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Gamification of mobile money payment for generating customer value in emerging economies: The social impact theory perspective

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ABSTRACT

This study develops and tests an integrated model of the social impact and customer value theories to understand how gamification of mobile money payment could generate customer value through its social impact. Cross-sectional data were collected from 567 mobile money payment users in Ghana to test twelve hypotheses using structural equation modelling (SEM). The study showed a positive and significant relationship between the gamified mobile money payment (Gmmp) and the social impact theory constructs, and consequently with the customer value propositions. The Gmmp was found to have a significantly positive relationship with all three social impact constructs of internalisation, compliance, and identification. However, compliance was significantly predictive of all the customer value constructs (customer engagement, satisfaction, and loyalty); identification was significantly predictive of satisfaction and loyalty; and internalisation was not significantly predictive of any of the customer value outcomes. The results show that Gmmp could create a substantial social impact on users to generate value for the customer and all service providers within the mobile money ecosystem. The results have implications for technology innovations, particularly the potential use of gamification at all customer touchpoints in the mobile money and financial technology services delivery value chain.

1. Introduction

Since the outbreak of coronavirus disease (COVID-19), countries have been striving to curb its spread through measures such as total or partial lockdowns and social distancing (Qazi et al., 2020; Pandey and Pal, 2020; Chirisa et al., 2022; Houghton et al., 2022). The COVID-19 pandemic has seen a surge in the diffusion and adoption of new and emerging technologies such as cloud computing, Internet-of-Things, blockchain, artificial intelligence, machine learning, Google Meet, Microsoft Teams, and Zoom (Pandey and Pal, 2020). Before COVID-19, people used mobile payment because it was convenient and enabled them to conduct financial transactions everywhere and at any time (Sreelakshmi and Prathap, 2020). Accordingly, studies have revealed the increasing use of mobile payments (Asongu et al., 2021; Lepoutre and Oguntoye, 2018; de Luna et al., 2019; Koomson et al., 2021), and online financial transactions since the outbreak of the pandemic (Rafidinal and Senalasar, 2021; Flavian et al., 2020) and because some

organisations now offer their products and or services online. It is clear in the extant literature on COVID-19 that the virus survives on hard surfaces for hours, and exchanging or touching an infected object is a means of transmitting the virus (Eikenberry et al., 2020; Fong et al., 2020). Consequently, Rafidinal and Senalasar (2021) advocated using contactless payment systems rather than handling physical cash.

Recent studies (Rafidinal and Senalasar, 2021; Mansour, 2021) have focused on COVID-19 and mobile payment systems, particularly in emerging economies. Apart from Bitrián et al. (2021), who recently looked at gamification of mobile apps in general, to the best of our knowledge, only a few studies have explored gamified mobile payment (Wong et al., 2021; Putri et al., 2019). This study extended the work of Wong et al. (2021), Putri et al. (2019), and van der Heide and Zelenský (2021) from an integrated model perspective to examine the consequences of gamified mobile money payments (Gmmp). This study provides foundational work on Gmmp by employing the social impact and customer value theories. Gamification is using game design elements in

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non-game contexts to motivate people, encourage action, and increase learning to complete a particular task (Behl et al., 2022a; Patrício et al., 2020; Deterding et al., 2011). In addition, customers and service providers alike can benefit from gamification (Huotari and Hamari, 2012; Aparicio et al., 2021). For instance, gamified systems influence users' psychological and financial well-being and enjoyment (Wunderlich et al., 2020; Hammedi et al., 2017; Bayuk and Altobello, 2019), enhance user engagement (Xie et al., 2022; Behl et al., 2021), brand engagement and social engagement (Srivastava et al., 2022), customer loyalty (Cui et al., 2022; Hwang and Choi, 2020; Leclercq et al., 2020; Harwood and Garry, 2015), and customer satisfaction (Yin et al., 2022; Torres et al., 2022). This study posits that besides the benefits offered in the current gamification literature, there may be additional benefits to both users and service providers that have not been explored, particularly regarding gamifying mobile money payments.

