The Factors Influencing the Usage of Mobile Commerce among Rural Entrepreneurs in Peninsular Malaysia

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Abstract—The mobile usage mainly for business activities among rural entrepreneurs are still in infancy stage due to several challenges. It is good if the study on the factors identification of mobile commerce usage specifically among rural entrepreneurs are conducted. Hence, the objective of the study is to investigate the factors contributing to the mobile commerce usage among rural entrepreneurs in Peninsular Malaysia. By using the Unified Theory of Acceptance and Use of Technology (UTAUT), the relationship between effort expectancy, performance expectancy, social influence and facilitating conditions on the utilization of mobile commerce were examined. Face to face survey method was applied for data collection. The Partial Least Square-Structural Equation Modelling (PLS-SEM) method was used to investigate 360 samples regarding the factors contributing the mobile commerce usage. The study indicated that social influence was the most influential factor in mobile commerce utilization. The effort expectancy, performance expectancy, social influence, and facilitating conditions were positive and significantly influenced the use of mobile commerce among rural entrepreneurs in Peninsular Malaysia. The findings were added significantly in bridging the knowledge gap concerning the elements influencing the mobile commerce usage among rural entrepreneurs. This empirical study provides significant input to all stakeholders, including government, relevant stakeholders (e.g. entrepreneurs, supply chain industry, telecommunications industry, and ICT industry), and local communities.

Keywords—mobile commerce, utilization, factors influencing, UTAUT, rural entrepreneurs

1 Introduction

The use of internet using mobile device among Malaysian user is about 80 percent of the Malaysian population represented high rates of mobile phone usage [1]. Based on Malaysia Digital Economy Corporation in 2020, this is a good start for Malaysian to be involved with the mobile commerce, which may contribute significantly in leading Malaysia's digital economy forward. Mobile commerce is defined as the pairing of

mobile devices that directly uses a mobile terminal and a wireless access network with a commercial transaction and other convention activities [2]. The use of mobile commerce needs to flourish to fulfill the customer's demand, as the growing demands from the consumers to establish an immediate access in searching the information of the product and services.

Recently, the function of mobile devices is no longer just for communication purposes, but it is useful for information gathering, various commercial activities, business and financial transaction, as well as entertainment [3]. Nowadays, both teenagers and adults are using the mobile device internet facility, contributing to the possibility of the mobile commerce utilization which grows progressively [4] due to the free access and familiar with them [5]. In addition, [6] believed that the current digital revolution has led the people to engaged with mobile device in their daily lives. It has become a mainstream trade operation, which accumulated 62 percent and 37 percent of users who used mobile device and desktop for purchasing activities through online respectively. The rest of 1 percent made an online purchase via other means [7]. These percentages illustrate that the internet users in Malaysia are prefer to use mobile device for purchase and transaction events compared to a computer.

The growth of mobile commerce in Malaysia is consistent with the development of mobile network operators. [4] proved that more Malaysians have a mobile device by their sides and making it an important communication device. However, a study shows that mobile usage in business activity among rural entrepreneurs in Malaysia are still in the infancy stage [8] [9]. For rural entrepreneurs, the transformation faces a greater challenge compared to urban entrepreneurs [9]. These challenges need to be overcome by identifying the driving factors that encourage them to participate into mobile commerce usage. A drastic shift from the traditional approach into the full utilization of mobile commerce is a must. An embracing the digital economy and utilizing e-commerce like mobile commerce as part of their vital tools in running their business will ensure the sustainability of their business.

Moreover, realizing the importance of utilizing and maximizing the digital economy, the Ministry of Rural Development (MRD) has made efforts to increase the entrepreneur's online presence through e-usahawan and MyBazar programs as well as organized Ekspo Inovasi Teknologi dan Keusahawanan Desa (INOTEKDESA) Program to encourage ICT adoption among entrepreneurs [9]. It seems that the government undoubtedly encourages and supports the use of mobile commerce in business activities. The involvement of all stakeholders including government, entrepreneurs, and communities are very important to make this effort work effectively. In this situation, participation from rural entrepreneurs is highly needed. In order to encourage the involvement of rural entrepreneur's mobile commerce utilization, an in-depth study on the driving factors of mobile commerce utilization should be conducted. Hence, the aim of the study is to identify the factors influencing mobile commerce usage among rural entrepreneurs in Peninsular Malaysia.

