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How is mobile money services usage transforming the lives of the poor in Ghana?

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Abstract

Mobile money (MM) is considered a revolutionary phenomenon in the developing world and relies on basic mobile handsets capable of voice and SMS or text. This chapter assessed the potential of mobile phones as a delivery mechanism for financial services in Ghana. Based on the sample of 595 responses collected during the months of September and October, 2016, we investigated various consequences that influence the consumer decision-making process and continuous usage within the mainstream MM or micro-financial services. In total, six hypotheses were developed and tested. The results provided support for all the hypotheses. The key takeaway from this chapter is that MM service agent credibility was found to be a significant driver of consumer engagement and continuous usage. The chapter concludes with a discussion enlisting study implications, limitations, and future research directions.

Keywords: Mobile money; branchless banking; Ghana; consumer engagement

1. Introduction

John is working on a construction site which is located 300 miles away from his home in Sawla, a small town located in northern Ghana. The citizens of Sawla town are largely 'unbanked,' and the town has very limited access to formal banking services such as Internet and ATM services. Most of the town's population relies on mobile money (MM) services in sending and receiving funds. John does not maintain a bank account but considers a cell phone as a 'blessing' to communicate with his family members and to send them money through a nearby MM agent found in a kiosk on a street corner. John visits the MM agent, deposits money into his MM account and then transfers the money to his wife in Sawla at his convenience after performing a few simple steps on his basic handset. John pays a very nominal transaction fee, and to his satisfaction, he also receives immediate funds delivery confirmation on his cell phone. Nowadays, John has adopted the MM services to pay the tuition fee for his daughter. MM plays a very important role in the life of John in effectively managing his finances and payment needs. The above synopsis shows a glimpse of how MM services are transforming the lives of the poor in Ghana and in most developing countries where this new form of business model has been introduced.

Mobile money (MM) is considered a revolutionary phenomenon in the developing world and relies on basic mobile handsets capable of voice and SMS or text, not Internet-enabled smartphones (Lepoutre and Oguntoye, 2017; Maurer et al., 2013). As we learned from the story of John, in most of the African countries, including Ghana, a considerable population cannot access formal banking services but own a cell phone. Against this increasing financial exclusion situation, many African countries are considered important research sites, particularly in MM systems and services. This necessity for academic research is due to a large scale usage of MM services by underbanked consumer segment living mostly in rural or remote areas where the provision of formal banking services has always been financially unviable and a mammoth challenge for the banking industry, Government agencies, and the regulatory authorities. Nonetheless, in the opinion of CGAP (2006), the provision of formal banking services such as MM is considered safer and cheaper than informal alternatives.

Historically, the development and deployment of SMS-based MM provider called M-PESA first started its operations in Kenya in 2007. Following this lead, many developing markets introduced branchless banking or 'mobile money' products on cell phones to largely underbanked, and unbanked population segment. This innovative arrangement allows the mobile network operators (MNOs) and banks to develop an agent network and other value chain elements, and collaborate with each other to allow the remotely located population to access banking systems as well as information using their cell phones. This innovation also allows the conduction of various transactions such as salary receipt and payments, remittances transfers, airtime purchase, utility bill and school fee payments, and savings (Murendo et al., 2018). We argue that banking institutions should understand the changing consumer behavior and the factors including their decision as to when to prolong the usage of a specific banking channel such as MM. Unlike formal banking services, the MM technology relies on agent network.

Nonetheless, since 2003 MM sector has expanded to over 32 countries in the developing world (Tobbin, 2011). Here, prior literature has extensively examined various antecedents of acceptance and post-acceptance in the mobile banking context. However, the field of research in MM (also known as branchless banking) is disparate (Muthinja and Chipeta, 2017) and the MM research is still in an incipient stage of development worldwide (Dermish et al., 2011). Nonetheless, most of the studies conducted in the field of MM were available in the shape of ground-level surveys and white papers written for a specific purpose by practitioners. Consequently, the academic research and conceptual understanding of portable devices such as mobile phones in the development of innovative mobile financial services for the underprivileged class is lagging behind the rapid pace of change on the ground (Duncombe and Boateng, 2009). Similarly, the MM as a phenomenon of interest is contemporary and scarcely researched (Tobbin, 2011).

To fill this gap in the literature, the purpose of this chapter is three-fold. Frist, we assess the potential of mobile phones as a delivery mechanism for financial services (Duncombe and Boateng, 2009) in a developing country, Ghana. Second, we highlight the significance of the role played by the MM agent in providing branchless banking services to the poor. Third, we investigate various consequences that influence the consumer decision-making process and their continued usage of mainstream MM or micro-financial services. Here, we developed a theoretical model consisting of two independent variables (MM agent credibility, MM agent

service quality) and examined their influence on the endogenous variables (consumer engagement, continuous usage of MM services, WoM). The overarching research question is: how do MM agent credibility and service quality drive consumer engagement and continuous usage of MM services?

To answer our research question, the theoretical model (Figure 2) depicts that MM agent credibility and service quality have a positive direct effect on consumer engagement as well as both direct and indirect effects (via engagement) on continuous usage of MM services in Ghana. We also hypothesized that continuous usage has a positive direct effect on WOM. Finally, in the proposed model, we control for the effects of perceived risk, age, gender, education, duration, frequency of usage, income, and cell phone usage duration.

The remainder of the chapter is organized as follows. Section-2 provides the review of past literature and discusses the role played by MM agent as well as the state of MM services in Ghana. Section-3 explains the research model and presents the hypotheses. This will be followed by a discussion of the research methodology (section-4). The section-5 is dedicated to the results, and finally, the chapter concludes with a brief discussion of the results, limitations, implications, and future research directions (Section-6).

