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# Effects of a Technological-Organizational-Environmental Factor on the Adoption of the Mobile Payment System

Gyamfi-Yeboah KWABENA<sup>1</sup>, Qiang MEI<sup>2</sup>, Touseef Hussain GHUMRO<sup>3</sup>, Wenyuan LI<sup>4</sup>, Daria ERUSALKINA<sup>5</sup>

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## Abstract

The mobile payment system has not only changed the payment pattern but also has improved the performance of small and medium-sized enterprises (SMEs) and individuals' quality of life by saving their energy, reducing the risk of taking cash, and enabling them to give more time to businesses and do international business. Besides, with the current advancement in the Internet as well as the digital transformation, SMEs are being forced to adopt mobile payment systems (MPS). The purpose of this study is to investigate the effects of technological-organizational-environmental (TOE) determinants on the adoption of MPS and its impact on SMEs' firm performance operating in Ghana. This research employed a closed-ended questionnaire to collect data from January 2020 – April 2020. This study used a structural equation modeling (SEM) approach using SmartPLS 3.0 for path analysis of 145 responses. The findings of the study include the statistically significant effects of technological (relative advantage and compatibility), organizational (top management support and employees' readiness), and environmental (social influence and competitive pressure) factors on the adoption of MPS. Furthermore, this study also proved the positive and statistically significant effect of MPS on SMEs' performance. This study demonstrated that the TOE factor explains 70% variations in the adoption of MPS.

**Keyword:** Mobile Payment System, Small and Medium-Sized Enterprises, Firm Performance, Technological-Organization-Environmental Factors

**JEL Classification Code:** E42, O33

## 1. Introduction

Small and medium-sized enterprises (SMEs) are potent economic influencers as well as play a key role in socio-economic development by contributing to the generation of

wealth, employment, innovation, flexibility, and economic growth. Globally, over 90% of enterprises are SMEs and generate approximately 50% of the permanent jobs. About 80 – 90% of global SMEs are in developing countries and contribute over 40% to the GDP with over 70% jobs (Vasilica-Maria et al., 2020). In the case of Ghana, manufacturing SMEs contribute over 70% to GDP and account for approximately 92% of businesses in Ghana. About 90% of the contribution to GDP comes from private sector SMEs, and over 85% of jobs in the manufacturing sector come from manufacturing SMEs (Afum et al., 2020). Although there is a significant contribution of SMEs, their development is usually impeded by several factors (i.e., limited access to the global market, lack of management skills and training, government rules and regulations, and lack of access to appropriate technology); therefore, very few SMEs are considered to be financially and structurally stable (Donkor et al., 2018). SMEs in Ghana tend to be cash-dependent due to their structure and managerial profile of the manager. As such, they are usually obliged to transact

<sup>1</sup>First Author. School of Management, Jiangsu University, Zhenjiang, Jiangsu, China. Email: kwaben93@yahoo.com

<sup>2</sup>Corresponding Author. School of Management, Jiangsu University, Zhenjiang, Jiangsu, China [Postal Address: 301 Xuefu Rd, Jingkou District, Zhenjiang, Jiangsu, China] Email: mei\_qiang64@yahoo.com

<sup>3</sup>Department of Career Development Center, Sukkur IBA University, Sindh, Pakistan. Email: touseef.hussain@iba-suk.edu.pk

<sup>4</sup>School of Management, Jiangsu University, Zhenjiang, Jiangsu, China. Email: liwenyuan8@ujs.edu.cn

<sup>5</sup>School of Finance and Economics, Jiangsu University, Zhenjiang, Jiangsu, China. Email: darii94@yandex.ru

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business with suppliers, to buy or pay for goods by traveling to their offices, which can entail considerable risk of theft or losing money. In the case of SMEs which have bank accounts, apart from the disadvantages of costs which are incurred by high bank charges, documentation, and transport, owners are frequently required to queue for lengthy periods before they can obtain access to funds, which makes it very difficult to exploit any unexpected opportunities which may arise for which funds are required. Because most of SMEs are sole traders who operate in a very informal manner and the businesses are often staffed only by their owners and possibly one or two members of their families, they are often obliged to leave their businesses unattended for several hours to conduct transactions in a bank. As a consequence, sales are lost, and their prospects for survival are severely compromised (Talom & Tengeh, 2020).

