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**Drivers and outcomes of consumer engagement:
Insights from mobile money usage in Ghana**

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**Drivers and outcomes of consumer engagement:
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Abstract

Purpose – The purpose of this study is to examine the drivers of consumer engagement and its consequences via the experiences of mobile money services' users in Ghana, and to discuss its implications for the society, financial service innovation, delivery, and operations.

Design/methodology/approach –A pre-tested survey instrument was used with a sample of 595 mobile money services users in Ghana. SmartPLS application was used to analyse the data and report findings.

Findings –The study shows that perceived risk, consumer empowerment, subjective norm, performance expectancy, and effort expectancy influence the affect component of consumer engagement and explain around half of its variance. The effect of perceived risk on consumer engagement was counterintuitive. Perceived risk was significant and positive for cognitive processing, whereas the effect was significant but negative for affect. The authors found support for the positive effect of cognitive processing on advocacy intention but no support for its effect on continuous usage. By contrast, affect strongly influenced both advocacy intention and continuous usage of mobile money services.

Practical Implications - We highlight the implications of mobile money services to business and marketing/service managers, policymakers, non-banking entities (such as telecoms and financial technology firms), and to the society in general. We provide important insights into how service providers can manage consumer engagement process and formulate marketing strategies to target and promote this simple, but innovative service to consumers. Moreover, we discuss the societal implications of our study in Ghana, a developing country. We recommend several options for future studies in order to stimulate the research agenda on mobile financial services in general.

Originality/value – The present study shows that although mobile money was initially introduced to help consumers who hitherto have no access to formal banking services, this form of banking has become increasingly popular among various consumer segments as its usage and adoption has increased multifold largely in emerging and developing countries. The main contribution of this study is the development and testing of the 'mobile money customer engagement model.' Moreover, this study shows the key factors that influence the engagement process and the effects of these factors as analyzed within the context of a developing country.

Keywords Mobile money, Consumer engagement, Continuous usage, Consumer behavior, Ghana.

Paper type Research paper

1. Introduction

Innovative service technologies have transformed how individuals, firms, and organizations function today. These developments exert a far-reaching global impact on performance, outreach, competitiveness, and resilience for all industries, including banking and payment services. Inspired by these developments, the services sector, including banking, is witnessing changes in the technological environment with its attendant new business models, which are currently disrupting traditional service elements. Smartphones, phablets, and tablets are facilitating dramatic changes in both service consumption and how consumers interact with different service providers. These portable devices are now in continuous use by consumers when performing different tasks, such as communicating, browsing for information and news, entertainment, banking & payment services, social networking, and shopping (San-Martín *et al.*, 2016). Unlike entertainment, using portable devices to conduct banking and payment transactions (e.g., sending and receiving money) is ascending in many developing and emerging countries, which often have inadequate branch-oriented banking services network.

The recent phenomenon of using cell phones for accessing and conducting banking and payment transactions remains highly successful due to the rising costs of developing and maintaining expensive bank branches, deploying automated teller machines (ATMs), and applying new technology. These challenges and the developments seen in the increasing use of portable devices strengthen the business case for the mobile money business model in many African countries such as in Kenya, Ghana, and Nigeria, among others. Fortunately, many of these mobile money (also referred to as branchless banking) technology deployments, such as M-Pesa in Kenya and FNB in South Africa, have reached a sustainable scale and have provided a gateway to the digital economy. However, it must be noted that mobile money is not only limited to African countries. Mobile money has become equally popular in Asia, Middle East, and South America and even among individuals from these sub-regions and continents who are now immigrants in Europe and North America; most of them patronize variations of 'branchless banking,' such as 'money transfer'. However, little research has been conducted within the domain of mobile money financial services as

research and literature have focused on the formal banking and financial services sector. An equally important issue is the lack of knowledge and research on 'mobile money consumer engagement' process. This paper therefore provides increased understanding of the key factors that have an impact on mobile money consumer engagement process and its outcomes, using Ghana as empirical context.

Mobile money is defined as the technology or service that enables a consumer to access, transfer, store, and use money via handheld devices, including mobile phone (Lepoutre and Oguntoye, 2018). Mobile money has had profound implications to people worldwide; perhaps, mobile money has been beneficial to most poor consumers in developing economies as it has bypassed their need to use branch-based banking and in many cases has made the rather unavailable financial services available to them. The introduction of mobile money to the Ghanaian economy has played a key role in promoting financial inclusion (Ghana Banking Survey, 2016) and has provided several benefits to the remote and less privileged population in a myriad of ways. Ghana, therefore, stands out as a good empirical case to examine mobile money services and technology use for several reasons. First, the success of mobile money in Africa, especially in Ghana, is largely due to a greater number of people using handheld devices, including mobile phones, in Africa than in other parts of the world and due to the limited access to or the inaccessibility of formal banking channels, such as branches and ATMs, among Ghanaians. Because of this, cell phones are the only means by which many Africans (Dogbevi, 2010) can access formal banking and payment services. Second, mobile money service providers in Ghana do not require users to open a bank account, which normally requires multiple documents and verifications. By contrast, mobile money services, through agent networks, provide instant, cheap, and relatively safe means of transferring money, offer shortened transaction times, and charge low transaction costs from the poor and unbanked population (Ghana Banking Survey, 2016). Third, this paper based on the sample studied argues that the introduction and usage of mobile money transcends many segments of the population and is not only limited to the poor, underbanked or financially excluded population. Fourth, developing and fast emerging markets are presenting significant departures from the assumptions of Western or developed world theories that challenge our conventional wisdom (Burgess and Steenkamp, 2006). Consequently, findings from the Ghanaian setting may be applied to other countries and contexts.

In the context of mobile money services, we define consumer engagement as a consumer's positively valenced mobile application-related cognitive, emotional, and behavioral activity during or associated with the focal consumer and mobile application-based interactions (Hepola *et al.*, 2016). Consumer engagement has received increasing attention from the industry and researchers; recently, consumer engagement (also referred to as user engagement or customer engagement) has been examined in various technology usage contexts, such as mobile commerce application (McLean, 2018), online brand communities (Ibrahim *et al.*, 2017), and mobile payment applications (Hepola *et al.*, 2016). This increasing attention to consumer engagement is largely due to the fact that, unlike customer satisfaction, consumer engagement targets more long-term interactions and encourages customer loyalty and advocacy through word of mouth. Therefore, when a relationship between a firm and a customer is satisfactory and creates an emotional bond, such relationship progresses to the engagement stage with the potential to generate more sales, to ensure a lifetime of profitable loyalty (Pansari and Kumar, 2017), and to increase firm value (Verhoef *et al.*, 2010).