2. Literature review

Literature review section has been divided into two sub-sections. First sub-section provides a brief overview of different MM models in place and how they differ from each other. Second sub-section explains the MM usage in Ghana and the context of study.

2.1 MM services and MM Agent

MM is an evolving sector, and it has an economic impact, especially in the emerging and developing world (Tobbin, 2011). Resultantly, Africa's branchless banking or MM market has expanded and diversified in recent years (Chironga et al., 2017). This diversification in MM sector is based on a very simple notion: Who manages the MM value chain elements? i.e., either bank or mobile network operator (MNO).

In MNO-based MM model, the majority of the value chain elements - deposit holding, MM issuer, payment platform, the recruitment of local MM agents who act as resellers, telecommunication channels – are owned and managed by the MNO. The bank here acts only as a deposit holder. The scope of the MM services under the MNO-led model largely concentrates on payments. Nonetheless, if there is no particular legislation for non-bank-actors such as MNO engaging in payment systems, the implementation of the purely MNO-led model in those countries require the collaboration of MNOs and the banking entity for such deployment. Another type of MM model is called MNO-Bank partnership. Here MNOs in partnership with a banking company deploy the MM services. This collaboration with a financial institution expands the scope of the MM services from simple payments to loans and deposits.

Bank-led MM models are different from the MNO-led models. According to Chironga et al. (2017), the bank-led MM models require banks to develop banking apps and other value chain elements. These MM services typically require the sender to be a customer of the bank providing the service, while the beneficiary or recipient does not need to be a bank customer.

Because the banking companies are considered mature organizations with well-established business practices and a reassuringly cautious attitude to change (Lepoutre and Oguntoye, 2017), bank-led and MNO-bank-partnership MM models provide several benefits to the consumers as well as develop a strong consumer trust in the MM services.

In MM, also known as branchless banking (Reaves et al., 2017), the agent network plays an important role, and it has been explicitly considered, for example by Cobert et al. (2012), as the most critical success factor in MM. Here, designated agents provide financial services to low-privileged consumer segments on behalf of banking institutions, and these agents are considered the face of service to the consumers. Research (e.g., Maurer et al., 2013; Davidson and Leishman, 2011) has referred these agents as ‘human ATMs’ or ‘bridges to cash’, ‘front-line, human face.’ According to the explanation provided by Baptista et al. (2010), agent is regard as an individual or business that is designated by the bank or mobile network operator (MNO) to facilitate the transactions for MM users, provide front-line customer services, register new prospects, and so forth.

Elaborating the significance of paying close attention to managing the agent network, prior research (Cobert et al., 2012; Chironga et al., 2017) has reported that since customers interact with MM agents for conduct cash-in and cash-out functions, the customers consider the MM

agent as the face of the company such as bank. In this situation it is safe to conclude that a MM agent can either build or destroy trust and credibility of MM services. Also, Vodafone pioneered the MM business in Africa with its highly successful and popular MM service called M-Pesa. The firm recognized that the critical actors in the MM ecosystem are actually the agents that constitute the M-Pesa network (Lepoutre and Oguntoye, 2017).

2.2 The branchless banking systems and their usage in Ghana

Africa, earlier known as the unbanked continent, is widely considered the global leader in MM technology and services, which has become an important component of Africa's financial services landscape (Chironga et al., 2017). People in Africa use more mobile phones than in any other part of the world (Dogbevi, 2010). According to Africa Mobile Trends (2016), by the year 2020, the mobile subscriptions across African continent will increase to 50%. In terms of mobile phone subscriptions, Sub-Saharan Africa will became the third biggest region now accounting for 10% of the global subscriber base (Africa Mobile Trends, 2016). Sub-Sahara Africa recorded 420 million mobile subscribers at the end of 2016. (GSMA, 2017). Africa is credited with the invention of MM (Botsman, 2016). The platform first emerged in 2007 when Vodafone developed M-PESA for Vodacom and Safaricom in Kenya (Munford, 2015, Mbele, 2016) for money transfers. Currently, the continent leads the rest of the world in respect of MM usage. According to Botsman (2016), a survey conducted by the Gates Foundation, the World Bank, and Gallup World Poll revealed that out of the top twenty (20) countries that employ MM, fifteen (15) are African. Additionally, Kenya has 80% of the world's MM transactions (Botsman, 2016). Figure 1 depicts the mobile payment usage of Top seven African countries.

[Insert Figure 1 about here]

The liberalization of Ghana's mobile telephone sector has resulted in dramatic transformation. The sector currently comprises five (5) firms (MTN, Vodafone, Airtel Tigo, Glo, and Expresso) (NCA, 2016). MTN the market leader as at July 2017 accounted for 47.54% and 56.29% of mobile voice and mobile data subscription respectively (see Table 1 below for details).

