

FACTORS LEADING TO MOBILE PAYMENT INTEGRATION IN SMALL AND MEDIUM ENTERPRISES (SMES): EXPLORING KEY INHIBITORS IN GHANA AND CHINA

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ABSTRACT

Payment systems have been completely transformed by the use of mobile devices, which offer a safe, practical, and effective way to make financial transactions. With an emphasis on technological infrastructure, user experience, legal frameworks, trust and security, and competitive market forces, this study investigates the factors impacting the adoption of mobile payments among SMEs in China and Ghana. Purposive sampling is used in the study to choose SMEs that satisfy particular operational and legal requirements. Online surveys were used to collect data, with WeChat's survey platform for Chinese participants and Google Forms for Ghanaian respondents. The study involved a total of 180 SMEs (90 from Ghana and 90 from China). The findings reveal key demographic differences and adoption trends, with Chinese SMEs demonstrating a higher inclination towards mobile payment systems due to favorable technological advancements and regulatory support. In contrast, Ghanaian SMEs face barriers such as limited infrastructure, regulatory challenges, and security concerns. The study highlights critical determinants, including ease of use, perceived benefits, trust, and institutional support, which influence mobile payment adoption. Insights from this research provide actionable recommendations for policymakers, financial institutions, and technology providers to foster mobile payment adoption among SMEs in developing economies. These include enhancing security and trust through stricter cybersecurity measures, improving digital infrastructure through investments in high-speed internet and mobile network coverage, developing reliable and interoperable payment platforms, providing regulatory and policy support through tax breaks and clear regulations, and improving user experience through multi-language options and 24/7 support.

Keywords: Mobile payment adoption, SMEs, Ghana, China, digital financial inclusion.

INTRODUCTION

The emergence of mobile payment systems has transformed international trade by providing companies and customers with a safe, practical, and effective way to make financial transactions. Small and medium-sized businesses (SMEs) are using mobile payment solutions more frequently as digital economies grow in order to boost customer happiness, speed up transactions, and improve operations. SMEs, since its remarkable effects and acceptance by consumers and giant telecommunication companies, financial institutions and Small and Medium Enterprises (SME, henceforth). Most SMEs' have embraced Apple Pay, Samsung Pay, PayPal, WeChat Pay, AliPay, Ghana MTN mobile money, instant payment systems, mobile banking apps and other Point-of-Sale merchant payment systems. According to the statistics of the IResearch report in

2020, the Gross Merchandise Volume (GMV) of m-payment has increased to 58,800 billion RMB in China in the year of 2017, with an average growth rate of more than 236.2% (IRResearch, 2020). According to Nielsen report, about 69% of Chinese tourists sampled used mobile payment at their destinations overseas. Also, over 50% of the merchants surveyed in the USA and UK argued that after accessing Alipay, the flow of Chinese customers has increased. In China, the usage of mobile payment rates is becoming closer to bank card payment and cash (Nielsen China Report, 2019).

Mallat and Dahlberg (2024) concluded that mobile user's intention to use mobile payment systems is of considerable interest to researchers because financial institutions, trusted third parties, SMEs, payment service providers and other stakeholders can benefit greatly from an enhanced understanding of the key factors underlying the user intention to use such a system. To enhance understanding of mobile payment, Shao et al. (2019) said it represents a technical innovation of traditional payment, and it is defined as "any payment where a mobile device is used to initiate, authorize and confirm an exchange of financial value in return for goods and services". Existing literature suggests that mobile payment systems provide flexibility and convenience (Koster et al., 2016; Lu et al., 2017).

China has adopted mobile payment systems widely, but Ghana's SME sector has been slow to adopt these mobile payment systems. Many Ghanaian SMEs are still reluctant to use mobile money services, even though mobile network providers and FinTech companies are working to promote them. This study aims to identify the factors that prevent SMEs in Ghana from incorporating mobile payment solutions. The study compares the mobile payments adoption factors by SMEs in Ghana to China with emphasis on important elements such as technological infrastructure, user experience, regulatory laws, trust and security, and competitive pressure.