As it has become abundantly evident that to sustain, compete globally, and achieve constant growth, SMEs in developing countries like Ghana need to adopt a digital payment system that reduces the financial and non-financial cost (i.e., time, energy). In recent years, the payment system has revolutionized from simple cash/credit transactions to a number of mobile payment systems (MPS). This paradigm shift in payment systems happened due to the advancement of the Internet, increased use of mobile phones, and changes in the economy, global market demands, and the proliferation of social networks. The MPS allows businesses to process *payments* through *mobile* devices, including smartphones and tablets. It is a quick, convenient way to accept payments from anywhere and helps businesses grow their bottom line. There are numerous mobile payment services to choose from and they all tout the latest technological advances, services, and features (Luna et al., 2019; Nguyen et al., 2020). Globally, MPS is receiving increasing attention, from merchants to consumers, as a substitute for using a check, cash, and credit cards. The potential of MPS and digital payment systems is massive (Alkhowaiter, 2020; Yucha et al., 2020). Nonetheless, mobile commerce is considered a key tool for firms to improve performance, as it provides customers accessibility, global reach, and allows them to purchase products despite boundaries. Moreover, the availability of digital payment technologies (i.e., mobile money, Internet banking, debit, or credit cards) has gradually increased in developing countries and is a basis for financial inclusion initiatives (Ligon et al., 2019). Indeed, the advantages of the adoption of MPS include the independence of time and place, queue avoidance, availability, and the possibility of remote payments. At the same time, the disadvantages include complexity, perceived risk, premium pricing, and lack of critical mass (Wang et al., 2016).

Though the new MPS has been steadily introduced in the market, its rate of adoption has stayed modest. Little research has been dedicated to from SMEs context and

to explore the views of owners or executives on the MPS (Khan & Ali, 2018). Zumanu (2019) argued that limited work has been carried out concerning factors of adoption of MPS and its influence on SME's performance in the Ghanaian context. Wong et al. (2020) stated that unlike existing studies (Alkhowaiter, 2020; Luna et al., 2019) that employed linear models with Technology Acceptance Model (TAM) or United Theory of Acceptance (UTA) and Use of Technology (UoT) that ignores the organizational and environmental factors, they adopted the "Technology, Organization, and Environment (TOE)" framework that covers the technological dimensions of relative advantage and complexity, organizational dimensions of upper management support and cost and environmental dimensions of market dynamics, competitive pressure, and regulatory support. Indeed, as the technological-organizational-environmental (TOE) framework has united both human and non-human factors into a single framework, this renders robust strength over traditional models like a UTA and UoT. Hence, the empirical findings from studies adopting the TOE framework have ensured that it is a valuable model for investigating the adoption of MPS (Wang et al., 2016).

Therefore, this study aims to investigate the effects of TOE factors on the adoption of MPS in the context of SMEs operating in Ghana. Besides, the objectives to assess the effects of the adoption of MPS on SME's performance.

## 2. Literature Review

### 2.1. Theoretical Background

The theory of reasoned action by Azjen and Fishbein (1980) and the theory of planned behavior by Ajzen (1991) are the classical theories mainly used by prior studies to explain human behavior regarding the adoption and usage of new technologies. Further, grounded on the above theories, the technology acceptance model (TAM) was developed by Davis (1989), who proposed that the perceived ease of use and usefulness are the drivers that describe the attitude of an individual towards the adoption of technology and subsequently determine the intention to use, resulting in the adoption of technology. The aforementioned theories were largely used by scholars to determine the individual attitude towards the adoption of technology. However, Wong et al. (2020) argued that they ignored the organizational and environmental factors. Although the TAM was adopted in prior studies related to the MPS, it focused on individual factors and is customer-based. In contrast, this study used the TOE framework developed by Tornatzky et al. (1990) to determine the impacts of contextual factors on the adoption of a specific technology. There are three heads of this framework technological, organizational, and environmental. Technological factors comprise external and

internal technologies that are crucial to the business, whereas organizational factors include the firm size, management level, resources, and other related issues. The environmental factors relate to its stakeholders (i.e., competitors, customers, suppliers, government agencies, its industry, and others).