[Insert Table 1 about here]

The introduction of MM to the Ghanaian economy has played a key role in the push for financial inclusion (Ghana Banking Survey, 2016). According to the World Bank, majority of

Ghanaians (a whopping 76%) is unbanked (Segbefia, 2016) and MM has aided in extending some form of financial assistance to rural Ghana where traditional banks have not been able to operate. MM is currently being employed in transferring money, making payments, and other transactions traditionally deemed to be the reserve of banks (Ghana Banking Survey, 2016). MTN, Ghana's largest telecom company, started the MM concept in August 2009 and by 2014, the patronage of MM had gained momentum, and the volumes were rising astronomically across income groups (Mustapha, 2015; citifmonline, 2016). In August 2016, there were 16.4 million registered MM accounts in Ghana (GBN, 2016). In respect of the value and volume of transactions, the Bank of Ghana reported that MM transactions amounted to GH¢11.6 billion in 2014 and GH¢9.2 billion in 2013 from an amount of GH¢2.4 billion. Additionally, the total number of registered agents reached 108,531 in June 2016 as against 36,000 agents in the same period the previous year (citifmonline, 2016; adomonline, 2016). The number of transactions has almost quadrupled since 2012; from 30 million to about 106.4 million in 2014 (citifmonline, 2016). The exponential rate at which MM patronage is rising is arguably due to the benefits that the service offers subscribers. MM provides a cheap and relatively safe means of transferring money, shorter transaction times and reduces the transaction cost of financial services to the poor and unbanked (Ahiabenu, 2010; Ghana Banking Survey, 2016). Additionally, the proliferation of mobile phones in the country could be a factor (Andersson, 2013).

3. Research model and hypotheses

The research model is depicted in Figure 2. It includes five main constructs and six hypotheses in total. We investigate the effects of MM agent credibility as well as MM agent service quality on the unbanked consumer engagement. We also investigate the effect of consumer engagement on consumer continuance usage of MM services and WOM.

[Insert Figure 2 about here]

3.1 The effects of MM agent credibility on consumer engagement with MM services

The term 'credibility' is defined as the extent to which a person believes that the use of any financial service will have no security or privacy threats (Luarn and Lin, 2005). According to Kim et al. (2009) and Kim and Prabhakar (2004), structural assurances promise the reliability of monetary or financial transactions, the protection of individual privacy, and transactional

confidentiality. Since MM is a financial service, the credibility and the usage of this newly developed service for the unbanked or underbanked can be enhanced if MM agents are deemed trustworthy by consumers (Maurer et al., 2013; Davidson and Leishman, 2011). Conversely, if an agent commits a fraud, misguide the consumer, or makes mistakes, it will tarnish the image of the banking system and the credibility of the service. Resultantly, this will reduce (and may eliminate) the continuous engagement with the MM services.

In relation to consumer engagement, mobile-based developments created two major challenges for research and service organizations, especially banks. First, the use of technology demands a structured rather than an unstructured approach. Second, technology usage in the everyday lives of consumers changes consumer behavior, making consumers more fickle and more skeptical than ever before (Shaikh and Karjauoto, 2016). Based on that premise, there is a need to move beyond customer satisfaction and loyalty with an underlying purpose to evolve to a higher level, a level of desired differentiation and sustainable competitive advantage (Pansari and Kumar, 2017). This led to the rise of the term engagement among marketing academics and practitioners (Pansari and Kumar, 2017).

Customer engagement has been considered an emerging and interesting topic in the marketing research (Marketing Science Institute, 2014; Hepola et al., 2016). The term customer engagement has also been referred to as customer brand engagement, brand engagement, and consumer engagement (Puriwat and Tripopsakul, 2014). According to Vivek et al. (2014) and Hepola et al. (2016), consumer engagement goes beyond purchase of a service or product, and refers to the level of the customer's (or potential customer's) interactions and connections with the brand or firm's offerings or activities, often involving others in the social network created around the brand, offering, or activity. In the mobile services context, Hollebeek et al. (2014) have defined customer engagement as a consumer's positively valenced mobile services (including mobile application) related to cognitive, emotional, and behavioral activity or related to focal consumer and mobile services interactions.

Prior research (e.g., Henderson, 2015) has confirmed the relevance of trust and credibility as an antecedent to customer engagement in the context of online blogs. This direct correlation between the credibility and customer engagement implies that the higher the credibility, the higher the consumer engagement. Nonetheless, this relationship between credibility and consumer engagement is not investigated in the context of mobile-based services such as

MM, but considering the adjacent association between the online blogging and mobile-based services, this correlation is expected to be present also in the context of MM services. It is, therefore, hypothesized:

H1: Agent credibility positively influences consumer engagement with MM services

3.2 The effects of MM agent service quality on consumer engagement with MM services

In the backdrop of increasing competition among service companies such as banks, the nature and the quality of service provided to customers have received immense attention from companies with or without web presences. The basic argument emanating from an extended literature on service quality (e.g., Goyal and Chanda, 2017; Salanova et al., 2005; Sureshchandar et al., 2002; McLachlin, 2000) explains that superior service quality creates a great customer experience. It is considered as an important antecedent of customer loyalty and retention; a positive perception of firm's service quality which promotes the positive word of mouth for the service provider such as agent and bank. A strong correlation is found between service quality and customer satisfaction (Farooq et al., 2018). The most important dimension of service quality is reliability, and the only appropriate judge of service quality is the customer.

Literature has segregated the definition of web-based service quality or e-SQ and offline service quality that involves physical or face-to-face interaction. Parasuraman et al. (1988) defined service quality as global judgment, or attitude, relating to the superiority of the service. On the other hand, e-SQ is defined as the extent to which a website facilitates efficient and effective shopping, purchasing, and delivery of products and services (Zeithaml et al., 2000).

The scope of this study considers face-to-face service quality provided by agents in MM services to largely unbanked consumer segment and its effect on the customer engagement. Investigating the service quality, customer engagement, commitment and customer loyalty of service providers of the mobile network, Thailand, Dhasan and Kowathanakul (2017) found that service quality, promotional offers, commitment, and customer engagement have positive associations with customer loyalty. Their study also found a direct relationship between service quality and online customer engagement. A similar study by Puriwat and Tripopsakul (2014) found that service quality significantly influences customer engagement's

three dimensions: cognitive, emotional, and behavioral engagement. Considering this direct effect between service quality and customer engagement, we hypothesized that:

H2: Agent service quality positively influences consumer engagement with MM services

3.3 The effects of consumer engagement on continuous usage of MM services

Considering the effects of MM agent credibility and service quality on customer engagement, we now determine how customer engagement affects continuous usage behavior; an increasing customer engagement will prolong the usage of MM services.