The value of gamification, especially in developing economies, is evident in its transformative capabilities (Le Lay et al., 2021; Spanellis and Harviainen, 2021), development interventions (Hammler et al., 2022), empowerment and social inclusion (Stewart et al., 2013), community engagement (Srivastava et al., 2022), motivation (Pereira et al., 2022), social collaboration (Meske et al., 2017), and citizenship behaviour (Xu et al., 2022). Therefore, the proposed gamified mobile money payment system offers considerable potential for societal progress, especially in developing economies. Gamified mobile payment systems promote the diffusion of financial technologies to accelerate economic growth. It can enhance digital, financial, social, and economic engagement among the citizens of developing countries. The proposed Gmmp would complement the digitalisation agenda of developing countries while helping bridge the digital divide between urban and rural dwellers in developing countries. When gamified mobile payment strategies are implemented, society stands to benefit from financial inclusion, particularly where there is a wide gap between banked and unbanked individuals (Hamdan et al., 2022; Mousa and Ozili, 2022; Li et al., 2022). Financial technologies (FinTechs) and innovations such as gamified mobile payment contribute to poverty reduction in most developing countries, drive economic growth, and build a cashless society (Ahmad et al., 2020; Hamdan et al., 2022). The study is timely because it provides insight into the benefits of using gamified mobile payment systems to users and service providers in this new normal period and during future pandemics.

This study fills a gap in the literature since there are limited studies on the gamification of mobile payment systems (Putri et al., 2019; Wong et al., 2021). In addition, this study is unique in that it uses an integrated theoretical underpinning that draws on concepts and theories from digital technology, social science, and marketing. Practically, this study provides a foundation for service provider managers to consider formulating strategies to use gamified mobile money features to create customer value. In addition, apart from mobile money service providers, the service industry could benefit from this study by considering and incorporating gamified features in their service platforms, as gamification has proven to have several benefits for organisations (Hsu and Chen, 2018a, b; Hwang and Choi, 2020). More importantly, it has been reported that >1.2 billion customers registered mobile money accounts and over two billion dollars in daily transactions (www.gsma.com) call for strategy formulation of mobile money gamified features. On the theoretical side, this study combines a technology concept (gamification) with two theories, social impact and customer value, to understand gamified mobile payments. This is a departure from overused theories, such as the technology acceptance model (TAM) and unified theories of acceptance and use of technology (UTAUT), to understand gamified mobile payments (e.g., Wong et al., 2021; Aparicio et al., 2021; Rafidinal and Senalasarri, 2021). This study contributes to financial technology (FinTech) literature by extending mobile payments to include the perspectives of developing countries to enrich the understanding of mobile payments. Therefore, this study extends the literature on information system development, Fintech, and mobile payment systems.

Primarily, this study examined the role of social impact in the relationship between Gmmp and customer value. Specifically, the study 1) explores the potential social impact of gamified mobile payment among users of mobile money payment services; and 2) ascertains the relationship between the potential social impact of Gmmp and customer value. To achieve these objectives, we adopt an experimental survey research design to collect data from mobile money payment users in a developing country. Structural equation modelling (SEM) is then applied to test the 12 proposed hypotheses.

The remainder of this paper is organised as follows. The next section focuses on the literature review and hypothesis developments, which presents extensive and relevant literature on gamification and mobile money payments, social impact theory, customer value, and the proposed conceptual framework for the study. This was followed by a methodology that examined the measurement instruments, data collection and analysis methods, handling of non-response bias, and common method bias. The next section then discusses the results and implications of this study. Finally, the article highlights the limitations and directions for future research.

2. Literature review and hypotheses development

2.1. Gamification and mobile money payment

Gamification refers to the use of gaming features to enhance service provision and encourage value-creating behaviours (Basaran, 2022; Huotari and Hamari, 2012; Hofacker et al., 2016). It involves deploying game design elements in a non-game milieu to increase the engagement of users of a product or service and promote intended behaviours (Deterding et al., 2011; Simões et al., 2013). The features of gamification include its components, mechanics, and dynamics (Hofacker et al., 2016). Game mechanics allow customers to perform specific behaviour through challenge, time pressure, competition among users, rewarding users based on performance, and continuous feedback (Teng and Chen, 2014; Hofacker et al., 2016). The gamification concept was initially employed in marketing to enhance loyalty, communication, advertising, and customer engagement (Huotari and Hamari, 2012). However, its application has been extended to increase user engagement in areas such as health services (Liu et al., 2020; Yang and Li, 2021a, b), education (Costa et al., 2017; Legaki et al., 2021; Behl et al., 2022b), banking and finance (Bayuk and Altobello, 2019), internal communication (Thom et al., 2012), commerce (Hsu and Chen, 2018a, b; Poncin et al., 2017), and government services (Junnonyang, 2021).