The empirical findings from research adopting the TOE model have ensured that it is a valuable model to comprehend the IT-based adoption of innovation (Tajudeen et al., 2018). Besides, based on Ali (2018), Zumanu (2019) argued that very little empirical work has been dedicated to SMEs to date regarding MPS adoption and concluded that the TOE framework has a strong theoretical basis, strong empirical support and has been employed to investigate the adoption of new technology by SMEs. The TOE framework is consistent with the contingency theory, resource-based view theory, and diffusion of innovation theory (Ahmad et al., 2019). We chose the TOE model as the theoretical basis because of the following arguments. First, this framework has been widely used by prior scholars to explore closely related topics such as cloud computing, social media, mobile commerce, and other related issues (Chau et al., 2020; Khayer et al., 2020; Tajudeen et al., 2018). Second, the TOE framework considered several factors including organizational and environmental instead of focusing on single technological factors. Third, the TOE framework contains a shared *viewpoint* that *accepts* that the business changes are *made not only* by persons in the *business* (Hameed et al., 2012) but also by the facets of the business. Therefore, this study employed some of the general TOE factors and included specific drivers that are unique to MPS, and explored their influence on the adoption of MPS (refer Figure 1)

## 2.2. Hypotheses Development

### 2.2.1. Technological Factors

This study used two characteristics (relative advantage and compatibility) of technology. Relative advantage is the extent to which potential adopters consider an innovation better than the alternative or how innovation is perceived as advantageous (Rogers, 2003). It focuses on the benefits that are expected from the adoption of a specific technology (Tajudeen et al., 2018). A better understanding of executives and managers about the relative advantage of MPS increases the possibility of that business allocating specific resources, such as technological, managerial, and financial resources towards adopting MPS. The usage of MPS is expected to provide several benefits to SMEs, such as it saves time and cost, and enables remote payments (Khan & Ali, 2018). Similarly, compatibility is also a key factor in the adoption of technology. Compatibility is defined as “existing values, past experiences and needs of potential adopters.” (Khan & Ali, 2018). An organization that adopts social media is influenced by the relative advantages its usage is expected to provide, such as ease of obtaining and inputting data, and whether it helps form or enhance business connections, and relationships. Similarly, the decision to adopt social media is influenced by its compatibility with existing technology, culture, values, and work practices; the level of interactivity, or the extent to which social media enables two-way communication; and institutional pressure from external parties, such as competitors and customers. (Ahmad et al., 2019).

