat, 2007; Dahlberg *et al.*, 2008, 2015). m-payments are considered a two-sided market because merchants or retailers accept m-payments, and on the other side, customers use the service (Apanasevic, 2013). Raman and Aashish (2021) emphasized on the payment applications, such as ticket reservation, order tracking, banking services, etc. as

“mobile payment or m-payment” in the Indian context. There are different types of m-payment apps (e.g. FriMi, mCash, eZ cash, tailor-made banking apps, etc.) used by customers for making transactions with merchants in Sri Lanka. Though there are such apps available, Sri Lanka still seems to be a cash-oriented culture where people like to use cash instead of online payment methods. Having such a high number of m-payment apps, we do not know whether there is a difference in the usage of urban vs. rural as well as among the different retail activities. Thus, this study provides a way for understanding such unexplored areas.

Theoretical perspective

There are several theoretical models such as Theory of Reasoned Action (Fishbein and Ajzen, 1977), the Technology Acceptance Model (Davis, 1989), Theory of Planned Behaviour (Ajzen, 1991) and Mobile Technology Acceptance Model (Ooi and Tan, 2016) that can use to understand the adoption of new technologies by the individuals. Moreover, the Unified Theory of Acceptance and Use of Technology (UTAUT), developed by Venkatesh *et al.* (2003), has been adopted by many researchers (Rahi *et al.*, 2019; Raza *et al.*, 2019) as a theoretical framework to understand individuals' technology adoption. However, because UTAUT was developed initially in the organizational context, Venkatesh *et al.* (2012) developed UTAUT2 as an extension of the UTAUT in a more suitable way for understanding the technology adoption of end-users. The UTAUT2 is used in many recent studies on technology adoption in developing countries (e.g. Alalwan *et al.*, 2017; Farzin *et al.*, 2021). Thus, it seems to be using the UTAUT2 model for analysing the m-payment behaviour of Sri Lankans is appropriate. Thus, the variables of this study were selected based on the UTAUT2 model also, and this was used in the quantitative phase of the study.

Motives of mobile payments

Neghina *et al.* (2017) defined the consumer motive as how well consumers believe that they will do in an activity and the extent to which they value such activity. Regarding m-payments, there are a few common motives like performance expectancy, facilitating conditions, social influence (SI), innovativeness, perceived technology security (PTS) and hedonic motivation (HM), which are considered for the current study. However, yet it is new questions like whether these are the motives for Sri Lankan people to adopt m-payment; and are there any diversity in between the rural and urban context. Accordingly, the first two objectives of the study are derived (1) to investigate the motives of adoption of m-payments with a comparison of rural vs. urban and (2) examine the usage m-payments for different retailing activities.

Performance expectancy

Performance expectancy is the degree of the individuals' belief about a system they are using, and it will support the individuals to achieve their desired objectives (Venkatesh *et al.*, 2003; Chua *et al.*, 2018). Studies have identified that performance expectancy as one of the significant determinants of adopting m-payments by individuals (Musa *et al.*, 2015; Teo *et al.*, 2015; Al-Saedi *et al.*, 2020). A study conducted using UK individuals depicts that performance expectancy is one of the most robust predictors that use m-payments (Slade *et al.*, 2015). And also, a study conducted in the USA context shows that performance expectancy is among the most dominant factors influencing the adoption of m-payment services (Jung *et al.*, 2020). Contrary to the findings above, Yaseen and El Qirem (2018) revealed performance expectancy as an insignificant variable in explaining m-payment adoption in Jordan. In accordance with

the argument, [Farah et al. \(2018\)](#), [Makanyeza and Mutambayashata \(2018\)](#), [Hussain et al. \(2019\)](#) and [Wang et al. \(2017\)](#) identified the performance expectancy as a significant determinant in Pakistan, Zimbabwe, Bangladesh and Southern China, respectively. Thus, the following hypothesis is derived.

H1. Performance expectancy significantly motivates the adoption of m-payment in Sri Lanka

Facilitating condition

[Rogers \(2003\)](#) defined the facilitating conditions as the consistency with the existing values, needs and experiences of potential adopters who adopt an innovation. Similarly, [Venkatesh et al. \(2003\)](#) defined facilitating condition as the availability of technological resources that can support using information systems by individuals. The scholars widely acknowledge the facilitating condition in studying individuals' technological adoption ([Agarwal and Prasad, 1998](#); [Wu and Wang, 2005](#)). Among the several studies conducted to identify the relationship between facilitating condition and technology adoption, [Khechine et al. \(2020\)](#) identified that the facilitating condition significantly impacts adopting new technologies. The argument that the facilitating conditions substantially influences the adoption of new technologies has been further enriched through the findings of other scholars' studies (e.g. [Paul et al., 2015](#); [Sair and Danish, 2018](#)). Additionally, facilitating conditions have been the most prominent factor influencing the adoption of cashless payments among Malaysian individuals ([Rahman et al., 2020](#)). Contrary to the findings above, [Makanyeza and Mutambayashata \(2018\)](#) posited facilitating conditions as an insignificant factor in Zimbabwe. Moreover, [Hussain et al. \(2019\)](#) and [Chawla and Joshi \(2019\)](#) identified facilitating conditions as significant factor in explaining the mobile payment adoption in Bangladesh and India, respectively. Accordingly, to the findings above, the following hypothesis is developed.