The novelty of the paper is the use of a UTAUT model in exploring the factors affecting mobile commerce utilization in the context of rural entrepreneurs in Peninsular Malaysia. This study may develop a better understanding of influencing factors contributing to mobile commerce utilization among rural entrepreneurs. In addition, the findings are important for some preliminary recommendations to ensure efficiency, to encourage a competitive environment for the best practices of the industry, and to

develop progressive policies and regulations with a positive long-term effect. This study not only supports the government's effort, but it will also create a positive impact on the business growth of rural entrepreneurs. This study also brings significant benefit to the local communities which may help them to get involved with less effort and time in the transaction process. Moreover, this technology tool may help the relevant industries to gain profit at the maximum point as well as help in the growth of the national economy.

The paper has five sections. An introduction is discussed in the first section. This is followed by a literature review. The methodology is explained in the third part together with a comprehensive explanation of the participant and procedure, questionnaire development, and instrument, as well as statistical technique. In the fourth section, the data analysis of the study is outlined, comprising descriptive statistics of the construct, measurement model, and structural equation modelling (SEM). Next, the result's discussion and lastly the conclusion and policy recommendation of the study.

2 Literature review and research model

2.1 The concept of mobile commerce

Mobile commerce is well described as a business practice involving the purchase and sale of goods and services using wireless network mobile devices [10]. [11] characterised mobile commerce as quick activity with cutting-edge features, real-time network, and identification, which are associated with location, personalisation, and time.

Global Positioning System (GPS) is a tool that concerns localization in sending the land data innovation, which allows organizations to recognize the whereabouts of consumers and to provide goods and businesses unique to respective place (United Nations Conference on Trade and Development 2002). Personalization by means of the organization of knowledge was revealed by [11]. It is categorized as the degree to which the increased affiliation between vendors and buyers stimulates buyers' desire to shop propensities and needs. On top of that, it is vital because it will convince the buyers and vendors by providing the most relevant and appropriate message to them. According to [12], the advantage of personalization is diminishing any seeking costs. This feature of mobile commerce provides benefits such as convenience and interactivity.

2.2 Effect on the usage of technology applications of performance expectancy, effort expectancy, social influence and facilitating condition

The UTAUT is the most suitable model used to capture the study on mobile commerce utilization as it was defined as a concept of innovation, an item, or as a service. According to [13], the intention to implement new technology is drive by four main factors namely performance expectancy, social influence, effort expectancy and facilitating conditions.

In the context of the mobile commerce market, performance expectancy (PE) can be defined as the level of a consumer believes that mobile commerce usage would offer the benefits to the users when undertaking such activities. Based on [13], PE stands for perceived utility in the TAM model, and it is widely recognised as the best

predictor of technology adoption. [14] agreed with this conclusion, revealing that PE is a major influence of mobile app satisfaction. In mobile banking satisfaction tests, mobile insurance, mobile buying, and mobile commerce, the same strong influence on perceived usefulness was observed [15] [16] [17] [18]. PE, according to [19], was influenced consumer satisfaction and retention intentions. In addition, the PE construct is regarded as one of the most important factors of the user intention in studying the use of technology, mobile application and the context of mobile payment, diet food apps, and app-based tour guides [14] [20]. Customers will begin to engage with innovations once they discover that they are valuable to them [3].

Another key UTAUT aspect is Effort Expectancy (EE), which is typically characterised as the level of easy feeling connected with the mobile commerce usage [21]. The perceived ease of use in the TAM model is corresponding to EE in the UTAUT model [3]. Previous research, on the other hand, has shown mixed outcomes. In the context of mobile commerce, [22] discovered that perceived ease of use had a major impact on consumer satisfaction, whereas [10] observed that it does not. In other cases, such as mobile shopping and insurance, perceived simplicity of use was proven to be a good predictor of satisfaction [18] [16]. Furthermore, [23] demonstrated that internet users' effort expectations will enhance their performance expectations toward technology implementation.