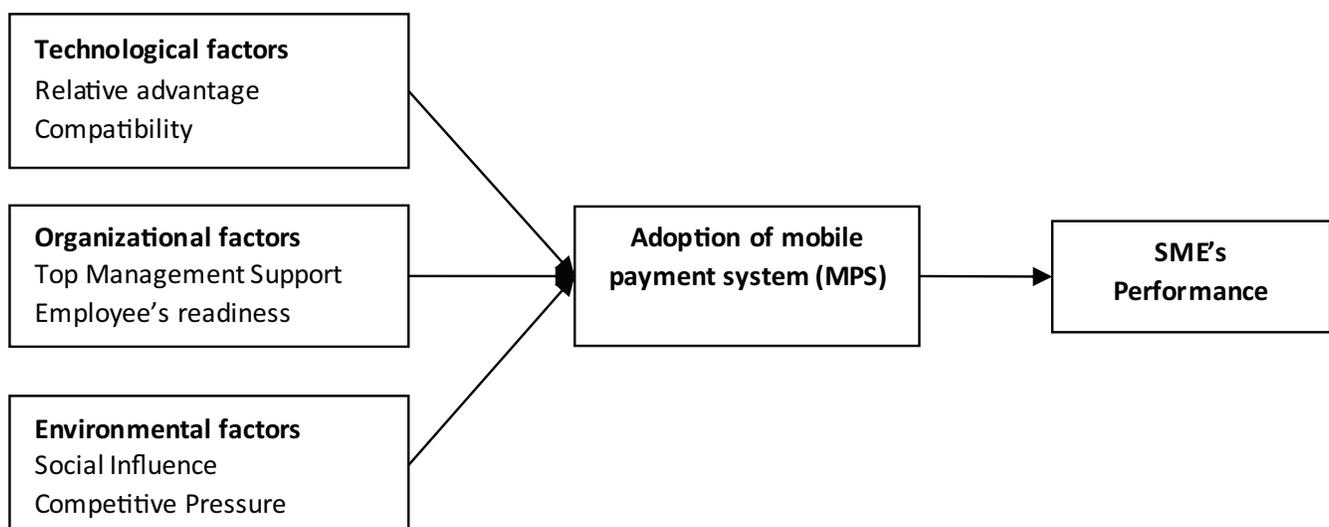


Figure 1: Conceptual framework

Tajudeen et al. (2018) found that an organization's technological context (in-use, available, and new technologies); organizational context (scope, size, and management support); and environmental context (industry, competitors, and business arena) impacts and explains the adoption of social media. Results indicated overall that social media usage positively impacts an organization's performance in terms of cost reduction, customer relations, and information accessibility. Moreover, Khan and Ali (2018) explored retailer's adoption of the mobile payment system; based on an extended model of the TOE framework, eleven factors were theorized to describe retailer's acceptance of MPS. The results revealed that external pressure and relative advantages are the most important antecedents of the intention to use MPS. Therefore, based on the previous research, it is estimated that MPS could provide SMEs with benefits such as profitability, availability, more opportunities for doing business globally, and transaction time improvement. Further, MPS is a cost effective as well as compatible which can be employed by SMEs. Therefore, we hypothesize as following.

**H1a:** *Relative advantage has a positive influence on SMEs' adoption of MPS.*

**H1b:** *Compatibility has a positive influence on SMEs' adoption of MPS.*

### 2.2.2. Organizational Factors

The organizational factors include the internal characteristics of the firms such as employees, turnover, managerial structure, and related issues. This study employed top management support and employee readiness as a proxy for organizational factors. Although, there are many others (i.e., entrepreneurial orientation, facilitating condition, technological competency). Most of the prior studies mainly focused on top management (Ahmad et al., 2019; Khan & Ali, 2018; Tajudeen et al., 2018) as the agency for changing the norms, values, and culture. They can build an encouraging environment to enable the adoption of technology by developing an idea of how the adoption of technology will benefit the firms (Olanrewaju et al., 2020). Notably, there is a positive association between top management support and the adoption of social media in SMEs operating in the UAE and Malaysia.

Recently Khan and Ali (2018) found the positive effects of top management support on the behavioral intention to adopt MPS in Chinese organizations. This study also includes employee readiness as one of the proxies to organizational factors. It is one of the crucial factors in the context related to the adoption of technologies such as decision support systems (DSS). Ahmed et al. (2019) used the TAM from an employees' user-perspective. It addresses those factors that

form employee readiness for e-business and enable their intention to use e-business technologies such as decision support systems (DSS). It focuses on technology-intensive firms while combining Davis' technology acceptance. The outcomes show that the four dimensions of EREB explain the 58.2% of the variance in perceived ease of use and the 50.2% of the variance in perceived usefulness model and employee readiness for e-business (EREB) model. Together, perceived usefulness and perceived ease of use explain the 51.8% of the variance in intention to use while fully mediating the relationship between higher-order EREB construct and intention to use DSS. As MPS is also e-business related, we argue that employee readiness also plays a key role in the adoption of MPS. Based on the above, literature we hypothesize as follows:

**H2a:** *Top management support has a positive influence on SMEs' adoption of MPS.*

**H2b:** *Employees' readiness has a positive influence on SMEs' adoption of MPS.*

### 2.2.3. Environmental Factors

Environmental factors are related to the environment of organizations with respect to customers, government, competitors, and suppliers. It comprises the structure and size of the industry, regulatory environment, competitors, and macroeconomic context (Tornatzky et al., 1990). This study focuses on SMEs; hence, we proposed two factors, that is, social influence and competitive pressure. Competitive pressure refers to the extent to which a firm is influenced by competitors in the market (Chau et al., 2020). It is considered one the crucial driver for the adoption of technology in SMEs (Olanrewaju et al., 2020). The SMEs realize more pressure when more players in the industry have adopted technologies (Khan & Ali, 2018; Tajudeen et al., 2018). The relationship between competitive pressure and the adoption of technology can be extended to MPS (Chau et al., 2020). Largely organizations use MPS when competitors use it. Further, organizations extensively adopt it to get a competitive advantage (Shankar & Datta, 2018). Previously, Tajudeen et al. (2018) found a positive relationship between competitive pressure and adoption of social media, and Chau et al. (2020) found a positive relationship between competitive pressure and adoption of mobile commerce.