Considerable academic effort has been invested to study consumer engagement in social media technologies and retail banking delivery channels and services, such as online/Internet banking and mobile banking (e.g., Mullan *et al.*, 2017; Oruç and Tatar, 2017; Rawashdeh, 2015; Tam and Oliveira, 2016; Ibrahim *et al.*, 2017). However, consumer engagement in the context of mobile money remains unexplored.

This study covers mobile money services that are not limited to the unbanked and underbanked segments of society, but which are also used by the highly literate consumer segments. This study provides ample evidence to show that popularity of mobile money usage is not limited to the underprivileged. Mobile money service is a viable and profitable business that has the potential to contribute to the financial viability of banks, financial institutions, and FinTechs, among other service providers. In view of the above, we seek to address the following research questions:

RQ1: Which key factors influence consumer engagement process?

RQ2: How do the dimensions of customer engagement (i.e. cognitive processing and affect) explain the advocacy intention and continuous usage of mobile money services in Ghana?

RQ3: What are the implications of mobile money adoption and usage to businesses (banking and non-banking) and policy makers?

This study aims to contribute to the on-going debate on mobile money services, which have permeated every sector of the economy largely in emerging and developing markets. In addition, this study examines how consumer engagement influences the sustained usage of mobile money services in Ghana. Moreover, it contributes to the literature on antecedents and consequences of consumer engagement.

This study offers important theoretical, managerial, and societal implications for business, marketing managers, policymakers (including regulatory bodies), non-banking entities, such as telecoms, financial technology firms (FinTech) start-ups, service providers, and society in general. It highlights how service providers can manage the engagement process. For instance, understanding the behavior and experiences of segments of the population that are financially excluded (i.e. non-access to the formal/documented banking services) provides valuable insights for strategy formulation concerning financial inclusion (i.e. access to the formal/documented banking services). It also provides insights into the best ways to promote a new payment system to potential consumers (Shaikh *et al.*, 2015).

Depending on the nature of the consumer, regulations in place, and technology in use, mobile money has been referred to as either *branchless banking*, *easypaisa*, *corresponding banking*, *over-the-counter banking*, or *agent banking* (Diniz *et al.*, 2012), with the same intended purpose and objective.

Our paper is organized as follows: We begin by discussing mobile money as used within and outside Africa, and then we describe the consumer engagement model. Next, we formulate our hypotheses and present our research methodology, analysis, and results. We then discuss our findings in the light of the published findings, draw our conclusion based on our study objectives, and recommend directions for future research.

2. Literature review

Mobile money within and outside Africa

According to the Global System for Mobile Association (GSMA, 2017), the global mobile money industry processes transactions worth over a billion dollars a day and generates direct

revenues of over USD 2.4 billion. Moreover, over 690 million are registered mobile money account holders worldwide.

Since the launch of M-Pesa, the first mobile money service in Kenya, pro-poor innovations (e.g., mobile money) were adopted rapidly in subsistence marketplaces, leapfrogging the traditional banking and payment services (Riley, 2018; Hasan *et al.*, 2019). Mobile money refers to the use of cell phones to perform financial and payment functions, such as remittances transfers, airtime purchase, utility bill and school fee payments, and savings (Murendo *et al.*, 2018). Dermish *et al.* (2011) provide a more comprehensive definition of mobile money (also called branchless banking); they consider mobile money as an innovative banking channel that allows consumer-oriented companies, including banks, to offer financial and other customer-friendly solutions outside traditional bank premises, with handheld devices as primary channel (Figure 1 depicts mobile money as an innovative technology-driven business model). From these definitions, cell phones clearly now serve as virtual bank cards, as point-of-sale (POS) terminals, and as internet banking terminals (Mothobi and Grzybowski, 2017) that enable transfers to be done remotely.

A few key factors that have driven the development and introduction of mobile money in developing and emerging countries, including African countries, are infrastructure deficiencies, the diminishing financial inclusion landscape that inhibits promotion of formal banking, and payment practices among the less privileged population, also known as the base of the pyramid (Berger and Nakata, 2013), which consists of the underbanked and unbanked segments. However, we argue that this assertion is gradually changing as mobile money has become commonly used even among the highly educated and professional/employed segments of the population as demonstrated by the current study.

[Insert Figure 1 about here]

Unlike other innovative banking services, which are largely controlled and managed by diligently regulated banking firms, mobile money motivates greater collaboration and partnership between banking and non-banking entities, such as telecom companies and FinTechs. Moreover, compared with branch-based banking services, ATM, and Internet banking, a mobile money network consists of three major elements, as follows: (1) designated retail stores and agents usually appointed or designated by the banking companies, telecoms, and microfinance institutions; these mobile money agents are accessible to low-

income customers to provide banking and payment services on a daily basis; (2) an electronic payment and telecommunication infrastructure; and (3) an accounting platform, which is primarily provided by either traditional commercial or microfinance banks. Retail establishments or mobile money agents usually act as intermediaries between banks/microfinance institutions and their customers. However, according to Jayo *et al.* (2012), payment infrastructure is the only element that can be operated by either a bank or a microfinance firm to facilitate mobile money transactions.

Consumer engagement theory

Consumer engagement has hypothetical roots within the extended domain of relationship marketing that emphasize the notions of interactivity and customer experience (Vivek *et al.*, 2012). Consumer engagement is considered as the creation of a deeper and meaningful connection between the company and the customer (Khan *et al.*, 2016). It is widely believed that a well engaged customer plays a key role in viral marketing activity and by providing constant referrals and recommendations (Brodie *et al.*, 2011) and increasing advocacy intention for a specific products, services, and brands to others either face-to-face and on various channels including social media.