From a service marketing perspective, gamification is not merely a game (Sarangi and Shah, 2015a, b). It describes "a process of enhancing a service with affordances for gameful experiences to support the user's overall value creation" (Huotari and Hamari, 2012, pg. 19). The notion that people enjoy fun in their lives stimulates gamification (Baptista and Oliveira, 2017). Hence, emphasis is placed on the experience that users gain from gamified applications instead of the approaches used in designing game elements. Mechanics promote interaction and engender an engaging experience for users (Hofacker et al., 2016; Landers et al., 2019; Hwang and Choi, 2020; Putri et al., 2019), coupled with functions that attract users and provide fun and flow experiences that stimulate their active adoption and participation in the service provision process (Prestopnik et al., 2017). User-centric experiences such as points for actions, badges for rewards, leader board for competition, discounts, and other free rewards are introduced to encourage service engagement (Yong et al., 2021; Burke, 2012) and provides insight into "how best to influence customer behaviour, attitudes, and other states with designed interventions derived from games" (Landers et al., 2019, p. 318). Gamification helps kindle, infuse, and sustain user interest, performance, and ownership (Sarangi and Shah, 2015a, b).

Consistent with seminal studies, gamified mobile money payments refer to the integration of game design features into transactions that involve transferring money, making payments, and receiving payments

using a mobile communication device (Deterding et al., 2011; Bayuk and Altobello, 2019; GSMA, 2021). A Gmmp system provides gameful experiences that spur customer usage and engagement with mobile money payment services through gaming features, such as leader boards, points, and badges (Huotari and Hamari, 2012). Affordances provide feedback, attainable goals or objectives, progress, and reinforcement (Hamari et al., 2014). Gmmp services provide features that allow, for example, goal setting by providing objectives, rewards, tracking, and monitoring of given activities (Hamari, 2013). A well-designed Gmmp would achieve the same outcomes in tandem with earlier studies that proved the relationship between usage of gamified financial technology services and users' attitude development, fun experience, increasing customer acceptance, satisfaction, and engagement (Hammedi et al., 2017; Bayuk and Altobello, 2019; Baptista and Oliveira, 2017).

2.2. Social impact theory of Gmmp

Harnessing social influence as a mechanism for deploying gamification to achieve desired customer value has received limited attention. However, individuals use diverse social and gamified mobile applications to motivate themselves and others to sustain their habits and attitudes (Hamari and Koivisto, 2013). Social influence theory describes a person's sense of how significant others think of a target behaviour and whether they expect them to accomplish it (Ajzen, 1991). Social influence generally changes the pattern of technology usage and continuance intention (Lu, 2014). Although different models have parallel labels for social influence (Venkatesh et al., 2003; Moore and Benbasat, 1991), each construct has an explicit or implicit implication that people's behaviour is influenced by their views on how others would see them when they utilise a specific technology (Argo and Dahl, 2020; Li, 2011). Thus, a person may inadvertently use a specific technology based on the influence and views of others (Bagozzi and Dholakia, 2002).

Social impact occurs in three forms: internalisation, identification, and compliance (Kelman, 1974). These dimensions correspond to group norms, social identity, and subjective norms (Tsai and Bagozzi, 2014; Venkatesh and Davis, 2000). Internalisation describes the process by which an individual accepts a belief or behaviour because it is consistent with the individual's value system (Kelman, 1958; Malhotra and Galletta, 1999). For example, the individual may consider adopting the Gmmp system because it is "useful for the solution of a problem or find it congenial to his need" (Kelman, 1958, p. 53). By contrast, identification describes how others influence an individual in the same social group (Cheung et al., 2011; Kelman, 1974). In this context, individuals socially identify with Gmmp "because s/he wants to establish or maintain a satisfying self-defining relationship to another person or a group" (Kelman, 1958, p. 53). Compliance is the process by which individuals consent to the views or behaviours of others (Kelman, 1974). The individual "adopts the induced Gmmp not because they believe in its content but because they expect to gain specific rewards or approval and avoid specific punishments or disapproval by conforming" (Kelman, 1958, p. 53).

Grounded on the view of social influence, this study mirrored how individuals perceived the utilisation of Gmmp to achieve their sense of engagement, satisfaction, and loyalty. Previous studies revealed the influence of gamification in shaping people's perceptions, habits, behaviour, and attitudes through mobile applications and designs in various settings such as loyalty programmes, e-banking, online e-commerce, new product adoption, education, and sustainability (Mulcahy et al., 2021; Landers et al., 2020; Çera et al., 2020; Zhang et al., 2021; Bayuk and Altobello, 2019; Jang et al., 2018; Müller-Stewens et al., 2017; Simões et al., 2013; Li, 2011). Consistent with the application of social influence processes in diverse contexts (Manca et al., 2022; Oldeweme et al., 2021; Singh et al., 2020; Sarkar et al., 2019; Ifinedo, 2016), this study proposes that gamification predicts social influence through internalisation, identification, and compliance processes. The study, therefore, hypothesised the following:

Hypothesis 1. There would be a significant relationship between gamified mm-payment and internalisation.