Social influence and personality traits are the important drivers for the adoption and use of MPS (Luna et al., 2019). This factor is extensively used with classical theories such as TPB, UTA, and UoT. It is the degree to which customers perceive that significant others (e.g., friends and family members) believe they should employ a specific technology (Alkhowaiter, 2020). Venkatesh et al. (2003) argued that it illustrates the influence of environmental factors such

as opinions of friends, superiors, relatives, and other close siblings on behaviors, when they are perceived to be profitable it may encourage towards the adoption of MPS (Oliveira et al., 2016). Besides, Liébana-Cabanillas et al. (2014) used it as one of the dimensions of external influence. Further, we argue that the relative, friends can be an employee of a competitor, who can propose the adoption of technologies. Recently, several studies found a positive association between social influence and intention to adopt MPS (Park et al., 2019). Therefore, based on the aforementioned arguments we propose the following hypotheses:

**H3a:** *Social influence has a positive influence on SMEs' adoption of MPS.*

**H3b:** *Competitive pressure has a positive influence on SMEs' adoption of MPS.*

#### 2.2.4. SMEs Performance

Besides identifying the antecedents of SMEs adoption of MPS, this study also assessed the effects of MPS adoption on SMEs' performance. Previous studies have found a positive relationship between the adoption of technology (i.e., cloud computing, social media, mobile money) and SMEs performance (Ahmad et al., 2019; Khayer et al., 2020; Talom & Tengeh, 2020). In the context of MPS, very few studies were conducted to investigate the effects of MPS on SMEs' performance (Talom & Tengeh, 2020). Further, existing literature claims that MPS can have a significant influence on firms in terms of e-commerce (Zumanu, 2019). Therefore, when SMEs adopt MPS, it will decrease their costs of handling cash, increase sales, speed-up the buying process, and enable them to make payments to anyone anywhere. Due to the limited studies in the context of the adoption of MPS and its effects on SMEs performance, we proposed the following hypothesis:

**H4:** *Adoption of MPS has a positive influence on SMEs' performance.*

### 3. Methodology

This study used the structural equation modeling (SEM) implemented by prior studies related to the adoption of technology (Ahmad et al., 2019; Luna et al., 2019; Khayer et al., 2020; Oliveira et al., 2016; Tajudeen et al., 2018). SEM is a multivariate statistical tool that is employed to evaluate the structural relationship (Anderson & Gerbing, 1988). Further, it is a combination of multiple regression and factor analysis and is used to assess the relationship between constructs and latent variables (Chin, 1998). This approach of analysis is largely used by researchers because it predicts multiple and interconnected dependencies. Besides, this method employs

two types of variables dependent and independent variables. The SEM is mainly used to validate the proposed hypothesis and is capable of modeling a linear association between constructs (Khan & Ali, 2018).

#### 3.1. Sample and Data Collection

Participants of the study were owners and executives of the different types of SMEs (i.e., information communication technology, professional services, restaurants, business services, catering, construction and contracting, travel and transport) residing in Ghana. The convenient random sampling approach was used for the selection of respondents. At first, participants were informed that their participation is voluntary, and their identity will not be exposed. Data was collected from January – April 2020 through an online survey. Online surveys are considered an authenticated and a significant tool for new research and represent a fast, simple, and less costly approach to collecting data. Further, this method of data collection also shortens the time period, and guidelines can be updated when required (Dillman, 2006). Recently, several studies related to the adoption of technology used this method of data collection (Ahmad et al., 2019; Tajudeen et al., 2018). Apart from the above, another reason includes the current pandemic situation of COVID-19 (Qalati et al., 2020). In total, 300 questionnaires were distributed via social platforms resulting in 145 valid responses; the response rate was 48.33%.