LITERATURE REVIEW

Mobile Payment System

A new paradigm has emerged under the name mobile payment (M-payment). Mallat (2016) defined Mobile payments as the use of a mobile device to conduct a payment transaction in which money or funds are transferred from a payer to a receiver via an intermediary, or directly without an intermediary. Mobile payment services utilize wireless and other communication technologies, thereby allowing users to make quick payments with their mobile devices (Kujala et al., 2017). In the view of Mun et al. (2017) mobile payment refers to the transaction that is carried by using a mobile device without interacting directly with the merchant's physical point of sale (POS) system such as conducting electronic commerce over the mobile internet, transferring funds through a mobile application. According to Abrahão et al (2016), mobile services are associated with other technologies ranging from network infrastructure to software and communication equipment and they contribute to m-payment; flexibility, mobility and efficiency to solve everyday problems or satisfy the wishes of their users. "M-payment, which is a particular form of e-payment, utilizes communication technology by enabling mobile users to make payment using Internet-connected mobile devices" (Ting et al, 2016).

While this definition includes mobile payment transactions conducted via mobile banking systems, a distinction between mobile payments and mobile banking services should be noted

mobile payment is known as proximity mobile payment as well which the consumer presents at the point of sale (POS) to pay for goods or services by using mobile devices (Mun et al., 2017). Contributing to the M-payment definitions is the transfer of money in exchange for service or goods over a mobile device. It relies on technology such as short message service (SMS), secure mobile browser or mobile application and QR (Quick Response) code. Given the prevalent use of mobile devices and the Internet, the m-payment system is proving to be a well-accepted payment method for individual consumers and a useful mechanism to expedite payment for government bodies and business organizations.

Small and Medium Enterprises (SMEs) in Ghana and China

In Ghana, the most commonly used definition of SMEs is the number of employees in the enterprise (Nkuah et al, 2013). The Ghana Statistical Service (GSS) defines small businesses as enterprises that employ less than 10 persons while those that employ more than 10 people are classified as Medium and Large-Sized Enterprises. Alternately, the National Board for Small Scale Industries (NBSSI) in Ghana utilized both the ‘fixed asset and number of employees’ criteria to define SMEs. According to the NBSSI, enterprises with not more than 9 workers, plants and machinery (excluding land, buildings and vehicles) and not exceeding 10 million Cedis (US\$ 9506) are considered Small small-scale enterprises. Pass et al. (2000), define SMEs as companies that (1) have an annual turnover of less than £11.2 million; (2) have gross assets of under £5.6 million; and (3) have not more than 250 employees. In Singapore, for example, 99% of all enterprises are considered to be micro and SMEs (Jamal and Johari, 2015)

Commenting on the controversial definitions of SMEs’, it constitutes a small business and its explanation has been attributed to the sized-based criterion which uses the number of employees, total assets and sales turnover as measures of size. The fundamental problem with this is that none of the measures for size stands out to be the best measure. Moreover, one of the widely used and most referenced definitions for SMEs is from the Bolton Committee’s Report. The Bolton Committee’s Report (1971) formulated what is known as the *economic* and *statistical* definitions of a small firm. The *economic definition* holds that; a firm is considered as small if it satisfies the following three criteria;

1. it has a relatively small share of the marketplace;
2. it is not managed through the medium of a formalized management structure but by owners or part-owners in a personalized way;
3. it is not a subsidiary of larger enterprises.

SMEs in China are defined, according to the *Law of the People’s Republic of China on the Promotion of Small and Medium-sized Enterprises (2017)* (SME Promotion Law), as companies that “have a relatively small size in personnel and scope of business”. The standards for classifying small and medium enterprises are formulated by the relevant departments of the State Council, and the identification of a company as a micro, small, or medium-sized enterprise is dependent on a series of variables such as the industry it belongs to, its operating income, its total assets and its number of employees. SMEs constitute an overwhelming majority of the enterprises in China and are key to its economic development, as they represent 99.6 percent of China’s companies, offer more than 80 percent of the job positions and hold more than 70 percent of the patents. They also represent more than 60 percent of the gross domestic product (GDP) and contribute more than 50 percent of the taxes (Guo and Li, 2007)