Hypothesis 2. There would be a significant relationship between gamified mm-payment and identification.

Hypothesis 3. There would be a significant relationship between gamified mm-payment and compliance.

2.3. Social impact of Gmmp and customer value

Understanding customer value is vital for achieving a competitive advantage (Vargo and Lusch, 2004; Torkzadeh et al., 2020). In the marketing domain, customer value is recognised as the pillar that triggers a competitive advantage for organisations and enables the long-term survival of organisations (Mishra et al., 2020; Zeithaml et al., 2020). Customer value refers to "a customer's perceived preference for and evaluation of those product attributes, attribute performances, and consequences arising from use that facilitates (or blocks) achieving the customer's goals and purposes in use situations" (Woodruff, 1997, p. 142). According to Holbrook (2006, p. 715), customer value is an "interactive relativistic preference experience," that involves an interaction between a subject (the customer) and an object (e.g., a product, service, or store). Customer value has been conceptualised as service-related (Coletta et al., 2021; Kelly and Scott, 2012; Tai et al., 2018), relationship-related (Coletta et al., 2021), embedded customer satisfaction (Vinhas and Gibbs, 2012), and knowledge sharing (Linnander et al., 2017; Schmidt et al., 2016). Viewing customer value from a service-related perspective enhances service delivery (Leclercq et al., 2020; Helmfalk and Marcusson, 2019; Kelly and Scott, 2012). Similarly, assuming a relationship-related perspective means that value-creation activities occur before actual service delivery and build a strong relationship, engagement, trust, commitment, loyalty, and social benefits (Roncone and Massari, 2022; Coletta et al., 2021; Abou-Shouk and Soliman, 2021; Graça et al., 2016). The varying conceptualisation of customer value shows that the construct is still fragmented and can be applied contextually. In the context of relationship-relatedness, a user of a gamified service determines the value of the service (Leclercq et al., 2020). What is also gameful is an individual's subjective experience (Leclercq et al., 2020; Landers et al., 2019; Huotari and Hamari, 2012) in search for rare approaches to achieve user engagement, satisfaction, and loyalty within the growing mm-payment environment (Hadjielias et al., 2022; Basaran, 2022; Roncone and Massari, 2022; Behl and Pereira, 2021; Grönroos and Voima, 2013).

Engagement entails the involvement of an individual's complete self in a focal object (Grillo and Damacena, 2015; Rich et al., 2010; Brodie et al., 2011). The term "engagement" describes the "quality of user experience characterised by attributes of challenge, positive affect, endurance, aesthetic and sensory appeal, attention, feedback, variety/novelty, interactivity, and perceived user control" (O'Brien and Toms, 2008, p. 1). Drawing on the extant literature, user engagement describes a user's motivation to interact, maintain involvement, collaborate with members, and demonstrate a willingness to use a gamified application (Leclercq et al., 2020; Suh et al., 2018; Brodie et al., 2011; Hsu et al., 2012; Vivek et al., 2012). The primary goal of gamification services is to stimulate customer engagement (Xiao et al., 2022; Bitrián et al., 2021; Hollebeek et al., 2021; Leclercq et al., 2020; Eisingerich et al., 2019; Suh et al., 2018; Leclercq et al., 2018) and make service provision more enjoyable (Jeon et al., 2022; Hwang and Choi, 2020; Wunderlich et al., 2020; Baptista and Oliveira, 2017; Santhanam et al., 2016). Previous studies have elucidated the dimensions of user engagement: cognitive (attention and absorption), behavioural (sharing, learning, and endorsing), and emotional (enthusiasm and enjoyment) (Brodie et al., 2011; Dessart et al., 2016). Likewise, social influence tends to deepen individual engagement through internalisation, identification, and compliance. Thus, gamification within social circles is a nascent mechanism to improve the engagement of mm-payment users since

individuals with social ties show higher engagement by embracing the thoughts and behaviour of others and eventually thinking and acting in the same way, unlike those without social ties (Poirier and Cobb, 2012; Jacques, 1995).