Out of 300 participants, 62.8% (91) were male, and 37.2% (54) were females. Nearly, one-third of participants (32.4%) were aged between 26 – 34 years, 28.3% between 31 – 35 years, 16.6% between 18 – 25 years, 8.27% were aged over 40 years. 45.5% had completed higher secondary school, 31.7% had a bachelor's degree, 12.4% had a master degree's and 10.3% had a doctorate. In response to how long the company has been using digital payment systems to improve business practices, 69.7% reported 1 – 5 years, and 22.7% selected 6 – 10 years, while the rest 7.58% reported less than a year.

#### 3.2. Instruments

This study used a five-point Likert scale to record the participant's responses. All the items in the measures are adapted from well-established scales but modified as per the objectives of the study (Khan & Ali, 2018). The three items for relative advantage and three items for compatibility were adapted from Wang et al. (2016). Three items for top management support were adapted from Wang et al. (2016), and employee readiness assessed by using eighteen items [benefits (five items), security (four items), collaboration (four items), and certainty (five items)] were adapted from Lai and Ong (2010). Four items for the competitive pressure

were adapted from Maroufkhani et al. (2020); Wang et al. (2016), and three items for the social influence were adopted from Al-Saedi et al. (2020). Adoption of MPS was assessed using four items adapted from Luna et al. (2019). And five items for SMEs performance were adapted from Ahmad et al. (2019) and Cao et al. (2018).

#### 4. Results and Discussion

This study used Partial-Least-Square-Structural-Equation-Modeling (PLS-SEM) approach using SmartPLS 3.0 version 3.2.78 to test the hypothesize, given its widespread application in social science, business management, and related disciplines, and given the fact that it considered a comprehensive system of variances (Sikandar et al., 2020; Kong et al., 2020). Hair et al. (2019) proposed a two-step

approach (1) assessment of the measurement model and (2) assessment of the structural model. Before analyzing the measurement and structural model, we have used the full collinearity approach, specifically, the variance inflation factor (VIF), for detecting multicollinearity in regression analysis (Li et al., 2020). This study is free from common method bias (multicollinearity) as the computed VIF values are less than 5 (acceptable threshold) (Table 1).

##### 4.1. Assessment of Measurement Model

According to Roldán and Sánchez-Franco (2012), a proposition to measure the model is required to assess the individual item reliability, internal consistency, content validity, convergent validity, and discriminant validity (see Table 2).

**Table 1:** A Measurement Model and Common Method Bias

Construct	Items	Loadings	CA	CR	AVE	Inner VIF
Relative advantage	RA1, RA2, RA3	0.865 to 0.955	0.912	0.945	0.852	3.145
Compatibility	C1, C2, C3	0.872 to 0.906	0.867	0.918	0.789	2.672
Top management support	TMS1, TMS2, TMS3	0.928 to 0.948	0.935	0.958	0.885	3.421
Employee readiness	ER1, ER2, ER3, ER4, ER5, ER7, ER8, ER10, ER11, ER12, ER13, ER14, ER15, ER16, ER17, ER18	0.752 to 0.889	0.97	0.973	0.692	1.074
Social influence	SI1, SI2, SI3	0.975 to 0.98	0.978	0.985	0.958	2.907
Competitive pressure	CP1, CP2, CP3	0.887 to 0.912	0.886	0.929	0.814	2.337
Mobile payment system	MPS1, MPS2, MPS3, MPS4	0.865 to 0.961	0.966	0.975	0.907	1.001
Firm performance	FP1, FP2, FP3, FP4, FP5	0.812 to 0.885	0.907	0.931	0.73	

**Table 2:** Discriminant Validity Square Root of AVE

Constructs	1	2	3	4	5	6	7	8
Adoption of mobile payment system	<b>0.952</b>							
Compatibility	0.631	<b>0.888</b>						
Competitive pressure	0.608	0.64	<b>0.902</b>					
Employee readiness	0.305	0.178	0.126	<b>0.832</b>				
Firm performance	0.706	0.696	0.702	0.255	<b>0.854</b>			
Relative advantage	0.751	0.677	0.685	0.238	0.739	<b>0.923</b>		
Social influence	0.449	0.687	0.651	0.141	0.703	0.754	<b>0.979</b>	
Top management support	0.659	0.755	0.701	0.2	0.745	0.741	0.728	<b>0.941</b>