H2. Facilitating conditions significantly motivate the adoption of m-payment in Sri Lanka

Social influence

[Venkatesh et al. \(2003\)](#) defined SI as the direct and indirect impact of others on users' thoughts, feelings and actions. The recent studies conducted to identify mobile-based services' adoption have widely incorporated SI into the studies (e.g. [Tsu Wei et al., 2009](#); [Tan et al., 2010](#); [Tan et al., 2011](#); [Yang, 2012](#); [Bao et al., 2014](#); [Duarte et al., 2018](#); [Verkijika, 2018](#)). SI in adopting m-payments is identified as a significant variable in previous studies ([Lu, 2014](#); [Sair and Danish, 2018](#)). And also, it has been evident that SI has a positive impact on adopting the m-payments by individuals ([Slade et al., 2015](#)). Contrary to the above findings, [Makanyeza and Mutambayashata \(2018\)](#) found SI as an insignificant factor in Zimbabwe. But, [Farah et al. \(2018\)](#), [Yaseen and El Qirem \(2018\)](#) and [Hussain et al. \(2019\)](#) revealed that SI has a significant impact on m-payment adoption in Pakistan, Jordan and Bangladesh, respectively. SI on the adoption of m-payments can be treated as a phenomenon that happens due to external motivation. Thus, it is possible to argue that SI can have an impact on adopting m-payments. Accordingly, the third hypothesis is developed as follows.

H3. SI significantly motivates the adoption of m-payment in Sri Lanka.

Innovativeness

[Tan et al. \(2011\)](#) and [Chao et al. \(2013\)](#) revealed that individual innovative behaviour (personal innovative behaviour) can always adopt new products and services. When innovativeness

comes to the information and technology sector, it is defined as the tendency that individuals have to be technology pioneers and thought leader (Parasuraman and Colby, 2001). The m-payment systems are a type of new product in Sri Lanka. Thus, the innovative behaviour among Sri Lankans might exhibit the adoption of m-payments into their day-to-day activities. Significantly, individuals with higher personal innovativeness tend to adopt any innovation earlier than others (Agarwal and Prasad, 1998). Contrary to this finding, Chong *et al.* (2009) emphasized that innovation attributes have no impact on collaborative commerce in Malaysia. In a study conducted in the Malaysian context (Rahman *et al.*, 2020), it is identified that innovativeness is positively associated with the adoption of cashless payments among individuals. Further, people with higher personal innovation in the information technology field tend to have a more positive image towards adopting such new technologies into the practice of their lives (Lu, 2014). Accordingly, the study formulates its fourth hypothesis as follows:

H4. Innovativeness significantly motivates the adoption of m-payment in Sri Lanka.

Perceived technology security

PTS is one of the significant barriers that individuals have to adopt new technologies, especially in the adoption of online transactions (Salisbury *et al.*, 2001). The PTS is defined as buyers' perception of the sellers' inability and unwillingness to give enough protection to the customers' financial information (Rahi and Ghani, 2016). Therefore, the technology security systems available in the companies should make sure that it gives enough safety to the consumers' information (Shaikh and Karjaluo, 2015). Moreover, when a company uses a solid security system for its technological activities, the customers' usage of such technical systems will also increase at a significant rate (Rahman *et al.*, 2020). Accordingly, the following hypothesis is developed in this regard.

H5. PTS significantly motivates the adoption of m-payment in Sri Lanka.

Hedonic motivation

Among the different drivers of technology adoption, HM has been a significant driver since this concept leads to a positive attitude among users regarding a new technology (Poong *et al.*, 2017). The HM is defined as the individuals' technology adoption and their fun by adopting such technologies (Kim and Hall, 2019). Salimon *et al.* (2017) highlighted that HM has a significant positive relationship with the adoption of e-banking. On the contrary, Hussain *et al.* (2019) and Yaseen and El Qirem (2018) emphasized HM as an insignificant factor in Bangladesh and Jordan. Further, it has been evident that HM is the most prominent factor motivating individuals to adopt mobile banking (Boonsiritomachai and Pitchayadejanant, 2019). Moreover, Farah *et al.* (2018) and Makanyeza and Mutambayashata (2018) supported the argument in Pakistan and Zimbabwe, respectively. Therefore, there may be an impact from HM on adopting the m-payments by the Sri Lankan individuals as assumed in the following hypothesis.

H6. HM significantly motivates the adoption of m-payment in Sri Lanka.

Based on the aforementioned literature, the conceptual framework (Figure 1) is developed to achieve the Objectives 1 and 2 by employing the quantitative approach.

Challenges of adopting m-payments: managers' perspective

In the past, mobile phone usage for various reasons has drastically increased, and among those different purposes, m-payments are also included (Moghavvemi *et al.*, 2021).