Pansari and Kumar (2017) define consumer engagement as “the mechanics of a consumer’s value addition to the firm, either through a direct or/and indirect contribution” (p. 295). Others (Hollebeek *et al.*, 2014; Abdul-Ghani *et al.*, 2018) suggest that consumer engagement or consumer brand engagement expresses the cognitive, emotional, and behavioral connection a user or customer has with a firm or brand.

The consumer engagement largely provides a multidimensional perspective consists of cognitive, emotional, behavioral, and social elements, but according to Brodie *et al.* (2011), a good number of studies have provided a unidimensional perspective consist of either the emotional, cognitive, or behavioral aspect of engagement.

For the sake of this study, the terms ‘customer engagement,’ ‘consumer engagement,’ and ‘user engagement’ are used interchangeably in this paper. Although, consumer engagement is conceived as a behavioral, cognitive, and emotional process (Dessart *et al.*, 2015), in this research, we focus on two key consumer engagement dimensions: cognitive processing and affect.

3. Conceptual model and hypotheses development

In accordance with Mollen and Wilson's (2010) conceptualization, we have based our investigation of the antecedents and consequences of consumer engagement on psychological factors. Although we did not hypothesize the effects of perceived risk (see Figure 2), we included perceived risk in the model due to the important role that risk plays in the adoption of mobile-based innovative technology products and services. We also controlled for usage experience, usage frequency, education, income, and age.

[Insert Figure 2 about here]

Factors predicting the cognitive processing dimension of consumer engagement

According to Midha (2012), consumer empowerment is related to user's perception of the extent to which he/she can control the distribution and use of his/her personal identifying information. Consumers consider empowerment the ability to draw forth positive emotions (affect), such as hope and happiness. These findings suggest that greater consumer empowerment with expanded information capabilities will lead to greater cognitive processing.

Subjective norm is similar to the antecedent social influence and social norm. Subjective norm refers to the perceived social pressure about whether to adopt or accept a specific behavior such as adoption and usage of an innovative service such as mobile money (Ajzen, 1985; Glavee-Geo *et al.*, 2017). The cognitive aspect of subjective norm helps individuals evaluate situational conditions and consequences, such as the possibility of and/or difficulty in implementing one particular behavior (Jalilvand *et al.*, 2011). Receiving a plethora of information and opinions from family and friends about something, such as the use of mobile money services, will lead to a more rigorous information search, especially with cognitive pressure. Consequently, it is logical that subjective norm will increase consumers' cognitive processing.

In the m-banking context, performance expectancy reflects the user's perception of performance improvements, such as convenient payment options, fast response, and service effectiveness (Zhou *et al.*, 2010). In the context of Internet banking, performance expectancy refers to the degree to which consumers believe that using Internet banking could help them

either make a profit or save money while conducting online banking tasks (Venkatesh *et al.*, 2003). This study particularly considers performance expectancy as the degree to which an underbanked or unbanked consumer believes that the perceived usefulness of using mobile money services will provide benefits as well as improve his/her performance. These benefits can include the following: "... is useful in my daily life," "... will increase my productivity," and "... will help me save time."

By contrast, effort expectancy is defined as the user's perception of how difficult it is to use any product or service (Zhou *et al.*, 2010). Venkatesh *et al.* (2003) found that consumer adoption and usage of an information system, such as m-banking, is largely influenced by four major factors: performance expectancy, effort expectancy, social influence, and facilitating conditions. Regarding the relationship between perceived usefulness and cognitive processing, Hew and Kadir (2016) found that perceived ease of use and perceived usefulness influence immersion and cognitive processing. This implies that the ease of use of either a service, product, innovation, or technology should have an impact on the cognitive processing of information. This argument brings us to our first hypothesis:

H1: Consumer empowerment (H1a), subjective norm (H1b), performance expectancy (H1c), and effort expectancy (H1d) have a positive effect on consumer cognitive processing.

Factors predicting the affect dimension of consumer engagement

After examining brands and consumer engagement in online brand communities, Wirtz *et al.* (2013) found that the overall quality of brand communities' relationships with a group is higher when they demonstrate greater engagement and subjective norm. Similarly, consumer engagement in sustainable technology is influenced by attitude, subjective norm, perceived behavioral control, and personal norms (Gangale *et al.*, 2013). Additionally, subjective norm is considered a significant predictor of consumer engagement (de Oliveira *et al.*, 2016).

Cognitive pressure is considered interconnected with the affect (or the emotional aspects) of an individual's attitude. Here, it is largely believed that affect plays an important role in the adoption and usage of information systems, such as mobile banking and mobile money services.

According to Li *et al.* (2012), subjective norms have a positive effect on emotion during mobile device usage. In the context of e-commerce use, Smith (2008) and Kim *et al.* (2016) assert that ease of use influences the motivation and affect of consumers. This is true in the case of mobile money services, which is available to those who cannot access formal banking services, such as branch banking and ATMs, in remote areas. Consequently, it is expected that people develop affect (or positive emotions) toward mobile money services when using these services to remit funds to their family and friends. Under these circumstances, it is likely that the performance expectancy and effort expectancy of mobile money services will increase consumers' affect for the service. Based on these findings, we propose the following hypotheses:

H2: Consumer empowerment (H2a), subjective norm (H2b), performance expectancy (H2c), and effort expectancy (H2d) have a positive effect on consumer affect.

Effects of cognitive processing on advocacy intention and continuance usage

Cognitive processing is the consumer's level of thought processing and elaboration when interacting with a specific information system, such as m-money, social media, and/or various brands (Brodie *et al.*, 2011). Advocacy intention is defined as the expressive response of consumer loyalty that is motivated by emotional factors and/or perceived social benefits (Jones *et al.*, 2008). Conversely, continuous usage of either a product or service after either initial acceptance or adoption occupies an important position; thus, it has been examined extensively in the information systems and marketing literature.

For example, continuous usage has been investigated in the context of m-banking (Shaikh *et al.*, 2015), mobile broadband (Kongaut and Bohlin, 2016), and mobile social apps (Hsiao *et al.*, 2016). Research has long emphasized the need to investigate m-banking continuous usage (Shaikh *et al.*, 2015). Moreover, in the context of m-banking and m-payments, a direct relationship between cognitive processing and continuous usage intention has been examined by Hepola *et al.* (2016). We intend to further examine these associations and therefore propose the following hypotheses:

H3: Cognitive processing has a positive effect on advocacy intention (H3a) and continuous usage (H3b).