Individual item reliability was measured by outer loadings of items related to a particular construct (Ahmed et al., 2020). Hair et al. (2019) proposed the value of outer loading should be  $\geq 0.7$ , therefore competitive pressure (CP4) and employee readiness (ER6 and ER9) were removed from the analysis. According to Li et al. (2020), Cronbach’s alpha (CA), values should exceed 0.7. Internal consistency reliability according to Hair et al. (2019) requires composite reliability (CR) to be  $\geq 0.7$ . Regarding convergent validity, Fornell and Larcker (1981) recommended that the average variance extracted (AVE) should be  $\geq 0.5$  (see Table 1). Furthermore, According to Fornell and Larcker (1981), “the square root of the AVE for each construct should exceed the inter-correlations of the construct with other model constructs” (see Table 3).

#### 4.2. Assessment of Structural Model

This study used PLS bootstrapping with 5000 bootstraps and 145 cases with the motive of examining the hypothesized model and its significance level (Hair et al., 2019) (Table 3). According to Hair et al. (2019), the structural model should be used to assess the linear regression effects of the dependent variables on one another. A PLS assessment of the structural model used path co-efficient, p-value, and coefficients of determination ( $R^2$ ).

According to Cohen (1998), the values of  $R^2$  are 0.60, 0.33, and 0.19, respectively, set as a rule of thumb, and these values are described as substantial, moderate, and weak. The value of  $R^2$  of this study was 0.70, which implies that 70% variation in the adoption of MPS occurred due to technological factors (relative advantage and compatibility), organizational factors (top management support and employee readiness),

and environmental factors (social influence and competitive pressure). While 49.9% variation in SMEs firm performance occurred due to the adoption of the MPS. As per the threshold defined by Cohen (1998), we state that this model has a medium and substantial effect (Table 3). Furthermore, we employed the cross-validated redundancy measure ( $Q^2$ ) to evaluate the model (Ringle et al., 2012). Values of 0.02, 0.15, and 0.35 respectively indicate that an exogenous construct has a small, medium, or considerable predictive relevance for a specific endogenous construct (Cohen, 1998). This study evidence considerable predictive relevance (Table 3). Besides, to test the goodness of model-fit, we have reported SRMR, the retained valued 0.055 is below the acceptable threshold (Li et al., 2020; Qalati et al., 2020).

Table 3 shows that all hypotheses of the study found were supported based on the criterion of  $t$ -value  $> 1.96$ , and  $p$ -value  $< 0.05$ . In the technological factors, two hypotheses were developed: *H1a* investigated the impact of relative advantage on the adoption of MPS. The relationship between relative advantage and adoption of MPS was supported ( $\beta=0.675$ ,  $t$ -value=8.648  $> 1.96$ ,  $p$ -value = 0000  $< 0.05$ ). *H1b* examined the influence of compatibility on the adoption of MPS. The relationship between the proposed construct was supported ( $\beta=0.234$ ,  $t$ -value=3.119  $> 1.96$ ,  $p$ -value=0.002  $< 0.05$ ). The results of the study were consistent with the study by Tajudeen et al. (2018), who proved the positive effect of relative advantage and compatibility on social media adoption, and Khan and Ali (2018) who proved the mentioned relationship in the context of the MPS. These findings imply that the adoption of MPS in SMEs operating in Ghana is perceived benefits (relative advantage and compatibility).