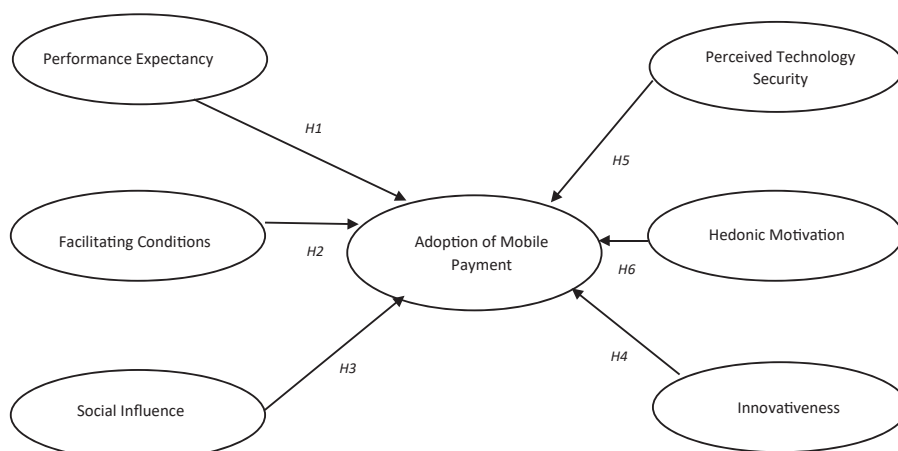


Figure 1.
Conceptual framework
of the
quantitative phase

The studies conducted on the adoption of m-payments mostly considered the adoption of m-payments by customers (Dahlberg *et al.*, 2015; Lee *et al.*, 2019). Thus, it has received less attention towards adopting m-payments from the managers' perspective (Guo and Bouwman, 2016; Singh and Sinha, 2020).

Unless it is considered about the managers' involvement in m-payment systems, it would be a one-sided activity, which will run to the end of m-payment activities (Dahlberg *et al.*, 2015). The results of the studies conducted among the merchants have depicted that companies' external and internal capabilities in different countries have influenced the adoption of m-payments (Mallat and Tuunainen, 2008; Cabanillas *et al.*, 2016; Taylor, 2016). Singh and Sinha (2020) highlight that in India, only 1–2% of the merchants accept the digital mode of payments in the retail sector; thus, the adoption of m-payments by merchants around the world is slower than expectations (Verkijika, 2020).

The success of e-payment systems is heavily based on merchants' aggressive use of technology (Lee and Shin, 2018; Singh and Sinha, 2020). However, the merchants' adoption of m-payment facilities requires an investment that cannot be afforded easily (Boden *et al.*, 2020). The lack of awareness among retailers on how m-payment works is a challenge for retailers to adopt m-payments (Petrova and Wang, 2013). Considering the COVID-19 pandemic that changed the whole world lead customers to adopt m-payments, and therefore, the retailers also had to adopt online payment methods at a greater level. Being a cash-based society, Sri Lanka has some barriers to the sudden adoption of online payment methods. Thus, the exploration of retailers' challenges when adopting online payments would be worthwhile since it has seldom studied such challenges from retailers' perspectives. Therefore, to achieve the study's third objective, researchers carried out a qualitative study to explore the challenges faced by retailers since there is a higher usage of online payments during the pandemic.

Methodology

Dewasiri *et al.* (2018) and Creswell (2009) emphasized that mixed-methods research design is appropriate when there are qualitatively and quantitatively bounded research questions in a single research study. Accordingly, this study combines qualitative and quantitative findings through a concurrent research design as shown in Figure 2 (Convergent Parallel Design) since the researchers had limited time to collect the data (Creswell, 2009). It aims to

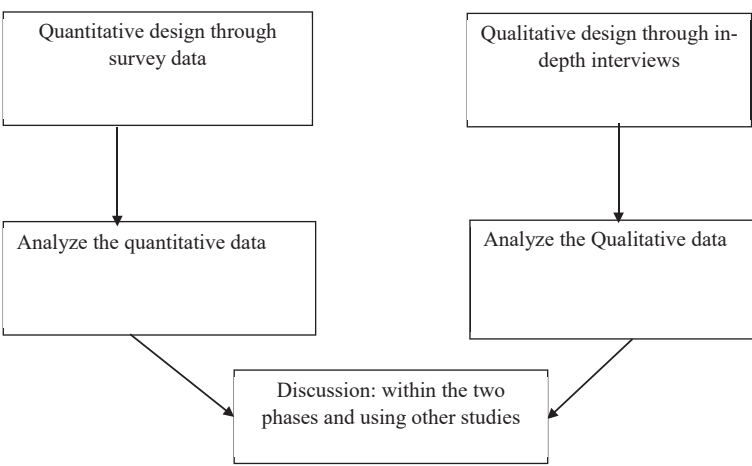


Figure 2. Flowchart of the basic procedures in implementing a convergent research design

Source(s): Adapted from Creswell (2009)

investigate the motives of m-payment usage in the retailing sector compared to rural vs. urban consumers in Sri Lanka, followed by examining the m-payment adoption in retailing activities through the quantitative phase. In parallel to the quantitative phase, it further explores the challenges faced by retailers in adopting m-payment through the qualitative phase. The researchers' intention was to investigate both customers' and retailers' perspectives simultaneously as both perspectives are equally important to make the mobile payments successfully. Thus, the convergent parallel design was used.