Social Influence (SI) is a term that describes a person's feelings about whether or not peers and other people who matter to him or her believe he or she should participate in certain acts. Customers' pleasure with mobile commerce may be influenced by the influence of friends, colleagues, family, and other influential people in society [24]. It refers to whether the majority of people approve or disapprove of users' behaviour when it comes to adopting new technologies. The subjective norms of Theory Plan Behaviour (TPB) are related to social influence in UTAUT. It recognises the impact of the environment on the user's perceptions and goals [25]. [26] investigated the effects of social connections on the intention to utilise mobile social applications and found that both have a significant impact. In the case of mobile shopping, [27] support their findings. On the other hand, [28] found no evidence of any substantial impacts of SI on consumer satisfaction in mobile commerce.

Consumer perceptions of environmental constraints or the instruments available to efficiently conduct mobile commerce are referred to as Facilitating Conditions (FC) [29]. The degree to which an individual assumes that a technological infrastructure is employed to facilitate the usage of technology is commonly referred to as facilitating conditions. According to [30], enabling conditions have a major impact on the utilisation of mobile apps as a purchasing platform. In the cases of mobile commerce applications in Cameroon, Sub-Saharan Africa, and e-banking services in India, [29] and [31] found similar results. [31] believes that providing excellent infrastructure to all socioeconomic classes, such as PCs and high-speed, affordable internet, is critical to achieving the positive major impact of technology adoption. However, [32] found that the enabling condition was not significant in predicting students' behavioural intention or mobile learning technology adoption behaviour in Saudi Arabia.

In this study, the UTAUT model was adapted in the context of studying the factors that contributes to the use of mobile commerce among rural entrepreneurs.

2.3 Research model and hypothesis

As discussed in literature review, this research explored the factors of effort expectancy, performance expectancy, social influence and facilitating condition on influencing the mobile commerce usage among rural entrepreneur. Hence, the following hypotheses and research model (Figure 1) are proposed:

H1: Performance expectancy (PE) influence the mobile commerce utilization among rural entrepreneurs

H2: Effort expectancy (EE) influence the mobile commerce utilization among rural entrepreneurs

H3: Social influence (SI) impacts the mobile commerce utilization among rural entrepreneurs

H4: Facilitating conditions (FC) influence the mobile commerce utilization among entrepreneurs

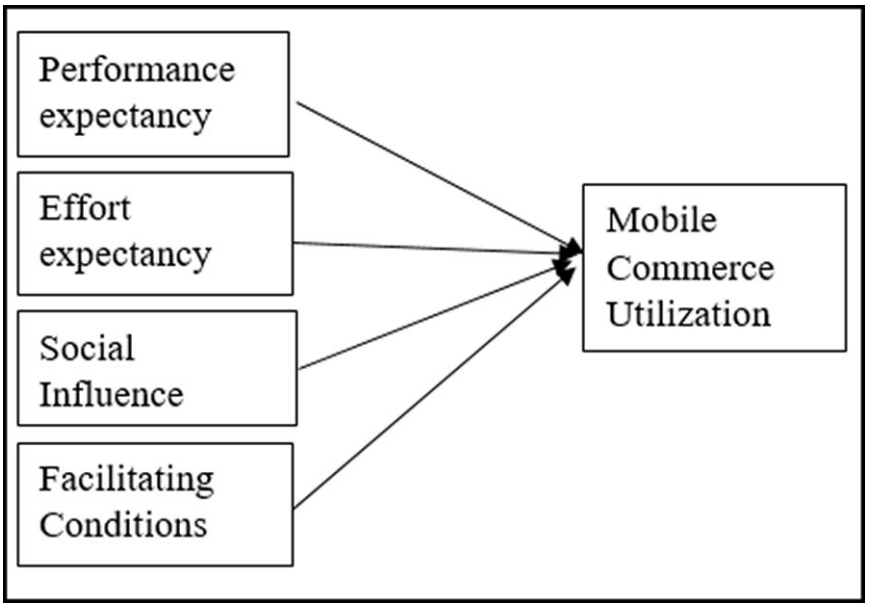

Fig. 1. Theoretical framework of the utilization of mobile commerce

3 Methodology

3.1 Data collection

400 questionnaires were distributed to the rural entrepreneurs in Peninsular Malaysia who are registered under *Dewan Perniagaan Melayu Malaysia* (DPMM) over two-month period and the completed questionnaires were collected in September 2020.