A review of contemporary literature revealed a positive and significant relationship between consumer engagement and continuous usage. For example, Hepola et al. (2016) examine the effects of consumer engagement (cognitive, affection, and activation) and perceived risk on continuous usage intention of consumers using m-banking and m-payment applications. We extend this relationship between the consumer engagement and the continuous usage intention in the context of branchless banking or MM services considered closely associated with the mobile payment services. We, therefore, posit that:

H3: Consumer engagement positively influences continuous usage behavior

3.4 The effects of continuous usage behavior on Word of Mouth

The relationship between continuous usage of service and positive e-WOM is quite obvious, since a satisfied customer will provide a positive recommendation. In this study, however, we have considered WOM more pressing after considering the nature of the MM services that serve a different consumer segment, i.e. unbanked and underbanked. Unlike social media and e-service, MM services demand traditional face-to-face interaction with the MM agent and, therefore, it is considered different from the e-WOM which is shared online with a larger consumer segment using online or social media channels. Thus, e-WOM is considered more influential than traditional WOM (Ring et al., 2016).

WOM is predominantly verbal and informal communication between private parties concerning evaluations of goods and services (Anderson 1998; Ring et al., 2016). In services marketing, prior research (Brown et al., 2005, P. 123) has described WOM as "a dominant force in the marketplace". Similarly, WOM has been considered a vital element in influencing purchase decisions of potential consumers (Ring et al., 2016; Shaikh and

Karjaluoto, 2016). After all, when customers believe they are satisfied and get more out of a product or service, they say positive things about this particular product or service.

Given its assigned importance, it is surprising to find relatively few studies (Brown et al., 2005) directed at understanding relationship between the increasing usage of service and WOM. Nonetheless, in the marketing (consumer behavior) literature (e.g., Shaikh and Karjaluoto, 2016), some evidences confirm the relationships between continuous usage intention and WOM. Thus, we hypothesize:

H4: Continuous usage behavior produces positive word of mouth

4. Research Methodology

4.1 Sample and data collection procedure

Consistent with a previous study examining customer usage of MM service (Chauhan, 2015; Upadhyay and Jahanyan, 2016; Cobla and Osei-Assibey, 2017), we conducted a survey of customers to test our conceptual model. The data for this research was collected from college student cohorts who were existing subscribers of MM services. University of Ghana executive masters' students were conveniently selected for the empirical investigation. Three teaching assistants randomly approached the students on the university campuses to ask if they would be willing to fill out a questionnaire. In all, 869 students were approached, out of which 595 responses were received from September 12, 2016, to October 11, 2016. 216 declined to participate because they had not subscribed to MM services. Appendix A presents the sample characteristics.

4.2 Measurement

We adapted our measures from established scales. When necessary, items were modified to suit the MM context. WOM was captured with three items borrowed from Zeithaml et al. (1996). Consumer engagement was modeled as first order components of the three dimensions of it: activation, affection and cognition. Two items were used to measure activation, four items measured affection and three items measured cognitive. These nine items were adapted from Hollebeek et al. (2014). Continuous usage of MM services was measured with three items adapted from Zhou (2013). All the remaining constructs were measured with four items. Items of MM agent service quality were adapted from Kim et al., (2010). Items of MM agent credibility were taken from Tang et al. (2004). The scales for

perceived risk (of using MM services) were taken from Karjaluoto et al. (2014). All items were measured on a seven-point Likert scale, ranging from strongly disagree (1) to strongly agree (7). The measurement items are shown in Appendix B.

5. Findings

The data were analyzed using SmartPLS 3.2.7 (Ringle et al., 2015). We first assessed the measurement model regarding the reliability of the scales, and checked for convergent and discriminant validity. All factor loadings were significant at $p < 0.001$ (two-tailed) and ranged from 0.497 to 0.947 (see Appendix B). Values of 0.5 are considered acceptable (Barclays et al., 1995) although loadings above 0.7 were preferred and considered as the rule of thumb. The composite reliability indices (Fornell and Larcker, 1981) were all above the acceptable value of 0.7 (Hair et al., 2018). Convergent validity was assessed by average variance extracted (AVE), where a value of 0.5 and above indicates an acceptable level (Fornell and Larcker, 1981). The AVE values ranged from 0.61 to 0.89 (Table 2) were all above the cut-off value of 0.5. Discriminant validity was performed using Fornell and Larcker's (1981) criterion, which requires that the square root of each latent variable's AVE is greater than the latent variable's correlation with any other construct in the model (Glavee-Geo et al., 2017). A comparison of the square root of the AVE (diagonal values) and the correlations among the constructs are presented in Table 2, showing support for discriminant validity. Further, discriminant validity was also assessed by using the *heterotrait-monotrait ratio of correlations (HTMT)* (Henseler et al., 2015). The HTMT values were below .85, demonstrating that discriminant validity was established between any two of constructs (Hair et al., 2018; Henseler et al., 2015).

[Insert Table 2 about here]

Assessment of the path coefficients was done by bootstrapping to assess the significance of the path coefficients. Table 3 shows the results of the path analysis of the initial model. In the proposed model as depicted in Figure 2, we hypothesized the structural relations between MM agent credibility, service quality, consumer engagement, continuous usage and WoM. We hypothesized a positive association between MM agent credibility (H1), MM agent service quality (H2) and consumer engagement. We proposed the outcome of consumer engagement to be continuous usage (H3), while WOM is posited to be the outcome of continuous usage (H4). The results of the structural model are shown in Figure 3.