Customer satisfaction and loyalty are relevant constructs in marketing and service environments. Customer satisfaction is described as an emotional and psychological state-based individual experience, several customer experiences, and a compelling summary response experience (Iglesias et al., 2011; White and Yu, 2005; Meyer and Schwager, 2007). Studies on customer service in financial services and technology adoption have also emphasised the critical role of satisfaction in customer value creation and the continuous use of such services (Sandanshive et al., 2022; Hanafizadeh and Amin, 2022; Bhattacharjee, 2001). Consistent with the proposition of Oliver (1997), customer satisfaction is a pleasurable fulfilment, and a gameful experience in service provision provides such hedonic experiences, which are geared toward the fun, enjoyment, and pleasurable experiences individuals gain from using gamified services (Leclercq et al., 2020; Hamari and Keronen, 2017). Thus, individuals develop a sense that gamified services satisfy their needs and objectives. This study aligns with the notion that the environment can influence customer satisfaction because social influence theory suggests that individuals' beliefs, attitudes, thoughts, and actions change because of social interactions (Spears, 2021; Argo and Dahl, 2020; Kelman, 1974). In the context of Gmmp, the impact of social influence is even more significant because new users must rely on the satisfaction derived from others already using Gmmp within their social circles (Yin et al., 2022; Argo and Dahl, 2020; Bhatt, 2021; Schierz et al., 2010). Social influence creates a sense of relationship value that leads to satisfaction (Deci and Ryan, 2000).

Customer loyalty is described as a sincere "commitment to rebuy or patronise a preferred product/service consistently in the future" (Oliver, 2000, p. 34). This explains a customer's intention to repeatedly buy or use a specific product or service (Iglesias et al., 2020; Ho and Chung, 2020; Thakur, 2016). Gamifying mobile platforms have the potential to stimulate customer repurchase and retention (Sitthipon et al., 2022; Aparicio et al., 2021; Kim et al., 2020; Hwang and Choi, 2020; Hofacker et al., 2016). Thus, the more loyal customers become to a specific gamified service, the more willing they are to use it repeatedly. From the perspective of social impact theory (Xue, 2019), this study proposes that individuals will continually use gamified mobile money payment systems and become loyal to them based on the influence of others in their social environment.

In tandem with seminal studies that have established social influence as a strong predictor of attitudes and user engagement (Lin et al., 2018; Jin et al., 2017; Hamari and Koivisto, 2013; Zhou, 2011; Hsu et al., 2012), customer satisfaction (Yin et al., 2022; Hajli et al., 2017; Beyari and Abareshi, 2018; Marinkovic and Kalinic, 2017), and loyalty (Mattke and Maier, 2021; Hwang and Choi, 2020; Hsu and Chen, 2018a, b; Kim and Ahn, 2017; Algesheimer et al., 2005), this study proposes that gamification within social circles will influence individuals' use of gamified mobile money payment. We, therefore, propose the following hypotheses:

Hypothesis 4. There would be a significant relationship between internalisation and user engagement of gamified mm-payment.

Hypothesis 5. There would be a significant relationship between identification and gamified mm-payment user engagement.

Hypothesis 6. There would be a significant relationship between compliance and user engagement of gamified mm-payment.

Hypothesis 7. There would be a significant relationship between internalisation and customer satisfaction of gamified mm-payment.

Hypothesis 8. There would be a significant relationship between identification and satisfaction with gamified mm-payment.

Hypothesis 9. There would be a significant relationship between

compliance and customer satisfaction of gamified mm-payment.

Hypothesis 10. There would be a significant relationship between internalisation and gamified mm-payment loyalty.

Hypothesis 11. There would be a significant relationship between identification and gamified mm-payment loyalty.

Hypothesis 12. There would be a significant relationship between compliance and gamified mm-payment loyalty.

2.4. Conceptual framework

The conceptual framework for the study (in Fig. 1) shows the relationship between the gamified mm-payment (independent variable), social impact theory constructs (mediating variable), and customer value or marketing outcome constructs (dependent variable).

The integrated social impact theory and customer value model for Gmmp (Fig. 1) show how the constructs are related, leading to the development of the proposed 12 hypotheses (Hypothesis 1–12) for testing. Drawing on the relevant literature, this study proposes a positive and significant relationship between Gmmp and the social impact constructs of internalisation, identification, and compliance (Mulcahy et al., 2021; Çera et al., 2020; Oldeweme et al., 2021; Singh et al., 2020). Additionally, the relationships between social impact and customer value constructs are proposed to be significant and positive (Yin et al., 2022; Argo and Dahl, 2020; Bhatt, 2021).