**Table 3.** Path Coefficient, Hypothesis Testing, Coefficient of Determination, and Model-Fit Indexes

Hypotheses	Relationships	Beta	SE	t-value	p-value	Decision	R <sup>2</sup>	Q <sup>2</sup>
H1a	Relative advantage → Adoption of mobile payment system	0.675	0.078	8.648	0.000	Supported		
H1b	Compatibility → Adoption of mobile payment system	0.234	0.075	3.119	0.002	Supported		
H2a	Top management support → Adoption of mobile payment system	0.208	0.085	2.43	0.015	Supported		
H2b	Employee readiness → Adoption of mobile payment system	0.11	0.047	2.318	0.021	Supported		
H3a	Social influence → Adoption of mobile payment system	-0.488	0.079	6.135	0.000	Supported		
H3b	Competitive pressure → Adoption of mobile payment system	0.154	0.06	2.548	0.011	Supported	0.70	0.584
H4	Adoption of mobile payment system → Firm performance	0.706	0.045	15.682	0.000	Supported	0.499	0.335
Model fit Indexes: SRMR = 0.055, d_ ULS = 2.491, d_ G = 1.681, Chi-square, 1,247.44, NFI = 0.823								

From the organizational perspective, we have constructed two hypotheses: *H2a* investigated the effect of top management support on the adoption of MPS. The relationship between management and MPS adoption was supported ( $\beta=0.208$ ,  $t\text{-value}=2.43>1.96$ ,  $p\text{-value}=0.015<0.05$ ). *H2b* investigated the effect of employee readiness on the adoption of MPS. The relationship between employee readiness and adoption of MPS was supported ( $\beta=0.11$ ,  $t\text{-value}=2.31>1.96$ ,  $p\text{-value}=0.021<0.05$ ). The results of the study were consistent with the study by Sikandar et al. (2020), who proved that top management support plays a key role in the adoption of technology. The results are also consistent with the study by Ahmed et al. (2019) who argued that employee readiness is also one the critical factor in the acceptability of MPS. This study result indicates that top management is supporting the adoption of MPS, and employees showed a willingness to adopt MPS, as it saves cost (time, energy, and money).

From the organizational perspective, we have constructed two hypotheses: *H3a* investigated the effect of social influence on the adoption of MPS. The relationship between social influence and MPS adoption was supported ( $\beta= -0.488$ ,  $t\text{-value}=6.135>1.96$ ,  $p\text{-value}=0.000<0.05$ ). *H3b* investigated the effect of competitive pressure on the adoption of the MPS. The relationship between competitive pressure and adoption of MPS was supported ( $\beta=0.154$ ,  $t\text{-value}=2.548>1.96$ ,  $p\text{-value}=0.011<0.05$ ). The results of the study were consistent with the study by Park et al. (2019), who proved the effect of social influence (friends, relatives, and family) on mobile-related technologies. The results are also consistent with the study by Chau et al. (2020) found that competitive pressure has a significant effect on the intention of SMEs to adopt MPS. This finding implies that social relationships negatively influenced MPS adoption due to several factors such as security, fraudulent activities, and less use by customers. Besides, due to increasing competition in the industry and options provided to make payment online, SMEs are required to adopt MPS.

Most importantly, this study's objective was to examine the effects of MPS on SMEs' firm performance. Notably, *H4* investigated the effect of the adoption of MPS on firm performance in the context of Ghana which was supported ( $\beta=0.706$ ,  $t\text{-value}=15.68>1.96$ ,  $p\text{-value}=0.000<0.05$ ). The results of the study were consistent with the study by Sikandar et al. (2020), who proved the positive effect of social media adoption on SMEs' performance operating in Pakistan.

## 5. Conclusion

This study was conducted to examine the effects of TOE factors on the adoption of MPS in the context of SMEs operating in emerging countries, specifically

Ghana. The outcomes of the study proved that TOE factors have a significant influence on the adoption of MPS. Furthermore, the study also confirmed that the adoption of MPS significantly influences SMEs' performance. Most importantly, this research pinpoint that by adopting MPS, firms can reduce the cost of traveling to bank, save time and give more time to businesses instead of waiting in line to make a transaction in the banks, decrease the chance of theft and loss to health which incur due to holding cash, and increase the international businesses and transactions.

This study contributed to the existing literature on MPS and extended the TOE framework in the context of MPS and developing countries. Most importantly, previous studies mainly focused on the intention towards the adoption of MPS, whereas this study evidenced the influence of MPS on SMEs' performance. This study is limited to one country only; hence, future studies can be conducted in other countries due to cultural variations and to validate results. Furthermore, the interaction effect of the adoption of MPS and the moderating role of the external environment can be employed in future studies.

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