Effects of affect on advocacy intention and continuance usage

Affect - which is connected to the demand for new stimuli (Cotte and Wood, 2004) - in the mobile context refers to the extent of a consumer's positive mobile application-related affect regarding a particular consumer and mobile application interaction (Hollebeek *et al.*, 2014). Concerning consumer affect, positive emotional responses, such as pleasure, may lead to approach responses (Mehrabian and Russell, 1974); thus, emotional responses can positively affect users' behavior (Oliver, 1997). As argued by Hepola *et al.* (2016), positive feelings about a product or service, such as mobile application use, lead to an increased intention to continue using the mobile-based service. In addition, Hollebeek *et al.* (2014) found that affect influences the usage intentions of social media.

Similar to these findings, Hepola *et al.* (2016) found a positive relationship between the affective (emotional) dimension of consumer engagement and continuous usage intention. As argued by Vivek *et al.* (2012) and Hollebeek *et al.* (2014), the cognitive dimension of consumer engagement relates to positive experiences. Nonetheless, contrary to their expectations, Hollebeek *et al.* (2014) found that cognitive processing did not affect usage intention in the context of social media. Hepola *et al.* (2016) examined the relationship between consumer engagement (including its three dimensions, i.e. cognitive processing, affect, and activation) and the continuous usage of mobile-based products and services, including m-banking applications. Here Hepola *et al.* found that affect and activation have a positive impact on continuous usage intention. Considering these somewhat contradictory prior results, in which the relationship between cognitive processing and continuous usage is somewhat unclear, more research is needed to test this relationship. Subsequently, this leads to our fourth hypothesis:

H4: Affect has a positive effect on advocacy intention (H4a) and continuous usage (H4b).

4. Research methodology

Research setting

The survey measurement scales were extracted from previous studies and modified to suit the mobile money context. To ensure the instrument validity of the measurement scales, a pre-test of the questionnaire was carried out on working professionals in Ghana. After a thorough review, some items were revised based on participants' suggestions to ensure the clarity of

the items. All items were measured on a 7-point Likert scale, ranging from strongly disagree (1) to strongly agree (7). Table 1 shows the constructs, measures, and factor loadings.

[Insert Table 1 about here]

Sample and data collection

Data were collected mostly from college students, graduate students, and workers of the University of Ghana; these participants do avail mobile money services. Three teaching assistants randomly approached potential survey participants to ask for their consent to be a part of the survey. A total of 869 potential respondents were approached, and 595 survey responses were received during the last quarter of 2016. Two hundred and sixteen potential participants declined to participate because they do not use mobile money services. The sample consisted of 53.1% males and 46.9% females. Almost 90% of the respondents were between 18 and 35 years of age. However, a few participants (3%) were over 45 years of age. Close to 70% of the respondents had a bachelor's degree. While checking the cell phone usage in Ghana, we found that around 53% of the survey participants were using a cell phone for more than 4 years, while approximately 19% had used a cell phone for less than a year. In addition, over 70% of the respondents had more than 5 months of mobile money services usage experience. We present the sample's demographic characteristics as shown in Table 2. The demographic profiles provide evidence to support our view that the introduction and usage of branchless banking transcends many segments of the population.

[Insert Table 2 about here]

Common method variance

Before testing the hypotheses, we conducted statistical tests to ensure that our findings were not biased by using common method variance (CMV) (Podsakoff *et al.*, 2003). As suggested by Hulland *et al.* (2018), the potential CMV was limited by not revealing the true purpose of the study, mixing the items in the questionnaire, and keeping the identities of the respondents confidential. Regarding post hoc methods to detect CMV, we modified the partial least squares (PLS) path model to reflect that we considered each indicator variable as a factor linked to its second order construct. The method construct, which is a new factor, was then added, with its indicators including all the indicators used in the latent variables in the research model (Kemery and Dunlap, 1986; Liang *et al.*, 2007). The results showed that the variance explained by indicators in the common method construct was only 0.02, which

shows that CMV bias did not considerably influence our study results. Based on the various approaches we used in testing CMV, we concluded that method variance biases are less likely to confound the interpretations and findings of this study.

5. Analysis

The measurement model was evaluated via the PLS technique using SmartPLS 3.0 (Ringle *et al.*, 2015). First we examined the items' internal consistency and scale reliability by using Fornell and Larcker's (1981) composite reliability index. Here, we found that the composite reliability values for all constructs used in this study exceeded the acceptable value of 0.7 (Hair *et al.*, 2016). From Table 1, the factor loadings are all significant ($p < 0.001$) and greater than 0.70, except the indicator NOM3, which had a loading of 0.653. We also assessed the measurement model in regards to convergent and discriminant validity. We evaluated convergent validity based on the average variance extracted (AVE) approach (Fornell and Larcker, 1981), where a value of 0.5 and above indicates an acceptable level. The AVE—by our measures—ranged from 0.69 to 0.83, which were above the acceptable value of 0.5. In addition, we assessed the discriminant validity of the latent variables in the PLS path model using the *heterotrait-monotrait* ratio of correlations (*HTMT*) (Henseler *et al.*, 2015). Our analysis showed that the *HTMT* values were all below .85, which shows that discriminant validity was established between any two of the constructs (Hair *et al.*, 2017; Hair *et al.*, 2018; Henseler *et al.*, 2015).

6. Results

Structural model assessment

We hypothesized that consumer empowerment (H1a), subjective norm (H1b), performance expectancy (H1c), and effort expectancy (H1d) have a positive effect on consumer cognitive processing. The results (Table 3) confirm these paths, except for H1a. The effects of subjective norm ($\beta = 0.26, p < 0.001$) and effort expectancy ($\beta = 0.25, p < 0.001$) were the strongest. Perceived risk was positively related to cognitive processing ($\beta = 0.11, p < 0.01$). However, H1a was insignificant ($\beta = 0.07, p > 0.05$). H2 proposed that consumer empowerment (H2a), subjective norm (H2b), performance expectancy (H2c), and effort expectancy (H2d) have a positive effect on affect. All these relationships were supported by the data. The effect of perceived risk on consumer engagement was counterintuitive, while the effect was significant and positive for cognitive processing ($\beta = 0.11, p < 0.01$) but significant and negative for affect ($\beta = -0.14, p < 0.001$).