3. Methodology

This study used a scenario-based survey research design (Jafarkarimi et al., 2016; Haines and Leonard, 2007; Leonard et al., 2004; Leonard and Cronan, 2001) to collect data from mobile money payment app users in Ghana (see Appendix A). The choice of the scenario-based survey approach was informed by the fact that a fully deployed gamified mobile app was unavailable to respondents. However, respondents were shown a model-based scenario for the gamified app, after which they answered the survey questions. The prototyping experience, a form of user experience (UX) method, also allows potential users to be involved in designing a product or service in an interactive manner (Interaction Design Foundation, 2020; Brown, 2009). The complete prototype of the application is available from the authors upon request. However, owing to copyright constraints, the entire app cannot be made available at this time. Surveys, apart from being a popular method for business research (Sekaran and Bougie, 2016), has a rapid turnaround when collecting data from a substantial sample (Zikmund et al., 2013).

3.1. Measurement instrument

The measurement instrument for the study was a questionnaire (Appendix A) developed from a review of the existing literature. The primary measurement instrument comprised seven constructs with 26 reflective items (Chin, 1998a). Gamification consisted of seven items adapted from Eppmann et al. (2018), Putri et al. (2019), and Högberg et al. (2019) and reflected the features of gameful designs such as badges, points, leader boards, scoring, avatars, and ranking (Seaborn and Fels, 2015; Blohm and Leimeister, 2013). The items for the social impact constructs were adopted from Cao et al. (2021). Compliance consisted of four items, while internalisation and identification had three items. Finally, the constructs for customer value (Klaus and Maklan, 2013), namely user engagement, satisfaction, and loyalty, had three items adapted from Wu and Li (2018), Klaus and Maklan (2013), and Hollebeek et al. (2014). All questions were anchored on a 7-point Likert scale, and respondents had to choose the extent to which they agreed with the statements. In addition, there were a few questions on the demographic characteristics of the respondents, namely age, sex, and mobile money payment service(s) used.

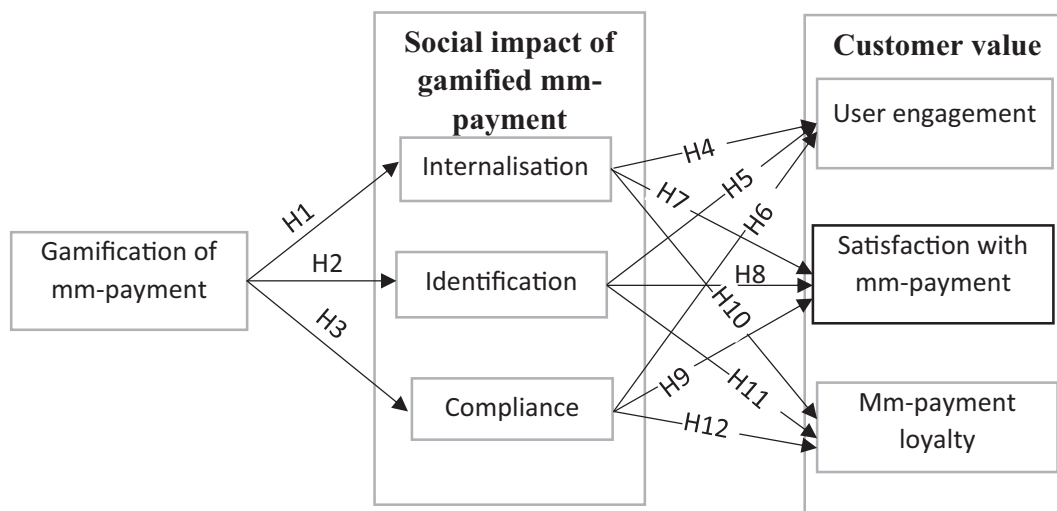


Fig. 1. An integrated Social Impact Theory and Customer Value model for Gmmp.

3.2. Method of data collection and analysis

A pilot survey with 30 respondents helped to assess the questions and enhanced the content validity of the questionnaire. The survey involved administering the questionnaire to a convenience sample of 620 mobile money service users in Ghana over four months. Of the 620 questionnaires distributed to potential respondents, 567 (91.5 %) were fully completed and found usable after data preprocessing. The final dataset was analysed using SPSS and Structural Equation Modelling-Partial Least Squares (SEM-PLS) method (Hair et al., 2021; Ringle et al., 2015).