Out of 400 respondents, the data analysis was subject to 360 completed responses, denoting a response rate of 90 percent. Table 1 indicates that most of samples were females (66.9%), from which 80.8% of the participants were aged 31 years old and above. Majority of the respondents were engaged with the food product (processed/ fresh) representing 76.9%. Furthermore, 42.5% of the respondents have a good education background with at least at a diploma level. Most of them (88.1%) have a monthly income of RM501 and above. Majority of the respondents have never attended any training during their business activity (73.9%). On the subject of the frequency of mobile commerce utilization, 71.1% of entrepreneurs indicated that they have used mobile commerce at least one time a month.

Table 1. Demographic profile of the respondents

N = 360	Frequency	Percentage (%)
Gender		
Male	119	33.1
Female	241	66.9
Age (years old)		
Below 30	69	19.2
31–40	100	27.8
41–50	101	28.1
51–60	56	15.6
61 and above	34	9.4
Marital Status		
Married	205	56.9
Single	125	34.7
Divorced	30	8.3
Education Level		
Primary School	31	8.6
PMR/SRP	33	9.2
SPM	125	34.7
SPM (Technical)	18	5.0
Diploma/STPM	114	31.7
Degree & Above	39	10.8
Food Types Product		
Semi Processes	83	23.1
Processes	277	76.9
Monthly Income		
RM400 and below	10	2.8
RM401 to RM450	7	1.9

(Continued)

Table 1. Demographic profile of the respondents *(continued)*

N = 360	Frequency	Percentage (%)
RM451 to RM500	26	7.2
RM501 to RM550	154	42.8
RM551 and above	163	45.3
Training		
Never	266	73.9
1 to 2 times	82	22.8
3 times and above	12	3.3
Mobile commerce Utilization per month		
Never Use (0)	104	28.9
Minimum (1–2)	32	8.9
Moderate (3–5)	75	20.8
High (6–10)	117	32.5
Maximum (11 and above)	32	8.9

3.2 Research questionnaire design

The questionnaire designed for the present study was derived from UTAUT theoretical framework and also adapted from prior study subjected to the field of mobile commerce [13] [33] [31] [3]. It was designed in two languages, namely Malay and English, to cater for the different ethnic groups in Peninsular Malaysia and their respective languages preferences. A five-point Likert scale was used which ranged from 'strongly disagree' to 'strongly agree'.

The questionnaires consist of six sections. Section A contains demographic questions that were designed to get the information about the gender, age, education level, marital status, type of product, monthly income, training and course attended, and frequency of mobile commerce utilization. Section B measured the performance expectation where each factor was measured by 6 items. While, Section C, D and E measured social influence, effort expectation and facilitating condition with 4 items for each respectively. The last section, Section F consists of the measurement for mobile commerce utilization with 7 items.

3.3 Statistical technique

The Partial Least Square-Structural Equation Modelling (PLS-SEM) approach aided by Smart PLS 3.0 was used to identify the factors influencing the mobile commerce usage. PLS SEM illustrated by [34] was able to tackle non-parametric models. This indicates that the requirement for normality distributed data was not necessary and the methodology criteria can be implemented in low sample size research and in exploratory research.

4 Data analysis

The PLS-SEM methodology was carried out to evaluate the measurement model and the structural model.

4.1 Descriptive statistics of construct

According to the Table 2, the descriptive statistics revealed that performance expectation has the highest mean value with 4.666 while the social influence recorded as the lowest mean value with 3.846. The standard deviations for all constructs were lower than 1.00, which indicates that the distribution of the mean value was small. It also implies that respondents have a common perception of this aspect of the study.

Table 2. Descriptive statistics on construct (N = 360)

Construct	N	Min	Max	Mean	Std. Dev
PE	360	2	5	4.666	0.7615
EE	360	2	5	3.863	0.9288
FC	360	1	4	3.851	0.7924
SI	360	1	5	3.846	0.8781
Mobile Commerce Utilization	360	3	5	4.100	0.4434

Note: Scale *1=Strongly Disagree, 5=Strongly Agree.*

4.2 Measurement model

The internal consistency reliability, convergent validity and discriminant validity of the construct were tested in measurement model. The reliability of the constructs was examined based on the Cronbach's alpha value. Table 3 displays that all the value of the Cronbach's alpha exceeded 0.7, suggesting high reliability [35].