The findings show the important role of subjective norm in the use of mobile money services in the research setting. The effect of effort expectancy on cognitive processing and affect was supported.

Regarding the outcomes of consumer engagement, H3 states that cognitive processing affects advocacy intention (H3a) and continuous usage (H3b). The results support the positive effect of cognitive processing on advocacy intention ($\beta = 0.11, p < 0.05$) but not the hypothesized effect of cognitive processing on continuous usage (Table 3). H4 hypothesized the positive influence of affect on advocacy intention (H4a) and continuous usage (H4b) was confirmed (H4a: $\beta = 0.46$; H4b: $\beta = 0.39$, both at $p < 0.001$). An inspection of the variance inflation factor (VIF) values demonstrates that multicollinearity is not a problem; therefore, no assumption was violated in assessing the structural models. All VIF values were less than the more conventional rule of thumb value of five (Hair et al., 2016). Figure 3 shows the results of the final estimated model.

[Insert Figure 3 about here]

[Insert Table 3 about here]

The significant factors predicting cognitive processing ($R^2=0.31$) were perceived risk, subjective norm, performance expectancy, and effort expectancy, while the same factors, alongside with consumer empowerment, also strongly predicted affect and explained 45% of its variance. Perceived risk, cognitive processing, affect, and covariates (usage frequency and income) predicted advocacy intention. Thus, usage experience ($\beta = 0.10, p < 0.01$) and usage frequency ($\beta = 0.10, p < 0.05$) had a slight positive effect on advocacy intention. The effect of the controls (education, usage experience, usage frequency, income, and age) on continuous usage was insignificant (see Table 3). Finally, while affect had a significant effect on continuous usage ($\beta = 0.39, p < 0.001$), the effect of cognitive processing on continuous usage was insignificant ($\beta = -0.03, p > 0.05$). A summary of the structural model results is shown in Table 4.

[Insert Table 4 about here]

7. Discussion and conclusion

Mobile-based financial delivery systems and technologies are quite common and popular on the African continent. The introduction of mobile money to the Ghanaian economy has played a key role in the push for financial inclusion (Ghana Banking Survey, 2016) and provided several benefits to the remotely located population in a myriad of ways. For instance, providers of the service in Ghana do not require the user to open a formal bank account. Mobile money provides a cheap and relatively safe means of transferring money, shortening transaction times, and reducing transaction costs to the poor and unbanked (Ghana Banking Survey, 2016).

This study provides important insights into consumer behavior when using mobile money services and how the drivers of consumer engagement generate the advocacy intention, and the continuous usage of MM services usage in Ghana. To achieve the research objective, we developed and tested a series of hypotheses using the survey data of 595 mobile money users in Ghana.

Theoretical implications

This study makes important contributions to theory/research by showing that while perceived risk, consumer empowerment, subjective norm, performance expectancy, and effort expectancy are significantly related to affect (all hypothesized relationships have a t-value > 3.29 for two-tailed test and $p < 0.001$), the same antecedent variables showed mixed results regarding cognitive processing. In addition, the explanatory power of these variables differs, that is, variation in affect is 45% whereas 31% in cognitive processing. Thus, this study theoretically shows that the antecedent effects of perceived risk, consumer empowerment, subjective norm, performance expectancy, and effort expectancy on cognitive processing and the affect dimensions of customer engagement differ. These effects are stronger and more consistent for affect than for cognitive processing.

Prior research (e.g., de Oliveira et al., 2016; Gangale et al., 2013) has confirmed the positive relationship between subjective norm and consumer engagement. Here, Gangale et al. (2013) stated that consumer engagement in sustainable technology is influenced by attitude, subjective norm, perceived behavioral control, and personal norm. Similarly, de Oliveira et al. (2016) found significant relationship between subjective norm and user engagement with social media (Facebook). In addition to subjective norm, we found that performance expectancy (akin to perceived usefulness) of mobile money services is a significant

antecedent of consumer engagement (cognitive processing and affect). This suggests that performance expectancy increases consumer engagement with mobile money services. Consumer empowerment is key to the use of mobile money services. Empowering the users of the service by using service agents, who form important nodes in the network, positively impacts the 'emotional' component of the engagement process, but it does not create much effect on the cognitive component. In addition, the simple nature of the service has had less impact on the cognition of the group consisting of a high number of highly educated respondents compared with its effect to group consisting of less educated respondents. This could explain the insignificant association between consumer empowerment and cognitive processing in the empirical setting. Furthermore, the effect of cognitive processing on advocacy intention was weak whereas its effect on continuous usage was insignificant compared to that of affect.

After five antecedent factors were employed, the 'mobile money customer engagement model' gives better explanatory power for the affect component than for the cognitive dimension. This model, which was developed and tested in this study, can be used in further research and bank marketing strategy formulation. In terms of research, conceptualizing customer engagement as a multidimensional construct could provide a better insight into the study of a phenomenon. In engaging consumers, service providers can more easily influence the engagement process by appealing to consumers (i.e. providing stimuli) regarding service delivery through emotional aspects than through cognitive components.

We also sought to confirm the negative relationship between perceived risk and consumer engagement. We expected perceived risk to have negative effect on consumer engagement. However, the empirical results show positive effect on cognitive processing and a negative effect on affect. The 'mixed' effect of perceived risk on consumer engagement can be explained by the fact that while perceived risk reduces affect, it nevertheless increases the cognitive processing component of consumer engagement. This is an interesting finding and contribution; perceived risk therefore stimulates the 'thought' processes of the consumer decision-making process. These findings are logical due to the context of the mobile money services in a developing country where the sending and receiving of money mediated by technology and service agents could make users skeptical and apprehensive due to the nature of the service. The uneasiness and fear that something might go wrong during the use of the service could explain the positive effect of perceived risk on cognitive processing. However,

the ability of users to learn about the service and to understand the processes involved could explain the continuous use of the service. Prior research (McLean, 2018) has found direct relationship between the perceived usefulness, perceived ease of use, and consumer engagement with an m-commerce application.