SPSS was used for descriptive data analysis (Table 1) and to assess non-response bias (Armstrong and Overton, 1977). SPSS was used for the descriptive statistical analysis because it has a friendly user interface, easy to use, and is a popular tool for analysis of social science data and normality testing (Mishra et al., 2019; Pallant, 2020; Paura and Arhipova, 2012).

The respondents were made up of 278 (49 %) males and 289 (51.0 %) females (Table 1). Most respondents were Millennials (62.3 %), with Boomers only 1.0 % of the sample. The users were proportionately distributed across various mobile money platforms based on their market share, with MTN MoMo users being the majority (63.8 %) and VodafonCash users (4.4 %) being the minor proportion of the sample.

Twelve hypotheses were tested in the study. The relationship between Gmmp and the social impact constructs of internalisation (Hypothesis 1), identification (Hypothesis 2), and compliance (Hypothesis 3) were hypothesised as positive. It is expected that, when consumers have a positive perception of Gmmp, they are more likely to internalise it (Hypothesis 1), identify with it (Hypothesis 2), and comply with its suggestions (Hypothesis 3). The later relationships between social impact theory constructs and customer value constructs are proposed to

Table 1

Personal characteristics of the respondents (N = 567).

		Frequency	Percentage
Sex	Male	278	49.0
	Female	289	51.0
Age	18–24 years (Gen Z)	137	24.2
	25–40 years (Millennials)	353	62.3
	41–56 years (Gen X)	71	12.5
	57 years+ (Boomers)	6	1.0
Preferred mobile money payment	MTN MoMo	362	63.8
	TigoCash	93	16.4
	VodafonCash	25	4.4
	Multiple MoMo	87	15.3

be positive. Thus, it proposed that internalisation would have a positive impact on user engagement (Hypothesis 4), satisfaction (Hypothesis 5), and loyalty (Hypothesis 6). Similarly, the relationships between identification and user engagement (Hypothesis 7), satisfaction (Hypothesis 8), and loyalty (Hypothesis 9) are positive. Finally, a positive relationship was proposed between compliance and user engagement (Hypothesis 10), satisfaction (Hypothesis 11), and loyalty (Hypothesis 12). These hypotheses (Hypothesis 1–12) were tested using SmartPLS by first performing a measurement model evaluation assessment (Henseler et al., 2009) followed by a structural model assessment using a bootstrapping procedure (Hair et al., 2017). The use of SEM-PLS in business research is not uncommon (Ringle et al., 2012) as it provides a tested approach for developing, testing, and validating simple and sophisticated conceptual models (Ringle et al., 2015; Hair et al., 2017). In addition, SEM-PLS has been found to be robust and effective in overcoming item measurement and sample distribution challenges (Chin, 1998b).

3.3. Non-response and common method bias

The data for the study was assessed as evidence of non-response and common method bias. To do this, the first 30 % of responses of the data were compared with the last 30 % of responses (Armstrong and Overton, 1977) to check for non-response bias. The results showed no significant differences between the two groups ($p > 0.05$) on the key constructs. Thus, non-response bias was not a problem in this study. Furthermore, Harman single-factor analysis (Malhotra et al., 2006) was used to check for common method bias (Podsakoff and Organ, 1986). The results showed that the first factor accounted for only 24.6 % of the variance. Therefore, common method variance was not a concern in this study. The data was also evaluated for multicollinearity (if any) by assessing the VIF (outer) values which were all found to be less than the recommended threshold of 5 (Hair et al., 2017). Full (factor level) VIF analysis was conducted and all the inner VIF values were found to be less than the 3.3 criteria (Kock, 2015). Therefore, common method bias was not a concern in this study.

4. Results

The quality of the constructs was assessed by the measurement model evaluation criterion (Henseler et al., 2009). The results (Table 2) revealed that the Cronbach Alpha (CA), composite reliability (CR), and the average variance extracted (AVE) values were greater than the threshold of 0.70 for CA and CR (Nunnally and Bernstein, 1994); and the

Table 2
Construct reliability and validity.

Construct	Cronbach's alpha	Composite reliability	Average variance extracted
Compliance	0.857	0.904	0.703
Customer engagement	0.841	0.904	0.758
Gamified m-payment	0.864	0.898	0.594
Identification	0.915	0.947	0.855
Internalisation	0.815	0.889	0.727
Loyalty	0.840	0.899	0.747
Satisfaction	0.895	0.935	0.827

AVE threshold of 0.50 (Fornell and Larcker, 1981a, 1981b). Thus, construct reliability and validity, and convergent validity was respectively confirmed for the data.