For the quantitative phase, the study population is consumers in rural and urban areas who use m-payment. The study uses the convenient sampling method to represent the total population in the quantitative phase. The study uses a self-administrated questionnaire survey as the data collection instrument. We carried out the study during the third wave of the COVID-19 period (May–June 2021) since it is a serious spread in Sri Lanka. After filtering the responses, 304 filled questionnaires were considered for the analysis. The adequacy of the sample was tested using Kaiser-Meyer-Olkin (KMO) and it was above the threshold level of 0.5.

Motives of the adoption of mobile payment were measured using the existing scales. In particular, performance expectancy is measured using the instruments developed by Sun *et al.* (2013), Boonsiritomachai and Pitchayadejanant (2019) and Onaolapo and Oyewole (2018). The facilitating condition is measured using the instruments developed by Venkatesh and Zhang (2010), Boonsiritomachai and Pitchayadejanant (2019) and Onaolapo and Oyewole (2018). The SI is measured using the indicators developed by Lee *et al.* (2008), Sun *et al.* (2013), Boonsiritomachai and Pitchayadejanant (2019) and Sair and Danish (2018). Nisha *et al.* (2016) and Sair and Danish (2018) provided the indicators for innovativeness. The PTS is obtained from Boonsiritomachai and Pitchayadejanant (2019). Finally, HM is obtained from Boonsiritomachai and Pitchayadejanant (2019). Adoption of the m-payment is measured using the scale of Sun *et al.* (2013) and Ozturk (2016). The five-point Likert scale (1 = strongly disagree to 5 = strongly agree) was used for the questionnaire. Structural equation modelling was used with the support of AMOS software.

For the qualitative phase, we conducted 10 in-depth interviews till the data saturation point with the managers of the retail companies which have adopted the m-payment platform through the purposive sampling technique. Informants were selected having considered their

involvement in m-payments and experience in the company. As m-payments are common in the banking and telecommunication sectors, the informants were mainly from such sectors. The average duration of the interview was 45–60 min. All the interviews were the first tape-recorded with permission. Recorded interviews were transcribed, and then the thematic analysis was carried out with the participation of three researchers individually and independently, following the guidelines of [Braun and Clarke \(2006\)](#).

The findings' trustworthiness was ensured using multiple techniques to address credibility, transferability, dependability and conformability ([Guba and Lincoln, 1981](#)). We used peer-debriefing among the three researchers to ensure credibility. Ensuring the re-visiting ability of all the informants and all the transcribed interviews were well recorded and maintained in both soft and hard versions enhancing the dependability. Providing the details on the context ensures the transferability of the study. Conformability is ensured by documenting the entire process of data collection and analysis in detail.

The details of the respondents in the quantitative phase and the details of participants in the qualitative phase are given in [Tables 1](#) and [2](#).

Sample profile (N = 304)		Frequency	%
Sample description			
Gender	Male	148	49
	Female	156	51
Age	Less than or equal to 20 years	11	4
	21–30 years	237	78
	31–40 years	1	1
	41–50 years	32	11
	51–60 years	14	4
	Above 60 years	9	3
Residential province	Western Province	87	29
	Central Province	18	6
	Southern Province	76	25
	Uva Province	25	8
	Sabaragamuwa Province	27	9
	North Western Province	19	6
	North Central Province	13	4
	Northern Province	20	7
	Eastern Province	19	6

Table 1.
Sample profile of the
quantitative phase

Sample profile (10)			
Participant	Age (years old)	Gender	Position held
IN 1	40	Male	Technical Executive
IN 2	38	Female	Digital Banking Executive
IN 3	45	Female	System Manager
IN 4	54	Male	System Manager
IN 5	29	Female	Assistant System Manager
IN 6	30	Male	Technical Executive
IN 7	34	Male	Executive–System
IN 8	32	Male	Digital Banking Executive
IN 9	38	Male	Assistant System Manager
IN 10	49	Male	System Manager

Table 2.
Sample profile of the
qualitative phase

Analysis and findings

The analysis is carried out in two phases. The first phase is quantitative to address the Objectives 1 and 2. The second phase is qualitative for achieving Objective 3.

Quantitative analysis

Measurement model analysis. We assessed the unidimensionality of the constructs through the confirmatory factor analysis (CFA); performance expectancy and facilitating condition (PEFC), SI, PTS, HM and adoption of mobile payment (AMP). Then, we confirmed the validity and reliability of the scales. Table 3 reflects the results of the CFA, together with information on reliability and validity. Innovativeness (IV) was removed from the model as it did not match and parameters. PEFC were combined though they are different motives in the literature to fulfil the parameters in the measurement model.