[Insert Figure 3 about here]

MM agent creditability significantly influence activation (β = 0.31, p < 0.001), affection (β = 0.36, p < 0.001) and the cognitive (β = 0.21, p < 0.001) components of engagement. However, although MM agent service quality significantly influence affection (β = 0.22, p < 0.001) and the cognitive (β = 0.18, p < 0.001) components of engagement, the influence of MM agent service quality on activation was not supported (β = 0.07, p > 0.05). We found support for the effect of activation (β = 0.27, p < 0.001) and affection (β = 0.40, p < 0.05) on continuous usage of MM services (See Table 3). The effect of the cognitive component of engagement was found to be insignificant (β = -0.01, p > 0.05). H4 which states a positive association between continuous usage and WoM is also supported (β = 0.45, p < 0.001). We controlled for the effects of perceived risk, age, gender, education, duration of MM usage, frequency of usage, income and cell phone usage duration on both endogenous variables (continuous usage and WoM). We found that perceived risk and duration of MM usage significantly influence continuous usage while income significantly influences WoM. Table 3 shows the results of the path analysis. In this paper, the terms ‘cognitive’ and ‘cognition’ are used interchangeably. In addition, the control variables MM usage experience, usage experience of cell phones and income were significantly related to WoM while perceived risk was found to be negatively related to continuous usage of MM services.

[Insert Table 3 about here]

6. Discussion and Conclusion

It is considered important to reach the underbanked and unbanked consumer segment when the consumption of formal banking products and services is considered as an important pre-requisite to improving economic activities, helping the less privileged to increase their household income, building their asset base, and improving their resilience to shocks (Abramovay 2004; Morawczynski, 2009). Consequent to these benefits, the MM service initiatives receive a considerable amount of attention from marketing executives, regulators, and government agencies, as well as from FinTech start-ups and MNOs.

The purpose of this chapter was to provide an overview of the consumer MM financial sector in Africa with an empirical focus on the role of service agents in Ghana. We sought to achieve this purpose with an overarching research question stated as: how do MM agent credibility and service quality drive consumer engagement and continuous usage of MM services? Specifically, we sought to find answers two research questions: 1) What are the factors that affect MM usage behavior of consumers in a developing country? 2) How does the credibility of MM agent play a decisive role in the success of branchless banking? In total, we hypothesized six structural relations and developed a model which we tested to answer our research questions.

6.1 Theoretical implications

Previous research has established the relevance of trust and credibility in customer engagement (e.g., Henderson, 2015) and behavioral intention to adopt and use m-banking (Cudjoe et al. 2015). Thus, in the context of m-banking, credibility has been found to be of topmost concern (see also Tang et al., 2004). Our support for the effect of MM agent credibility on all the three components of customer engagement provides strong support for the important role of credibility in mobile financial services delivery and adoption intention. Credibility strongly stimulate all the three dimensions of consumer engagement in terms of activation, affection and cognition. Consequently, activation and affection predict continuous usage. However, our analysis shows that MM agent service quality only had significant influence on the affection and the cognitive process of consumer engagement and not on activation.

Service quality is the extent to which the service delivered matches customer expectations (Chen, 2012). The level of service has been found to have a significant impact on trust in the usage of MM services (Zhou, 2013) while Chen (2012) found support for its indirect effect on continuous intention. The level of service is key in engaging consumers of MM services as supported by our study. Our study shows the importance of the quality of service delivered by agents in enhancing customer engagement and the continuous use of service. This is very important due to the variability of services delivered on behalf of financial institutions. Thus, engagement has an impact on the continuous use of MM service. Customer engagement is an important link to continuous usage. Our study on MM services confirms the linkages between customer engagement on WOM (c.f. Hepola et al., 2016). Thus, the manner in which MM

service agents engage customers and potential customers have implication on how these customers foretell their experiences to other potential customers.

Prior research has shown that an increased use of mobile and other e-services will result in positive e-WOM or recommendation intention (Noori et al., 2016; Shaikh and Karjaluoto, 2016). The effect of continuous usage on WOM has also been supported by the present study of MM services. The importance of risk in the m-banking adoption process has been the focus of recent studies (e.g., Shaikh et al., 2018). Thus, the significant negative effect of perceived risk on continuous usage found from our study highlights the risk-continuous usage link. In using the service, gender, age, level of education and income levels were found not to have any impact. This presupposes that the continuous usage of MM is irrespective of age, gender, level of education and income. However, regarding age, one can argue that a certain minimum age is required to transact financial services. All the respondents to this study were above 18 years.

6.2 Managerial implications

It is widely accepted and reported that over 2 billion people in the world do not have access to formal banking and financial services such as branch, ATMs, and Internet. This motivates the banking industry to expand its outreach by developing and deploying banking services which can be conveniently accessed using cell phones by a largely unserved and unexplored consumer segment which is often referred to as the underbanked or unbanked.

For managers, it is a valuable piece of information to understand that the transformational services such as MM are aimed at bringing the financial and payment services to the unbanked and, according to Tobbin (2011), this phenomenon is spreading throughout emerging economies at a rate that is unprecedented. MM services are unique and follow a different business model that allows the designated agents to provide financial services to less-privileged segments of a population. MM agents are intermediaries working on behalf of banking institutions. They are considered the ‘frontline’ contact persons for the co-creation of services to be ‘consumed’ by consumers. The credibility and trustworthiness of these intermediaries, therefore, have a significant impact on the service delivery designed and deployed by banking companies or the MNOs.