In China, the definition of an SME is complex and depends on the industry category and based on the number of employees, annual revenue and total assets and these criteria for small and medium-sized enterprises are based on the SME Promotion Law of China (2003) which sets the guideline for classifying SMEs. The relevant size of the SMEs is significantly smaller than the large and listed companies in China due to the size of their capital stock, and credit allowance according to Guo and Li (2007). After the reformations of government legislation in 2005 in favour of SMEs in China, nowadays, SMEs have been operating in different branches of businesses such as manufacturing, services, construction, transport, and retailing. The main market for SMEs is the domestic market of China which is due to the fact that SMEs cannot cope with the fierce competition in the international markets or do not have the advantage over foreign-invested companies with high tech. Due to the shortage of funds, most SMEs operate mainly in labor-intensive small and medium industries.

Mobile Payment Adoption Factors by SMEs

The tremendous benefits of the m-payment system for SMEs, however, have not been fully utilized by SMEs in many developing countries. As mobile payment services have a huge business potential but have not yet been widely adopted, various studies have focused on consumer adoption of these services using the technology adoption model (TAM) or a variant of this model (Dennehy and Sammon, 2015). In Vietnam, for example, there are only about 20% of SMEs have built websites and used m-payment to promote their business. Furthermore, about 70% of these websites are difficult to access on mobile devices (VECITA, 2017). Extant research has highlighted the importance of information quality on trust in e-commerce, mobile payment, and financial services (Silic & Ruf, 2018). Ulas (2019) concluded that obstacles in adopting digital transformation are budget deficiencies of SMEs, impossibility of investment due to high investments and operational costs, inability to understand internet technologies, inconveniency of sector, data security, privacy concerns, technological developments, insufficient information regarding digital standards, being unaware of the benefits of digitization, having connection problems, lack of qualified employment.

The widespread use of mobile electronic payment systems for commercial activities involving business-to-consumer or business-to-business entails systems with characteristics that range from globally accepted and easy-to-use accompanied with the necessary level of security (Dewan & Chen, 2015). A key concern to consumers and SMEs' is the ability to be able to carry out transactions at any time and anywhere, which is the most distinct advantage of mobile e-payments as opposed to only e-payment systems for developing countries (Arreymbi, Agbor & Adnan, 2008). Like other new technologies mobile e-payment systems have issues of prime concern to users. Some of these issues are related to security (Eze et al., 2008), trust (Tobbin, 2010), usability (Chan & Kauffman, 2010), government regulations (Au & Kauffman, 2007) and institutional factors (Hu et al., 2007). Bezhovski (2016) highlighted several factors that can prevent the use of mobile payment methods, such as premium prices of the payment system, perceived security risks, incompatibility with large payments and immunity to mobile payments. Meanwhile getting access to finance and security is one of the difficulties that SMEs face worldwide. Mallat et al. (2018) identified eleven determinants related to technology adoption, namely: ease of use, usefulness, attitude, social influence, compatibility, cost, prior experience, trust, risk, use context, and mobility. Some authors also highlight that usability problems are responsible for the low adoption of a variety of payment systems (Tânia et al., 2017).

RESEARCH METHODOLOGY

This study employs purposive sampling to select small and medium enterprises (SMEs) in Ghana and China, ensuring the inclusion of businesses that align with the research objectives. The selection criteria for SMEs in Ghana included three key factors: (1) the business must have been in operation for more than five years, (2) it must be legally recognized and licensed with no history of regulatory violations, and (3) it must operate as either a business-to-business (B2B) or business-to-consumer (B2C) entity. These criteria were established to ensure the reliability of responses and the relevance of the data collected for analysis. For the first phase of data collection, 108 respondents from five purposively selected SMEs in Ghana participated in the study. To facilitate an effective comparative analysis between Ghana and China, the study expanded its scope to include mobile payment users and businesses from both countries. In China, respondents were drawn from various business types, including delivery agencies, malls, KFC, McDonald's, and food vendors. In total, 180 respondents (90 from Ghana and 90 from China) were selected to complete a second set of questionnaires, ensuring balanced representation from both regions.