The convergent validity was assessed based on the value of items loading, average variance extracted (AVE) and composite reliability (CR). As reported by [35], the acceptable value of items loading should exceed 0.6, CR should be more than 0.7, and the AVE should exceed 0.5. Table 3 showed that 23 items loaded on their respective constructs surpassed the recommended value of 0.6. Prior to that, two items of mobile commerce utilization were deleted for not meeting this criterion. The two items were frequency use of mobile commerce for catalog purpose and banking purpose. Regarding the value of AVE from this study, the values exceeded the acceptable value (higher than 0.5) with range values of 0.526 to 0.686. Meanwhile, for the value of CR, all the constructs exceeded the acceptable value (higher than 0.7) with range values of between 0.885 to 0.976 [35]. As illustrated in Table 3, the threshold values were met by all constructs for items loading, AVE and CR with the acceptable value after the process of item deletion.

Discriminant validity was determined by the 0.85 threshold heterotrait-monotrait (HTMT) ratio. The interaction values of all variables were not greater than the critical

value of 0.855 which were depicted in Table 4. In addition, the value of variance inflation factor (VIF) for all constructs is lower than 5 as proposed by [34]. Specifically, it was between 1. 275 and 1. 718. The result revealed that the predictor constructs had no multicollinearity problems. Evidence of satisfactory discriminant validity was presented by both results.

Table 3. Validity and reliability analysis

Constructs	Items	Loadings	Cronbach's Alpha	AVE	CR
PE	B1a B1b B1c B1d B1e B1f	0.897 0.922 0.920 0.900 0.911 0.911	0.899	0.526	0.967
EE	B2a B2b B2c B2d	0.949 0.963 0.949 0.960	0.902	0.557	0.976
FC	B3a B3b B3c B3d	0.916 0.941 0.869 0.811	0.842	0.686	0.936
SI	B4a B4b B4c B4d	0.956 0.955 0.937 0.891	0.895	0.551	0.965
Mobile Commerce Utilization (MCU)	C1a C1b C1c C1f C1g	0.804 0.849 0.767 0.701 0.765	0.752	0.597	0.885

Note: C1d and C1e were deleted due to low loadings.

Table 4. Discriminant validity (HTMT criterion)

Constructs	1	2	3	4	5	VIF
(1) PE	**0.725**					1.718
(2) EE	0.282	**0.746**				1.513
(3) FC	0.299	0.471	**0.828**			1.422
(4) SI	0.286	0.340	0.276	**0.742**		1.275
(5) MCU	0.425	0.403	0.378	0.340	**0.773**	

Note: The diagonal figures are the square root of the AVE, where the off-diagonals are correlations; VIF = variance inflation factor.

4.3 Structural model

The significance and relevance of structural model relationships were analyzed based on the t-statistics for all path which is generated using SmartPLS 3.0 bootstrapping function. Based on the assessment of the path coefficient as shown in Table 5, all four factors variables were significant for the interaction between constructs. Specifically, the attributes of performance expectation ($\beta = 0.222$, $p < 0.01$), effort expectation ($\beta = 0.318$, $p < 0.01$), facilitating conditions ($\beta = 0.192$, $p < 0.01$), and social influence ($\beta = 0.241$, $p < 0.01$) were positively and significantly affecting the entrepreneurs' mobile commerce utilization, signifying that 86.1% of the variance in mobile commerce utilization was explained by independent variables. Thus, all four hypotheses (H1, H2, H3 and H4) were supported.

According to the value of effect size (f^2), PE ($f^2 = 0.252$), FC ($f^2 = 0.166$), and SI ($f^2 = 0.281$) contributed to the explanation of mobile commerce utilization have a medium effect. Furthermore, the result indicates that the EE ($f^2 = 0.403$) had close to a large effect in producing the R^2 for the mobile commerce utilization. These findings were determined based on Cohen's guideline in 1988. On top of that, the predictive relevance of the structural model is tested using the blindfolding procedure. The Q^2 value for the mobile commerce usage is 0.487, which more than 0 and indicated that the model has sufficient predictive relevance [34].

Table 5. Determinants of mobile commerce utilization

Hypothesis Path	Std. Beta	Bootstrap t-value	Decision	R^2	f^2	Q^2
H1: PE → MCU	0.222***	8.482	Supported	0.861	0.252	0.487
H2: EE → MCU	0.318***	9.694	Supported		0.403	
H3: FC → MCU	0.192***	6.647	Supported		0.166	
H4: SI → MCU	0.241***	9.884	Supported		0.281	

Note: ***p<0.01, ***p<0.05, ***p<0.10.