The standardized factor loadings and AVE results confirmed the solid convergent validity of measures (Hair and Anderson, 2010). Discriminant validity was assessed using the procedure suggested by Fornell and Larcker (1981). As can be seen in the CFA results (Table 3), all the standardized factor loadings were significant ($p < 0.001$) and ranged from 0.704 to 0.922 were far above the required value of 0.60, and AVE values of all constructs were above 0.5, the minimum threshold value (Hair *et al.*, 1998). Hence, the square root of the AVE

Construct	Items	Factor loadings	AVE, CR, and α
Performance expectancy and facilitating conditions	Mobile payment is useful to save time	0.833	AVE = 0.76 CR = 0.77 α = 0.72
	Mobile payment would enable me to conduct tasks (financial transfer, shopping) more easily	0.854	
	Mobile payment would increase my productivity	0.792	
	Mobile payment would improve my work performance	0.800	
	I have the resources necessary to use mobile payment	0.867	
	I have the knowledge necessary to use mobile payment	0.816	
Social influence	Mobile payment is compatible with other systems I use	0.704	AVE = 0.74 CR = 0.81 α = 0.70
	Celebrities can influence my behaviour in using mobile payment	0.748	
	Family members can influence my behaviour in using mobile payment	0.832	
	Friends/colleagues can influence my behaviour in using mobile payment	0.800	
Perceived technology security	I feel completely secure operating with mobile payment	0.769	AVE = 0.62 CR = 0.78 α = 0.69
	Mobile payment is a secure means for sharing sensitive information	0.795	
Hedonic motivation	My safety concerns are only with mobile payments	0.835	AVE = 0.58 CR = 0.81 α = 0.71
	Using mobile payment is fun	0.762	
	Depending on cash for payment is stressful	0.728	
Adoption of mobile payment	I have been using mobile payment methods for some time now	0.899	AVE = 0.72 CR = 0.88 α = 0.72
	I am likely to increase the use of mobile payment in my life	0.924	
	I always recommend to others to use mobile payments	0.922	

Note(s): Fit indices χ^2 (485) = 465.37, ($p < 0.01$), CFI = 0.97, GFI = 0.91, NFI = 0.92, TLI = 0.98, RMSEA = 0.032, SRMR = 0.03; FL, factor loading; AVE, average variance extracted; CR, composite reliability; α , Cronbach's alpha; χ^2 , Chi-square; CFI, comparative fit index; GFI, goodness-of-fit index; NFI, normed fit index; TLI, Tucker–Lewis index; RMSEA, root mean square error of approximation; SRMR, standardized root mean residual

Table 3.
Summary of the measurement model statistics

(as presented in Table 4, the upper diagonal) for each construct was greater than the correlation coefficient between that construct and all other constructs and, therefore, supporting discriminant validity (Fornell and Larcker, 1981). Further, as shown in Table 3, Cronbach's alpha coefficients for all constructs have exceeded the threshold of 0.7, indicating acceptable reliability levels (Cronbach, 1951; Nunnally, 1978).

Table 4 reports the means, inter-construct correlations and AVE scores for the study constructs. The construct means range from 3.24 to 4.10 (out of 5.0). Inter-construct correlations are positive and significant ($p < 0.01$; $p < 0.05$), ranging from 0.186 to 0.439.

Structural model analysis. The direct effect model was used here by considering the collective results to test the hypothesis. The underlying assumptions for SEM were checked and proved as depicted in Table 5. Those were independence of observations, adequate normality, no extreme outliers and multicollinearity and sampling adequacy (Hair et al., 1998).

The model analyses the direct impact of PEFC, SI, PTS and HM on AMP. The model yields an acceptable fit to the data: $\chi^2/df = 1.75$ (Ratios of 3 to 1), GFI = 0.97 (0.90 or greater), RMSEA = 0.031 (0.05 or less), NFI = 0.97 (0.90 or greater), CFI = 0.91 (0.90 or greater), TLI = 0.94 (0.90 or greater), AGFI = 0.83 (0.90 or greater) and PNFI = 0.64 (Hair and Anderson, 2010).

PEFC has a significant positive direct impact on AMP ($\beta = 0.461$, $p < 0.05$). SI does not show any significance impact of AMP ($\beta = 0.020$, $p > 0.05$). PTS has a significant positive direct impact on AMP ($\beta = 0.174$, $p < 0.05$). HM has a significant positive direct impact on AMP ($\beta = 0.350$, $p < 0.05$). PEFC shows the highest impact on AMP. HM and PTS, respectively, follow it. Except for the SI, all the other motives are a significantly positive impact on AMP. Thus, we cannot reject the hypotheses.

The adoption of m-payment and the motives are compared within the rural and urban contexts. We use independent sample *t*-tests for the comparison of rural vs. urban contexts. Table 6 shows the summary of the results.