Moreover, the quality of service delivered by intermediaries/agents on behalf of financial institutions and MNOs is another critical issue worth consideration if the ‘branchless

banking' business model is to become successful as an alternative delivery channel. Of the three dimensions of engagement, affection's influence on continuous usage has the greatest impact compared to activation and cognitive. This means that more should be done to stimulate the engagement process. Marketing communications and promotional campaigns of MM services targeted at consumers should emphasize the 'feeling positive', 'happy', 'good' and 'proud' about MM services. The actual service delivery by service agents should also aim at stimulating these 'emotions' in the consumers of MM services.

In addition, the significant effect of MM agent service quality on the affection and the cognitive process of consumer engagement and the insignificant effect on activation means that MM service agents, FinTechs and the banks need to do more in terms of customer service. This will require training and retraining of service agents who are the main intermediaries between the financial institutions (herein the banks), the FinTechs and the MM customers. Thus, improving MM agent service quality should be able to 'activate' users of the service in terms of using MM services regularly and very often. The effect of the cognitive dimension on continuous usage is insignificant in the study and this also means that targeted marketing communication strategies should be rolled out to help in educating the users and potential consumers. These communication and promotional strategies should aim at creating awareness of the service since this is a new service design and should help stimulate the cognitive processes of consumers to 'think', and to develop 'interest' in using the service. Subsequently, these strategies will culminate in increasing usage of MM services to the underbank and unbank segments of the population.

6.2 Limitations and future research directions

Our study is not without any limitations. First and the foremost limitation is that the generalization of our study results is difficult to establish because of two major reasons: First, the cross-sectional nature of our study does not provide the definitive information about the cause-and-effect relationships but a snapshot of a geographic location where the study was conducted. Second, the measurement of the constructs in order to study the consumer behavior in using MM services was survey-based administrated at a single point in time, and descriptive. These limitations in our study can be overcome if the future research considers conducting studies with larger samples sizes and experimental research design. The generalizability of the findings can also be achieved by involving different demographics and

age groups of the participants in multiple countries where MM services are currently in use in Africa.

Another limitation is the demographic profile of the study participants. The majority of the study participants were college students from rural Ghana. Therefore, examining the consumption intention, behavior and beliefs of the people living in urban Ghana is out of the scope of this study. Future research may conduct a detailed comparative study in examining the behavior of consumers living in rural and urban areas that use MM services. This will give an interesting insight to determine consumers in urban Ghana, despite having access to other banking channels, consider MM services and how their attitude, as well as MM service consumption pattern, differs from consumers living in rural Ghana.

Asian countries have recently been developing and deploying several MM models and applications in both MNO-Led and Bank-led. Another future research advice could be to replicate our research model in other developing markets in Asia.

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Figure 1: Mobile payment usage of Top seven African countries

(Source: African Business Central, 2015)