The study utilized online survey tools to collect data from respondents in both countries. In Ghana, the questionnaire was administered via Google Forms, while in China, WeChat's survey application was used for data collection. Two sets of questionnaires were prepared; one in English for Ghanaian respondents and another in Chinese for Chinese participants to ensure clarity and accuracy in responses. The data collection process was conducted in two phases. The first set of questionnaires was administered exclusively to Ghanaian SMEs, and responses were collected over a two-week period. Three days after completing the first phase, the second set of questionnaires was distributed to Chinese respondents. This approach ensured a fair and effective comparison between the two countries' mobile payment adoption trends. To maintain ethical standards, all respondents were informed about the purpose of the study, the confidentiality of their responses, and their right to withdraw at any time. These details were included in the survey instructions to ensure transparency and voluntary participation.

The study employed Microsoft Excel and SPSS (Statistical Package for the Social Sciences) as the primary tools for data analysis. Microsoft Excel was used to extract and organize the data from the WeChat survey application, which was then exported to SPSS for further analysis. The study also employed mean response comparisons to examine the factors influencing mobile payment adoption in both Ghana and China. The results are presented using graphs, tables, and percentages to ensure clarity and ease of interpretation. This methodological approach provides a robust framework for assessing mobile payment adoption trends in SMEs across Ghana and China, allowing for a meaningful comparative analysis.

RESULTS AND DISCUSSION

The survey on mobile money adoption among SMEs in Ghana and China reveals significant demographic differences. Males were the majority in both countries, with 61 male respondents in Ghana and 58 in China. The majority of respondents were aged 21-30, with a higher level of formal education in China. In both countries, SMEs had fewer than five employees, with only a small percentage employing more than 50 people. These demographic differences may influence mobile money adoption trends in both countries.

Table 1: Respondents' biodata

Category	Items	Frequency	
		Ghana	China
Sex	Male	61	58
	Female	29	32
Age	below 20	5	1
	21-30	37	25
	31-40	27	54
	41-50	21	10
Education	High school	49	10
	Bachelor/Diploma	31	76
	Postgraduate	10	4
Size of SMEs by employee	Below 5	58	24
	6 to 10	15	45
	11 to 20	14	16
	21 to 50	2	3
	Above 50	1	2

N=90 for each country

The results from Table 2 indicate the adequacy and reliability of the dataset used in analyzing mobile money adoption factors among SMEs in Ghana and China. Using SPSS, the overall Cronbach's Alpha value of 0.879 (87.9%) suggests a high level of internal consistency among the survey items. Moreover, The Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy value of 0.724 indicates a moderate-to-strong adequacy level, confirming that the data structure is appropriate for further statistical analysis. Also, the study found Bartlett's Test of Sphericity produced a Chi-Square value of 395.647 with 190 degrees of freedom (df) and a significance level (p-value) of 0.000. This test essentially confirms that the variables in the dataset are not independent and that meaningful patterns can be extracted (Hair et al., 2010).

Table 2 Reliability Statistics, KMO and Bartlett's Test

Cronbach's Alpha (N=180)		.879
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.724
Bartlett's Test of Sphericity	Approx. Chi-Square	395.647
	Df	190
	Sig.	.000

Comparison between China and Ghana Mobile Payment SMEs Adoption Factors

To make an unbiased comparison between China and Ghana, the researcher ignores the outliers of the responses and opts for an accurate measure of central tendency. The mean statistics were used to compare the answers of both respondents in Ghana and China respectively. Table 3 describes the mean statistics of the mobile payment growth factors in China and Ghana. The scale of response was measured using a 5 5-point Likert Scale ranging from a minimum of 1=

strongly disagree to a maximum =5 strongly agree. The mean or average values show the total response average of the respondents for each question item posed to the participants.