Regarding the outcomes of consumer engagement, our results show support for the positive effect of cognitive processing on advocacy intention. However, no support was found for the relationship between cognitive processing and continuous usage. These results are partially in line with the findings reported by Hepola *et al.* (2016), who tested the effects of users' self-congruence and personal innovativeness on consumer engagement in the context of m-banking and mobile payment (m-payment) applications and concluded that cognitive processing does not affect continuous usage intention. This finding is also in line with Hollebeek *et al.* (2014), who showed that cognitive processing did not influence usage intention concerning social media.

This approach is further evident from the consequent effects in which the affect component of engagement has a stronger effect on both advocacy intention and continuous usage compared to cognitive processing. This does not mean that the cognition component is of less importance; perceived risk significantly increases cognitive processing and limits advocacy intention, as shown by the results of this study.

Managerial, and regulatory implications

The findings also provide valuable information for practitioners, including other service providers in the delivery of financial services. Mobile money is a recent phenomenon. Hence, in the early stages of innovation or technology adoption and with a target audience (regarding potential customers) with relatively low to high literacy (based on the study's sample characteristics), the use of the affective component in stimulating engagement has a higher chance of success (increased continuous usage of the service) and therefore value to the company. One of the important implications is that the advent of new technologies has made it possible for both non-banking and financial technology firms to introduce innovative banking services such as branchless banking targeting potential customers of all segments. The challenge is that financial institutions with the hitherto physical 'brick and mortar' business model stands the chance of losing potential customers if they don't consider the impact these new business models can have on their current operations and services. The

competition from the new financial technology mediated business models pose a threat to the old established banks that lack service innovation. Likewise, for financial institutions and financial technology firms introducing new service innovations (such as branchless banking) to keep up with the competition, must consider consumer engagement as an important strategy for business sustenance and sustainability. This is because consumer/customer engagement targets long-term interaction with the purpose of customer value addition, increased sales, and an eventual increase in firm value (Pansari and Kumar, 2017; Verhoef *et al.*, 2010).

Another important implication has to do with marketing strategy formulation. Strategies for segmenting the different segments of branchless banking customers (the underbanked, banked, excluded, poor, affluent, educated, professional/employed segments) and targeting and positioning the branchless service to these segments should involve services marketing/operational plans for subsequent customer engagement. Banks would do well to empower their customers, which would encourage emotional engagement with mobile money services and therefore increase its usage. This emotional engagement will also increase consumer satisfaction and loyalty. For example, consumer empowerment can be achieved through financial literacy and well-being and consumer education. Concerning regulatory implications, given the significance of mobile money services in reaching the masses and infusing countries with economic activities, it is critical that developing economies provide an accessible institutional as well as regulatory framework for the development of this innovative technology/service.

Regarding regulatory implications, it is widely believed that the revised Payment Services Directive (known as PSD2) issued by the European Commission and implemented in early 2018, will create several challenges for the diligently regulated banking industry. Similarly, these regulatory developments will significantly affect the mobile money, mobile payment, and other related business models. For example, these regulations require the banking companies to share their account holder data with third party and mostly the non-banking actors, such as Telecoms, FinTech, etc., thereby allowing these non-banking entities to gain as well as retain control of the value network that serves customers. Future developments, as well as the strategic planning documents both prepared and followed by banking companies, should accommodate these developments and assess their impact on future business growth.

Societal implications

With a global installed base of over 4 billion handheld devices in use (App Anni Mobile Report, 2019), mobile technology can go a long way in providing formal banking and other financial services to different consumer segments globally. Since 2007, mobile money technology, services, and enabling regulations expand the banking and financial services outreach within and outside Africa by motivating non-banking entities, such as Fintech, to collaborate with banking institutions to develop and deploy mobile payment products and services for a larger consumer segment. In Sub-Saharan Africa, access to traditional banking channels is very limited, and due to unstable infrastructure, internet facilities are highly limited and virtually non-existing. Under these circumstances, mobile technology plays an important role in the everyday life of consumers and has become a primary channel for accessing and using formal banking services.

Moreover, formal but highly convenient banking services are widely considered as ‘blessing’ by radically transforming the lives of a considerable portion of underbanked population (Lepoutre and Oguntoye, 2018); they also change the socio-economic condition of many in emerging and developing countries by way of documenting financial transactions, promoting savings, facilitating easy and quick transfers and payments, and creating a new revenue stream for banking and non-banking entities.

Limitations and future research directions

This study is not without limitations such that in interpreting the findings of the paper, the following points should be taken into consideration. First, our study used a single-sourced data at one point in time from segments that are mostly in the age group 18-35, more educated and some of which are professional working people. Some of these respondents do not qualify for the so-called ‘unbanked, underbanked or excluded’ or ‘bottom of the pyramid’ segments that normally used to be the target of branchless banking. The sample we investigated in the current study shows that the use of branchless banking is not a preserve of only the poor, low literate and financially excluded population. Branchless banking adoption and usage is becoming popular, if not, has already reached high levels of adoption in most developing countries (and even in developed countries in different forms-e.g. Vipps in Norway). Thus, the cross-sectional nature of the study could be a limitation. It is possible that with a longitudinal study targeting the various segments of the population regarding the process and mechanisms of customer engagement, its antecedents and consequent effects can be studied in a more dynamic manner. This will help increase our understanding of the usage and adoption of branchless banking in relation to time since this business model is still

evolving. Second, as with any survey research, other factors could potentially explain our outcome constructs in this context. It is also notable that mobile money technology/service use is recent trends in most developing countries. The need to engage consumers is a key factor in continuous usage and recommendation of the service to other potential customers. However, unlike m-banking and Internet banking, mobile money depends on the use of the agents' networks; therefore, the quality of service provided by agents has implications for customer satisfaction and retention. Third, the focus of this study was to examine user perspectives. Future studies could evaluate mobile money agents who serve as intermediaries between consumers and either banking companies or microfinance institutions. This would provide valuable insights into the business-to-business context.