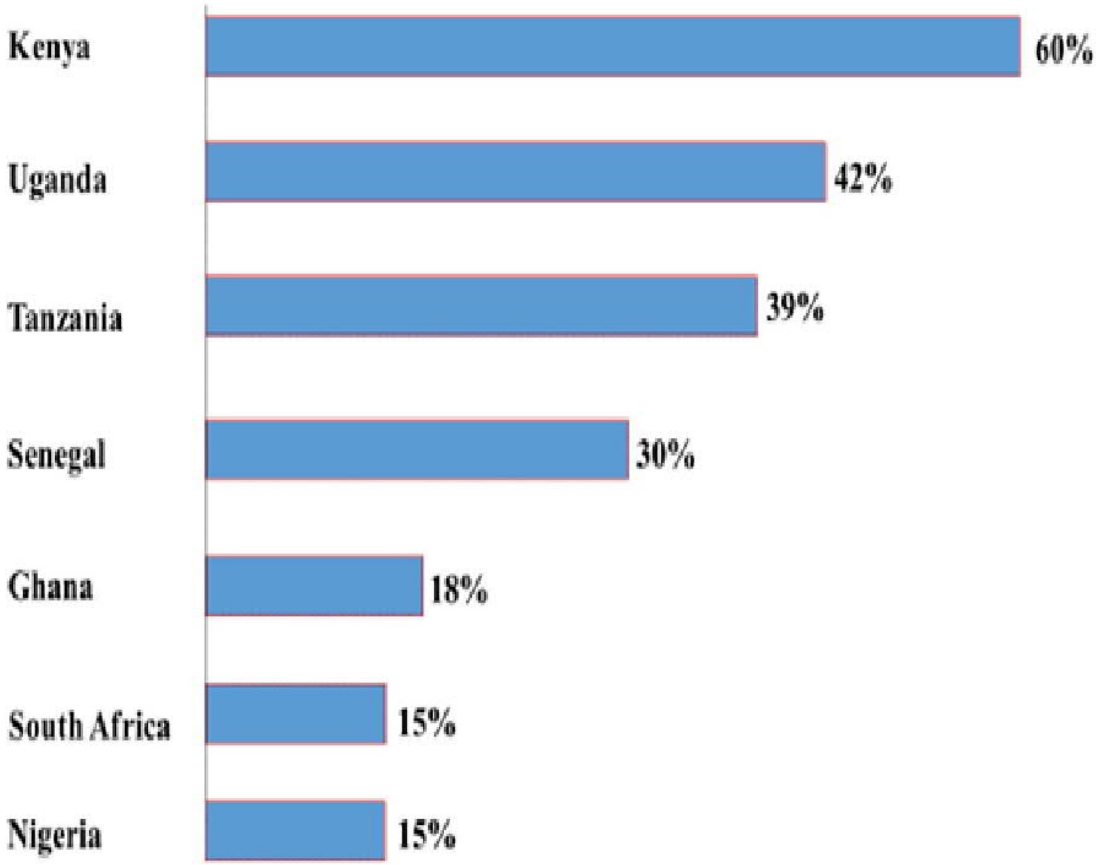

Figure 2: Theoretical Model

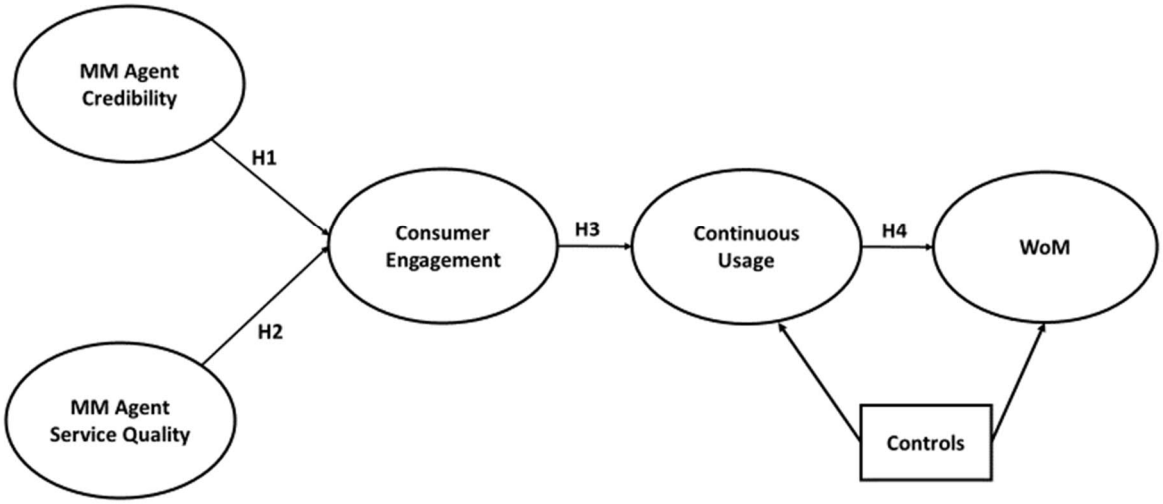

Figure 3: Results of respecified structural model (N=595)

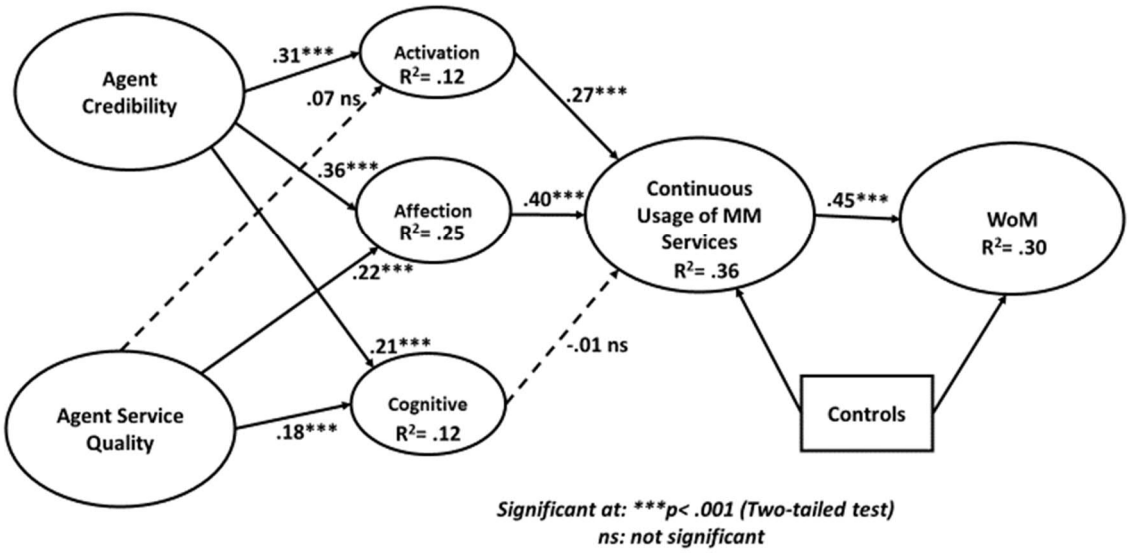

Table 1: Market shares of mobile phone operators by voice calls and data

(Source: NCA, 2017)

Firm	Voice (%)	Data (%)
MTN	47.54	56.29
Vodafone	24.02	16.48
Millicom (Tigo)	14.84	13.70
Airtel	11.36	12.37
Glo	2.18	1.11
Expresso	0.06	0.02

NB: Expresso's Mobile Voice & Data Subscriptions beyond April, 2017 is unavailable

Table 2: Discriminant validity coefficients (n=595)

	CR	**AVE**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Continuous usage (1)	.81	.61	**.78**							
Agent credibility (2)	.88	.66	.44	**.81**						
Perceived risk (3)	.89	.68	-.19	-.26	**.83**					
Agent service quality (4)	.89	.67	.34	.44	-.07	**.82**				
Word of mouth (WoM) (5)	.93	.81	.50	.29	-.17	.25	**.89**			
Activation (6)	.94	.89	.46	.34	-.11	.21	.39	**.95**		
Affection (7)	.95	.81	.54	.45	-,18	.38	.59	.45	**.90**	
Cognitive (8)	.88	.71	.30	.28	.07	.27	.41	.26	.61	**.84**

Note: Bold values on the diagonal are square root of the AVEs. CR Composite reliability; AVE Average variance extracted.