	Mean	PEFC	SI	PTS	HM
PETC	4.10	0.76			
SI	3.24	0.216	0.74		
PTS	3.56	0.378	0.439	0.62	
HM	3.66	0.309	0.387	0.186	0.58

Table 4.
Descriptive and
bivariate correlation
matrix for the study
constructs

Hypothesized path	Standardized path estimates
PEFC → AMP	0.461****
SI → AMP	0.020
PTS → AMP	0.174****
HM → AMP	0.350****
Note(s): **** $p < 0.05$	

Table 5.
SEM results for
the model

Usage of mobile payment and motives for the same	<i>t</i> -value	Significance value
AMP	2.898	0.003
PEFC	0.416	0.678
PTS	5.418	0.000
HM	4.734	0.000

Table 6.
Summary of the
Independent sample
t-test

Table 6 discloses that usage of mobile payment is significantly different across rural and urban. PTS and HM, as motives, are significantly different across the rural and urban contexts except for the PEFC. It means that regardless of whether rural or urban, PEFC are equally crucial for adopting the m-payment in Sri Lanka.

Mobile payment usage. The study examines the adoption of M-payment according to the retailing activities to achieve Objective 2 of the study. Table 7 shows the percentages of the retailing activities for which m-payments have been used. Banking activities and paying utility bills show the most frequent use of m-payment, respectively. It is followed by purchasing food, purchasing textiles, purchasing electronic items, purchasing footwear, and purchasing medicines, respectively. Purchasing furniture, paying for tuition/academic activities and travelling show minor retail activities that use m-payments.

Table 8 shows the types of applications (APPs) used for mobile payment. According to the table, tailor-made banking APPs are the most common APP. It is followed by FriMi, Genie, mCash, eZ cash and I-pay.

Qualitative data analysis: challenges faced by the retailers when adopting mobile payment

An investigation of retailers' perspectives regarding m-payments of the customers was undertaken to compliment the customers' perspective. In that investigation, the researchers were able to identify four main challenges from retailers' perspectives. The thematic analysis explores four main challenges for adopting m-payment from the retailers' perspectives in achieving Objective 3 as: "*Unfamiliarity of customers with the m-payment system*", "*Lack of knowledge within the employees on m-payment systems*", "*Poor Management Orientation*" and "*Lack of Computer Literacy of the Customers*". They are discussed with supporting quotations.

Challenge 1: *unfamiliarity of customers with the m-payment system.* The main challenge is the customers' unfamiliarity with the m-payment systems and procedures that need to be followed by the customers. In particular, the customers are not much familiar with the

Table 7.

Use of M-payments:
retail activities

Retailing activities	Percentage (%)
Purchasing electronic items	7.52
Purchasing medicine	4.51
Banking activities	25.88
Paying utility bills	23.77
Purchasing textiles	13.84
Purchasing food	14.64
Purchasing footwear	6.32
Purchasing furniture	2.91
Tuition fee, academic activities	0.40
Travelling and transport	0.20

Table 8.

Types of APPs used for
M-payment

Type of application	Percentage of usage (%)
Tailor-made banking apps	52.27
Genie	10.65
eZ cash	6.11
mCash	9.07
FriMi	20.51
I-pay	1.38

retailers' mechanism to ensure the security of the payment system as customers are not familiar with the systems, it demands to change the password frequently, customers do not understand the system, customers are fear of using m-payments through their mobile phones, fear of elderly people using the m-payments and difficulty of convincing the advantages to the customers and difficulty of explaining the functionalities associated with online banking in the Sinhala language. These are supported in the following quotations.

Customers are having many difficulties when making the user enrollment. Though this process is not [that much] difficult, customers are not familiar with setting a password by mixing the characters as required. - IN1

We expect customers to change the password monthly ... being matched with the international standards. But it is not done by the customers. - IN8

Customers do not understand the system much ... so, they do not do all what we expect from them ... for example like changing the password time to time - IN10

According to our system, the password should be changed monthly, but customers do not like to do such things. We implement such techniques to give full security to them. The problem is that the customers do not understand it. - IN 5

Customers are fear for registering to the online banking. [Because] accessing to [their] accounts through [mobile] phones generate fear about what will happen to [their] money. [Customers are not sure] whether the money transfers proceed properly. [And also] though a receipt generates for every transaction made, [customers] are reluctant to accept that - IN 6

People, mostly elderly customers, are afraid of only online. Because they expect hard copies and human touch - IN 7

It has been challenging for us to convince about the advantages of using online methods [to the customers]. Customers think that when there is no human touch, a fraud will take place and [the customers] will lose money in [their] bank accounts. - IN 2

It is impossible to explain some functionalities associated with the online banking systems to the customers in the Sinhala language. For example, One Time Password (OTP) is an English term, and it is hard to use a Sinhala word to explain this [to the customers]. [In such] cases, we face many troubles. When Customers cannot understand [what we explain], they have blamed [us] also. - IN 3

Challenge 2: lack of knowledge within the employees on m-payment systems. Employees who work with customers have a limited understanding of the m-payment system and related procedures. In particular, when the employees deal with customers' m-payment issues, they are not competent enough to effectively handle such cases as less technological skills with the employees, less number of responsible people available to solve issues related to online payments and unawareness of elderly employees regarding the online payment systems, and these are being supported by the following quotations. Most of the customers' problems are technology-related issues that the employees cannot successfully address. As this demands high technology know-how from employees, some retailers maintain separate units for handling m-payment issues. Such a unit is centrally maintained; thus, managing the customers' problems is restricted as inquiring about such a unit is another task for customers; instead, stop using m-payment.