Fourth, service design has been conceptualized as an antecedent of service quality due to its unique role in creating customer experiences (Andreassen *et al.*, 2016). Future studies could explore the service design-customer experience model (Andreassen *et al.*, 2016, p. 24) within the context of mobile money.

Fifth, qualitative studies on the motivations and service experiences of consumers using mobile money services could provide in-depth data on the mechanisms of mobile money and technology use. In addition, future studies could also research the personality traits of mobile money agents and how these traits impact consumer engagement (regarding agents' conation/actions/behavior) as well as their consequential effect on agent performance.

Sixth, while research on the link between personality traits and consumer engagement is lacking (Islam *et al.*, 2017), it is even more so in the context of innovative service adoption, such as mobile money technology/service use. Finally, service recovery after customer dissatisfaction (Andreassen, 2000) within the context of challenges, such as digital mobile money fraud, among other negative practices that mitigate against the service and lead to customer dissatisfaction, is a potential future research option that is worthy of consideration.

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List of Tables

Table 1. Construct, indicators and loadings.

Construct	Indicators	M	SD	Loadings
Advocacy intention CR=0.93 AVE=0.81	I say positive things about MM to other people.	5.25	1.61	0.884***
	I recommend MM to someone who seeks my advice.	5.29	1.43	0.912***
	I encourage friends and relatives to use MM.	5.29	1.53	0.902***
Subjective norm CR=0.87 AVE=0.69	People who influence my behaviour think that I should use MM.	4.49	1.61	0.902***
	People who are important to me think that I should use MM.	4.64	1.63	0.920***
	People who I know use MM (NOM3).	5.48	1.41	0.653***
Performance expectancy CR=0.91 AVE=0.73	I feel MM is useful.	5.96	1.43	0.772***
	MM improves my payment efficiency.	5.44	1.50	0.894***
	MM improves my payment convenience.	5.48	1.58	0.896***
	MM allows me to make payments more quickly.	5.67	1.47	0.842***
Effort expectancy CR=0.92 AVE=0.75	Learning how to use MM is easy for me.	5.76	1.44	0.893***
	It is easy for me to use MM.	5.89	1.36	0.916***
	It is easy for me to use MM skillfully.	5.54	1.46	0.879***
	Using MM saves me a lot of time.	5.83	1.47	0.763***
Cognitive processing CR=0.88 AVE=0.71	Using MM gets me to think about the service.	4.67	1.51	0.833***
	I think about MM a lot when I'm using this service.	4.46	1.48	0.862***
	Using MM stimulates my interest to learn more about this service.	4.52	1.50	0.840***
Affect CR=0.94 AVE=0.81	I feel very positive when I am using MM service.	4.93	1.41	0.885***
	Using MM service makes me happy.	4.83	1.42	0.919***
	I feel good when I am using MM service.	4.89	1.41	0.921***
	I am proud to use MM service.	4.87	1.49	0.873***
Continuous usage CR=0.91 AVE=0.83	I intend to continue using MM rather than discontinue its use.	5.23	1.66	0.909***
	My intentions are to continue using MM rather than use any alternative means.	4.64	1.76	0.914***

Customer empowerment CR=0.95 AVE=0.81	The services offered from the MM:	4.69	1.57	0.858***
	Allow me to have control over my personal financial management (such as the fund transfer and the payment of utility bills).	4.78	1.46	0.924***
	Allow me to independently manage my personal finances (such as the fund transfer and the payment of utility bills).	4.68	1.43	0.917***
	Let me exercise my judgment in managing my personal finances (such as the fund transfer and the payment of utility bills).	4.71	1.42	0.913***
	Encourage my own initiative in managing my personal finances (such as the fund transfer and the payment of utility bills).	4.68	1.47	0.874***
	Provide enough information to let me manage personal finances (such as the fund transfer and the payment of utility bills) on my own.			
Perceived risk CR=0.90 AVE=0.69	The decision of whether to use MM service is risky.	3.52	1.58	0.806***
	Using MM service puts my privacy at risk.	3.72	1.62	0.841***
	MM service has more uncertainties.	3.77	1.52	0.836***
	In general, I believe using an MM service is risky.	3.74	1.60	0.832***

M=Mean SD=Standard deviation MM=Mobile money CR=Composite reliability AVE=Average value extracted

*** $p < 0.001$ (two-tailed)

Table 2. Demographic characteristics (n=595).

Demographic characteristics	Frequency	Percent
<i>Gender</i>		
Males	316	53.1
Females	279	46.9
<i>Age (years)</i>		
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
<i>Highest level of education</i>		
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	0.7
Bachelor /Master	414	69.5
Ph.D.	3	0.5
<i>Current employment status</i>		
Student	346	58.2
Employee/professional	229	38.5
Unemployed	7	1.2
Entrepreneur	13	2.2
<i>Usage frequency of cell phones</i>		
< 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
<i>MM Usage experience</i>		
< 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

Table 3. Path coefficient and VIF (n=595).

Criterion	Predictor	β	t-value#	VIF
Cognitive processing R ² =0.31	Consumer empowerment	0.07	1.55	1.29
	Subjective norm	0.26	6.18***	1.32
	Performance expectancy	0.13	2.57**	1.99
	Effort expectancy	0.25	5.40***	1.80
	Perceived risk	0.11	2.77**	1.01
Affect R ² =0.45	Consumer empowerment	0.17	3.95***	1.29
	Subjective norm	0.20	5.37***	1.32
	Performance expectancy	0.24	4.88***	1.99
	Effort expectancy	0.22	4.58***	1.80
	Perceived risk	-0.14	3.87***	1.01
Advocacy intention R ² =0.39	Cognitive processing	0.11	2.16*	1.68
	Affect	0.46	8.02***	1.83
	Perceived risk	-0.07	2.03*	1.11
	Education	-0.04	1.29	1.12
	Usage experience	0.07	1.79	1.24
	Usage frequency	0.10	2.60**	1.33
	Income	0.10	2.47*	1.40
	Age	0.02	0.35	1.39
Continuous usage R ² =0.33	Cognitive processing	-0.03	0.51	1.69
	Affect	0.39	6.87***	2.17
	Perceived risk	-0.03	0.70	1.12
	Education	-0.00	0.02	1.12
	Usage experience	0.01	0.34	1.25
	Usage frequency	0.06	1.41	1.35
	Income	0.01	0.13	1.42
Age	-0.03	0.67	1.40	

*Note: # Based on 1000 bootstrapping samples;
*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$ (two-tailed)*

Table 4. Summary of findings (antecedents and consequences of customer engagement).