Table 3: Path coefficient and VIF (N=595)

Criterion	**Predictor**	**Path coefficient**	**t-values**	**VIF**
Activation	Agent credibility	.31***	6.72	1.23
	Agent service quality	.07 ns	1.52	1.23
Affection	Agent credibility	.36***	7.71	1.23
	Agent service quality	.22***	4.39	1.23
Cognitive	Agent credibility	.21***	4.28	1.23
	Agent service quality	.18***	3.88	1.23
Continuous usage	Activation	.27***	5.08	1.41
	Affection	.40***	7.09	2.05
	Cognitive	-.01 ns	.24	1.70
	Perceived risk	-.10**	2.66	1.12
	Age	-.03 ns	.55	1.63
	Gender	-.04 ns	1.30	1.04
	Education	.02 ns	.44	1.12
	Mobile money usage experience (Duration)	.05 ns	1.45	1.22
	Frequency of usage	-.04 ns	.93	1.31
	Income	.03 ns	.58	1.44
	Cell phone usage duration	.02 ns	.58	1.41
Word of mouth (WOM)	Continuous usage	.45***	10.62	1.10
	Perceived risk	-.06 ns	1.41	1.07
	Age	.04 ns	.66	1.61
	Gender	-.01 ns	.23	1.04
	Education	-.04 ns	1.29	1.11
	Mobile money usage	.09**	2.36	1.21

	experience (Duration)			
	Frequency of usage	.08**	2.05	1.21
	Income	.10**	2.21	1.43
	Cell phone usage duration	.04 ns	.88	1.41

Note: # Based on 1000 bootstrapping samples

**** p<0.001, ** p<0.05 (two-tailed), ns – not significant*

Appendix A: Sample/demographic characteristics

Demographic characteristics	**Frequency**	**Percent**
Gender		
Males	316	53.1
Females	279	46.9
Age (years)		
18 – 25	356	59.8
26 – 35	173	29.1
36 – 45	48	8.1
46 – 55	15	2.5
56 – 65	3	0.5
Highest level of education		
Junior High School	9	1.6
Senior High School	137	23
O' Level / A' Level	11	1.8
Polytechnic	17	2.9
Teacher training	4	.7
Bachelor /Master	414	69.5
Ph.D.	3	.5
Current employment status		
Student	346	58.2
Employee/professional	229	38.5
Unemployed	7	1.2
Entrepreneur	13	2.2
Usage frequency of cell phones		
< 1 year	117	19.7
1 - 3 years	159	26.7
4 - 6 years	150	25.2
7 - 9 years	74	12.4

10 - 12 years	32	5.4
13 - 15 years	17	2.9
> 15 years	46	7.7
MM Usage experience		
< 1 month	85	14.3
1 - 4 months	92	15.5
5 - 8 months	82	13.8
9 – 12 months	118	19.8
13 - 16 months	69	11.6
17 - 20 months	37	6.2
> 20 months	112	18.8

Appendix B: Item means, standard deviations and factor loadings

Items	**Indicators**	**M**	**SD**	**Loadings**[a]
Activation				
I usually use MM services regularly.	ACT2	4.23	1.76	.947***
I use MM services very often.	ACT3	4.19	1.84	.945***
Affection				
I feel very positive when I am using MM service.	AFF1	4.93	1.40	.883***
Using MM service makes me happy.	AFF2	4.83	1.42	.923***
I feel good when I am using MM service.	AFF3	4.88	1.41	.920***
I am proud to use MM service.	AFF4	4.87	1.49	.872***
Cognitive				
Using MM gets me to think about the service.	COG1	4.67	1.51	.812***
I think about MM a lot when I'm using this service.	COG2	4.46	1.48	.872***
Using MM stimulates my interest to learn more about this service.	COG3	4.52	1.50	.849***
Continuous usage				
I intend to continue using MM rather than discontinue its use	CON1	5.22	1.66	.910***
My intentions are to continue using MM rather than use any alternative means	CON2	4.64	1.67	.860***
I would like to continue my use of MM.	CON3	2.7	1.70	.497***

		8		
Agent credibility				
Using MM agent service would not divulge my personal information	CRD1	4.49	1.40	.816***
I would find the MM agent service secure in conducting my MM transactions	CRD2	4.50	1.42	.857***
The MM agent is like a friend to me because of his truthfulness	CRD3	4.03	1.46	.805***
The MM agent can always be relied on when doing cash transactions.	CRD4	4.22	1.49	.776***
Perceived risk				
The decision of whether to use MM service is risky.	RISK1	3.52	1.58	.798***
Using MM service puts my privacy at risk.	RISK2	3.72	1.61	.839***
MM service has more uncertainties.	RISK3	3.77	1.52	.828***
In general, I believe using an MM service is risky.	RISK4	3.74	1.60	.848***
Agent service quality				
MM agent provides on-time services	SRQ1	4.54	1.50	.832***
MM agent provides prompt responses	SRQ2	4.68	1.42	.884***
MM agent provides professional services	SRQ3	4.35	1.44	.813***
MM agent provides personalized services.	SRQ4	4.40	1.43	.738***
Word of mouth (WoM)				
I Say positive things about MM to other people	WOM1	5.25	1.47	.883***
I recommend MM to someone who seeks my advice	WOM2	5.28	1.43	.912***

I encourage friends and relatives to use MM	WOM3	5.29	1.53	.903***

Note: [a] Based on 1000 bootstrapping samples. Significant at *** p<0.001 (two-tailed)

M Mean SD Standard deviation