The employee skills [actually] is not up to a greater level to work with this online banking. One major issue is that [our] older employees are not that familiar with these systems. Therefore [they are] not that much interested in working with the technology. - IN 1

In our branch, I am the [only] one responsible for handling the issues related to online banking because I am the [only] one who is knowledgeable of this area. [Sometimes] I have to work

continuously, and [even] customers also have to wait for a long-time till [I] fix the problems. So, this has been a massive problem for both customers and us. - IN 9

Most of our employees are elders, so not confident to motivate the customers to use them. Because, if customers ask some question about setting it up or even solving some related issues, our team does not know how to fix it. - IN 5

Challenge 3: *poor management orientation*. Retailers do not possess a fully supportive management orientation to introduce online operations, including m-payments. As retailers are more experienced and comfortable with the traditional business model, the top management is not interested in inculcating the management orientation to support mobile payment. Even though during the COVID-19 pandemic, they are forced to move to an m-payment system, such adoption is not fully backed by such retailers' management orientation due to less focus of management on the new technological methods, making no effort to provide adequate training to the employees about the online payment methods and less priority towards latest payment methods which are reflected in the following quotations.

... I don't think that our management is that much focusing on the new technological methods. [Because] I know that [our] competitors are adopting the latest technologies and still using outdated technology. [therefore] we cannot give a good digital service to our customers. -IN 3

... the management has made no effort to give enough of the training to the employees about the online payment methods. [So] when a customer inquiry about the online payment only my self is ready to answer the employees. IN 4

mobile payment is adopted due to this COVID 19 pandemic. Otherwise, our management doesn't bother about it. So, only less priority is given for employee training on this latest payment system. IN 6

Challenge 4: *lack of computer literacy of the customers*. The lack of computer literacy of the customers is another challenge. Even though some customers who reside in urban areas of the country have sufficient ability to handle computers, including m-payment, most of the rural areas do not possess such competency. It restricts the adoption of m-payment. The unfamiliarity of the online payment process, refusing to state the unfamiliarity and staying with the existing practices are issues that occurred due to the lack of computer literacy of customers which reflect through the following quotations.

When we are dealing with the customers in Colombo district [1], it is easy for us to work because [they] have the computer literacy. Once we let them know the enrollment process, they can proceed without our support. But when the customers from far away are very unfamiliar with this process. [Actually] we also do not try much to promote online banking [to them]. - IN 2

... people do don't know how to use this technology for payment. Thus, instead of telling that they don't know, they refuse it saying the current practice is fine with them. - IN 8

most of the customers visiting our outlet do don't know how to use the technology for cashless payment. - IN 9

Discussion

The study is aimed at (1) investigating the motives of m-payment with the comparison of rural vs. urban context, (2) investigating the m-payment for different retailing activities and (3) exploring the challenges faced by retailers for adopting m-payment.

The study discloses that PEFC as one motive even though Khechine *et al.* (2020) and Slade *et al.* (2015) discussed PEFC as two different motives. Thus, though the current study is not similar to Khechine *et al.* (2020) and Slade *et al.* (2015), it indicates context-specific knowledge

reflecting that PEFC are perceived as one motive by the Sri Lankan people. Similarly, although innovativeness has been identified as a motive by [Rahman et al. \(2020\)](#), the measurement model of the current study reflects that innovativeness is not a matter in the Sri Lankan context.

The current scrutiny discloses that PEFC are the most significant motives for adopting m-payment in rural and urban contexts. It matches with [Jung et al. \(2020\)](#), [Farah et al. \(2018\)](#), [Makanyeza and Mutambayashata \(2018\)](#), [Hussain et al. \(2019\)](#) and [Wang et al. \(2017\)](#), and [Slade et al. \(2015\)](#) for performance expectancy and with [Hussain et al. \(2019\)](#), [Chawla and Joshi \(2019\)](#) and [Rahman et al. \(2020\)](#) for facilitating conditions. However, such findings challenge [Yaseen and El Qirem's \(2018\)](#) findings and [Makanyeza and Mutambayashata's \(2018\)](#) in terms of PEFC, respectively. Importantly, it is worth noting that these studies neither have investigated in the rural context nor have compared rural with urban. The study also found HM and PTS as the subsequent significant motives, respectively. These findings agreed with [Farah et al. \(2018\)](#) and [Makanyeza and Mutambayashata \(2018\)](#), who also claim HM's significance in m-payment adoption in different contexts. Such a finding contradicts [Hussain et al. \(2019\)](#) and [Yaseen and El Qirem \(2018\)](#) as they disclose HM as insignificant for the adoption of m-payment. Further, the current study supports [Rahman et al. \(2020\)](#) concerning PTS. The study shows that SI is not a significant motive for Sri Lankan people to adopt for M-payment, though [Farah et al. \(2018\)](#), [Yaseen and El Qirem \(2018\)](#), [Hussain et al. \(2019\)](#) and [Rahman et al. \(2020\)](#) were empirically evident that it is a significant motive even in the Asian context. The reason for such diversity may be due to socio-cultural differences in Sri Lanka. However, SI being insignificant is equal to the study of [Makanyeza and Mutambayashata \(2018\)](#).