5 Discussion

The empirical findings revealed that PE, EE, SI and FC positively and significantly affecting the rural entrepreneurs on mobile commerce usage, and hence, H1, H2, H3 and H4 were supported. This research suggests that all factors were playing a role in utilization of mobile commerce among rural entrepreneurs in Peninsular Malaysia. This reflects all these four factors were vital in influencing the rural entrepreneurs to use mobile commerce. These findings support those obtained in the previous studies [29] [14] [18] [27].

The results determine that the social influence was the most leading factor affecting the use of mobile commerce among rural entrepreneurs. This was followed by effort expectation, performance expectation and facilitating condition. Social influence is described as an individual perceiving the importance of others 'beliefs that they should

exert the new things. This reflects that mobile commerce utilization among entrepreneurs was influenced by peoples' experience in using it. In general, the key point here is that friends, family, and colleagues are potential reference group that strongly influence rural entrepreneurs towards mobile commerce utilization. Through the popularity of social media, it adds several new features, which includes offering business channels to share their goods that can attract people for using new system. Based on [36], any support is important to motivate people and enhance their continuous participation. The second influential factor of mobile commerce utilization followed by effort expectation. Effort expectation is well defined as an ease linked with the particular system usage. In terms of modifying their expectations and adoption intentions, the direct use of system knowledge by users can be affected by longer experience in the use of information systems. Factor of effort expectation is really important in the early usage stages of an online system. In addition, [36] also believed that the people interest in new practice were positively affected after using the service or tool for the first time. Usually, people with distinct background, age, and location will face trouble in accepting new practice and need several ways to motivate them in continuous participating towards the use of mobile commerce.

On top of that, performance expectation also vital in influencing the mobile commerce utilization. High trust able to build people's satisfaction and give intention that leads to the increase of mobile commerce utilization. The least influential factor was facilitating condition. It was known as the level to which a people feels that there exists the technological infrastructure to facilitate them in engaging with the mobile commerce usage. The mobile commerce application that should be present comprises of hardware, software, or connectivity to the internet, navigation and searching to encourage mobile commerce usage and it is much proper if guidance was given. In addition, other conditions like smartphone and other resources allied with such use, and the prior knowledge that users must have before the usage of mobile commerce.

6 Conclusion and recommendation

The result concluded that PE, EE, SI and FC were strongly influencing the mobile commerce utilization among rural entrepreneurs. This study provides research insight and practical implications of factors influencing the mobile commerce usage especially among rural entrepreneurs. The finding offers empirical evidence that provide significant input to all stakeholders including government, relevant stakeholders such as entrepreneurs itself, supply chain industry, telecommunication industry, ICT industry, and as well as local communities.

This study will boost the confidence of potential entrepreneurs in engaging in mobile commerce activities. As a result, more entrepreneurs will be ready to adopt mobile commerce in line with the government aspiration which hugely encourages entrepreneurs to use the digital technology tool in their business activities. The current effort and inspiration from the government should be further continued. In order to encourage more entrepreneurs to engage with mobile commerce utilization, the telecommunication industry also should play an important role by providing stable internet connection especially in rural areas. This will offer the quality facilities to the users. The ICT

industry also has a vital role to play in providing a friendly mobile commerce application appropriate for all group level.

In a long term, mobile commerce is a valuable digital tool to expand and develop the efficiency of their business as well as help them for the sustainability and growth of business. In addition, the use of mobile device has become too common nowadays. This study will open up the marketing idea to the local communities in exploiting their mobile device towards enhancing their socio-economic status. By using the mobile commerce, the entrepreneurs are able to improve their business sales due to unlimited marketing border. For the supply chain industries, this research will help the industry to sustain their business operation even though when the world are struggling with Covid-19 pandemic. The local communities also may access to the product easily and quickly.

This study only presents the results about the mobile commerce utilization that were directly influenced by PE, EE, SI and FC. The finding will be more informative if the mediating factors such as the challenge are included in proposed theoretical framework. In addition, the study will be more robust if the economic advantages of mobile commerce can be proven. It will encourage entrepreneur's motivation towards engaging with mobile commerce in their business activity. By considering this limitation, the future study will be more informative.

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