Table 3 Mean comparison of m-payment adoption factors between China and Ghana

Description	Ghana (Mean)	China (Mean)
trust and security	3.0241	4.6154
usefulness of M-payment over cash	4.2314	4.7692
Convenience	1.0142	4.5385
protection of privacy	2.8562	4.0769
reliable payment partners	2.3641	4.3846
speed and access to the internet	2.2578	4.5769
reliable software (Alipay, WeChat, QR)	1.0041	4.3462
confirmation and inquiry platform access	2.4250	4.7308
high level of technology	2.4572	4.7308
pressure from competitors	3.2554	4.1154
compatibility of m- payment by SMEs	3.4521	4.2692
low or no charges for m-payment service	3.2547	4.2308
language options and flexible procedure	2.3681	4.7308
24/7 online support	2.2334	4.7692
credible websites and apps	3.0021	4.6154
high technology and literacy rate	2.7308	4.5385
quality m-payment research	4.0124	4.5000
commitment, support and policy	4.2692	4.7692
acceptance by SMEs and the government	3.3854	4.5385
overall acceptance and discipline	2.7692	4.3846

The evidence of higher mean data from the data in China shows the level of mobile payment growth in China. Possibly, these factors were considered to be the success factors of mobile payment but not limited to; trust and security, the usefulness of M-payment over cash convenience, protection of privacy, reliable payment partners, speed and access to the internet, reliable software (Alipay, WeChat, QR), confirmation and inquiry platform access, high level of technology, pressure from competitors etc. Prior research suggests that countries with well-established financial regulations and consumer protection mechanisms tend to have higher trust in digital transactions (Zhou, 2013). Ghana's relatively lower score indicates the need for improved security measures to build confidence in m-payment adoption. Chinese businesses also rated privacy protection (4.0769), reliable payment partners (4.3846), and speed and access to the internet (4.5769) higher than Ghanaian businesses. This supports existing literature indicating that China's mobile payment ecosystem, dominated by Alipay and WeChat Pay, benefits from robust technological infrastructure and strong regulatory backing (Chen & Wu, 2021).

Conversely, Ghanaian SMEs (mean: 2.2578) struggle with internet reliability and access to efficient payment platforms.

In the case of Ghana's mean statistics, the average of the observations is lower as compared to that of China. For example; in *trust and security*, the mean data for Ghana is 3.0241 whilst is 4.6154 in China. *Protection of privacy* in Ghana is 2.8562 and it is 4.0769 in China. *24/7 online support* is 2.2334 in Ghana whilst it is 4.7692 in China. *Credible websites and apps* 3.0021 and 4.6154 in Ghana and China accordingly. Furthermore, the *high technology and literacy rates* are 2.7308 and 4.5385 in Ghana and China respectively.

A striking contrast is observed in the rating of reliable software (Alipay, WeChat, QR codes), where Ghana scores only 1.0041 compared to China's 4.3462. This disparity underscores China's mature digital payment ecosystem, supported by widespread QR code payments and interoperability among service providers. Ghana, on the other hand, faces fragmentation in mobile payment services, limiting seamless transactions (Boateng et al., 2020). Furthermore, competitive pressure (Ghana: 3.2554, China: 4.1154) plays a greater role in China's adoption, reinforcing the argument that businesses in technologically advanced environments feel more compelled to adapt to industry trends (Venkatesh et al., 2012). Similarly, China's higher scores in language options, flexible procedures (4.7308), 24/7 online support (4.7692), and credible apps/websites (4.6154) suggest a more user-friendly experience, fostering increased adoption.

CONCLUSION

The study reveals disparities in mobile payment adoption between Ghana and China, highlighting the impact of technological infrastructure, regulatory environment, trust, and convenience. China's success is attributed to secure platforms, reliable internet access, and established payment providers, while Ghana needs improvements in technological literacy and system reliability.

The study suggests several recommendations to improve mobile payment adoption among Ghanaian SMEs. These include enhancing security and trust through stricter cybersecurity measures, improving digital infrastructure through investments in high-speed internet and mobile network coverage, developing reliable and interoperable payment platforms, providing regulatory and policy support through tax breaks and clear regulations, and improving user experience through multi-language options and 24/7 support.

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