The current study compares the adoption of m-payment and motives for such adaption in rural context with that of the urban context making a substantial contribution to the knowledge of m-payment adoption. It addresses the need to investigate rural-urban comparison, as highlighted by [Rahman et al. \(2020\)](#), and the necessity of further investigating m-payment adoption in developing countries by [Cao \(2021\)](#). The study claims the adoption of m-payment by urban people is significantly different from that of rural people. HM and PTS also show significant differences across rural and urban. However, reflecting another fascinating insight, the study shows that regardless of the rural and urban cities where people live, they are very much concerned about PEFC as a motive for them to adopt m-payment. Investigation of m-payment according to retailing functions is another contribution made by this study. It discloses that m-payment is heavily used for banking operations and utility bill payments. It also provides insight into an emerging trend of using m-payments to purchase food and textile items. On the other hand, the usage of mobile payment for purchasing footwear and furniture and academic activities, and travelling is rare.

Customers' unfamiliarity, especially concerning the security of the system, lack of employees' knowledge of the system, poor management orientation and less computer literacy of the customers are the main challenges faced by retailers when adopting m-payment. The investigation of challenges from the managers' perspective is another contribution to the current knowledge. The need to investigate m-payment adoption from managers' perspectives has already been highlighted by scholars (e.g. [Singh and Sinha, 2020](#)). The current study addresses such a need as a comprehensive study. Some of these challenges match the finding of the quantitative phase. In particular, innovativeness has not been identified as a motive reflecting that customers are not yet familiar with the technology and are not even eager to improve technological know-how. On the other hand, the concern of security is a motive and a challenge for adopting m-payment. Having this holistic understanding derived from both customers' and retailers' perspectives using quantitative and qualitative approaches is a vital knowledge contribution in this context. It validates and confirms the finding from each method.

Contribution of the study

Investigating the mobile payment adoption from both customers' and retailers' perspectives is the main contribution of this study. It brings a holistic view of the study. In addition, employing a concurrent mixed-method research design is another significant contribution to the knowledge, bringing novelty to the study. Furthermore, the comparison of rural vs. urban in terms of m-payment adoption and motives of such adoption also contribute to the study's originality. Finally, the investigation of m-payment for retail activities is also adding knowledge to the context.

Implications of the study

Findings provide valuable insights for marketers, managers and retailing companies to successfully design and maintain their competitive strategies to enhance m-payment adoption driven by the COVID-19 pandemic. They should develop strategies to motivate the customers through PEFC, HM and PTS. Further, the potential of enhancing the rural customers' m-payment should be grabbed through these motives while keeping an eye on the urban customers as well. As the banks and utility providers are relatively outstanding in m-payment, they should develop strategies to facilitate the same. They can be role models to other retail sectors.

Further, companies should design strategies to make their customers more confident about the security of m-payment while inculcating supportive management orientation, which will facilitate the familiarity of the employees with the relevant technology. The management can improve the customers' understanding of the m-payment technology and their confidence in the security through such kinds of employees. Policymakers can use the study's findings to develop policies to enhance the safety of m-payment at the national level while facilitating the enhancement of the technological know-how of the citizens in the country.

Conclusion and future directions

The study investigates motives of adopting m-payment with the rural–urban comparison while examining such adoption for retailing activities. In addition, it explores the challenges faced by companies when adopting m-payment. The study employs the concurrent mixed-method research design. The study discloses PEFC followed by HM and PTS are the motives for adopting m-payment in the Sri Lankan context. This finding is consistent with the challenges explored from companies' perspectives. The unfamiliarity of the customers, especially regarding security, lack of technology-related knowledge of both customers and employees and poor management and technology-related challenges are the issues addressed from the companies' point of view. The study explores a significant difference between rural and urban contexts when adopting m-payment. Further, the motives also different across the rural and urban context, while PEFC is an equally important motive for both rural and urban people. The study claims that banking and utility bill payments are the leading retail activities made through m-payments while showing an increasing trend towards purchasing textiles and food items.

It is possible to extend this study to similar contexts such as other Asian or developing countries. Further, investigation of the reasons behind the challenges faced by retailers can be another fruitful research avenue. Finally, the evolution of m-payment, either with or without comparing COVID and non-COVID periods, is also a helpful avenue for future scholars.

Note

1. Colombo is the capital of Sri Lanka.

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