Associations	Sign	Results
Antecedent hypotheses		
Consumer empowerment → Cognitive processing (H1a)	+	Not supported
Subjective norm → Cognitive processing (H1b)	+	Strongly Supported
Performance expectancy → Cognitive processing (H1c)	+	Supported
Effort expectancy → Cognitive processing (H1d)	+	Strongly Supported
Perceived risk → Cognitive processing	+	Supported
Consumer empowerment → Affect (H2a)	+	Supported
Subjective norm → Affect (H2b)	+	Strongly Supported
Performance expectancy → Affect (H2c)	+	Strongly Supported
Effort expectancy → Affect (H2d)	+	Strongly Supported
Perceived risk → Affect	-	Supported
Consequent hypotheses		
Cognitive processing → Advocacy intention (H3a)	+	Supported
Cognitive processing → Continuous usage (H3b)	+	Not Supported
Affect → Advocacy intention (H4a)	+	Strongly Supported
Affect → Continuous usage (H4b)	+	Strongly Supported

List of Figures

Figure 1 Mobile money services as a new business model driven by technology.

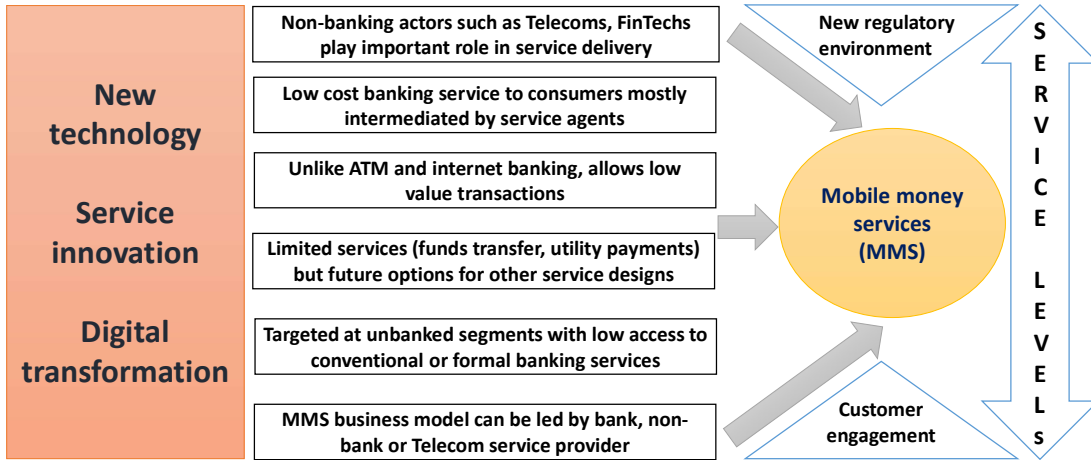


Figure 2 Conceptual model.

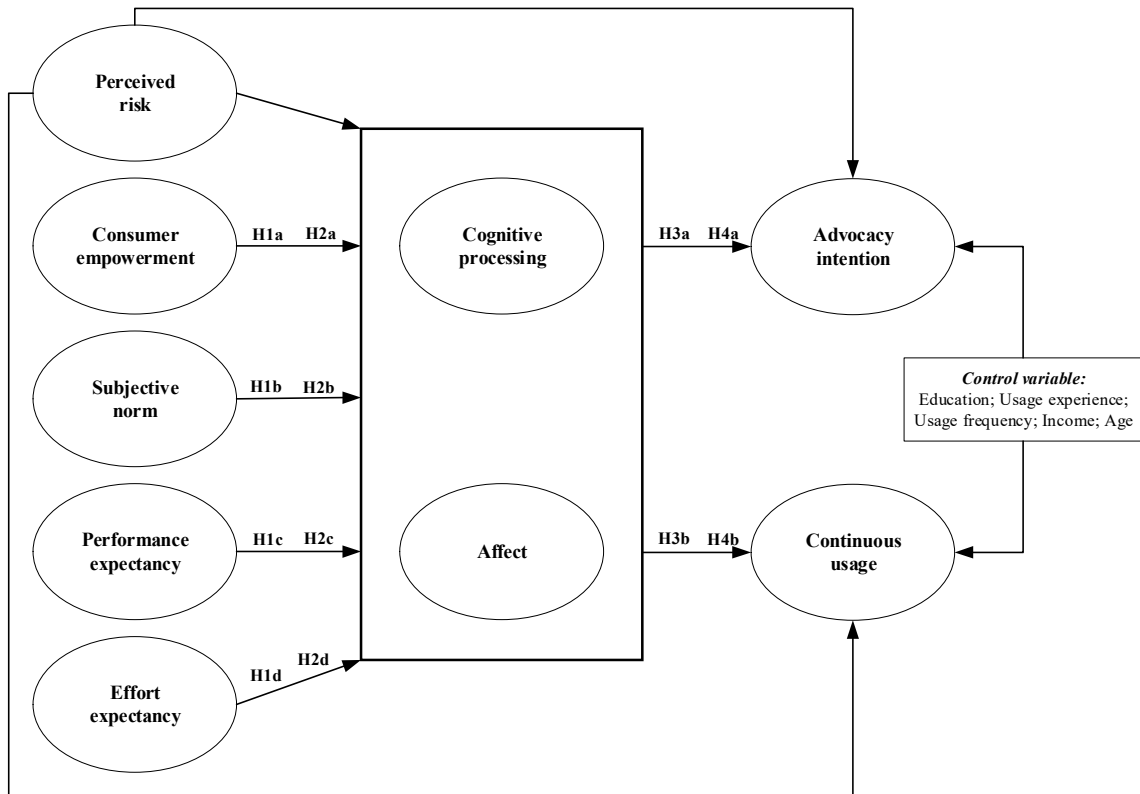


Figure 3 Structural model results.