Discriminant validity for the data was assessed by checking the square root of the construct's AVE, which were all greater than its correlation with the other constructs (Table 3).

In addition, the factor loadings and item cross-loadings (Table 4) were all greater than the 0.50 criterion (Hair et al., 2017).

Furthermore, all the HTMT values (Table 5) were less than the 0.90 thresholds proposed by Gold et al. (2001). Therefore, discriminant validity was confirmed for the data.

The explanatory power of the model was found to be high. The main dependent variable of customer engagement, satisfaction, and loyalty recorded R² values of 0.162, 0.239, and 0.395 respectively ($p < 0.05$). The social impact constructs explained between 0.158 (15.8 %) and 0.241 (24.1 %) of the variation in the main independent variable (Gmmp).

5. Hypotheses testing

The hypotheses for the study were tested by assessing the structural model using the bootstrapping procedure with a resample of 5000 (Hair et al., 2017). The final model (Fig. 2) shows the standardised path coefficient and statistical significance ($p < 0.05$).

Gmmp was found to be positively and significantly related to internalisation ($\beta = 0.397, t = 10.351, p = 0.000$), identification ($\beta = 0.425, t = 10.453, p = 0.000$), and compliance ($\beta = 0.491, t = 12.273, p = 0.000$). These thus confirm hypotheses Hypothesis 1, 2, and 3, respectively. Identification was significantly and positively related to customer satisfaction ($\beta = 0.195, t = 2.548, p = 0.011$), thereby confirming Hypothesis 8. However, Hypothesis 4 and 10 were not supported as internalisation did not show a significant relationship with customer engagement ($\beta = 0.113, t = 1.400, p = 0.162$) and with loyalty ($\beta = 0.042, t = 0.584, p = 0.559$). Furthermore, the data for the study did not reveal a significant relationship between identification and customer engagement ($\beta = 0.021, t = 0.217, p = 0.828$) and internalisation with satisfaction ($\beta = 0.093, t = 0.990, p = 0.322$), thus Hypothesis 5 and 7 were respectively not supported. Identification, however, showed a significant and positive relationship with loyalty ($\beta = 0.275, t = 3.178, p = 0.001$), thus confirming Hypothesis 11. The study finds a significant

Table 3
Discriminant validity, correlations of constructs and $\sqrt{\text{AVE}}$ test.

Construct	Compliance	Customer engagement	Gamified m-payment	Identification	Internalisation	Loyalty	Satisfaction
Compliance	0.838						
Customer engagement	0.391	0.871					
Gmmp	0.491	0.520	0.771				
Identification	0.735	0.331	0.425	0.925			
Internalisation	0.628	0.320	0.397	0.766	0.853		
Loyalty	0.594	0.689	0.524	0.575	0.482	0.865	
Satisfaction	0.449	0.645	0.435	0.432	0.428	0.816	0.909

NB: Diagonal values in bold are the square root of AVE; off-diagonal values are inter-construct correlation coefficient.

positive relationship between compliance and customer engagement ($\beta = 0.305, t = 4.076, p = 0.000$), loyalty ($\beta = 0.365, t = 5.705, p = 0.000$), and satisfaction ($\beta = 0.257, t = 3.409, p = 0.001$); in support of Hypothesis 6, 9 and 12 (Table 6).

A further assessment of the model for the direct impact of gamified mm-payment on the customer value constructs showed a significant and positive relationship between gamified mm-payment and customer engagement ($\beta = 0.203, t = 6.116, p = 0.000$); satisfaction ($\beta = 0.243, t = 8.009, p = 0.000$) and loyalty ($\beta = 0.313, t = 9.712, p = 0.000$).

6. Discussions of results and implications

The use of gamification by service providers is gradually gaining attention (Hofacker et al., 2016). However, there is an unsettled understanding of how gamification benefits service providers (Wolf et al., 2020). This study provides an understanding of how gamified mobile money payments lead to social impact and how achieving customer value will benefit mobile money service providers in an emerging country context. A cursory look at the literature on mobile money payments reveals a lacuna in gamification and mobile money payments. Our study fills this gap by presenting how gamified mobile money payments can trigger a social impact leading to three outcomes (user engagement, satisfaction with mm-payment, and mm-payment loyalty). Hence, an integrated model of social impact and customer value theories was developed and tested using 12 main hypotheses.

6.1. Gamified mm-payment and social influence (Hypothesis 1–3)

The first objective of this study was to explore the potential social impact of gamified mobile payments among users of mobile money payment services. In line with this, three hypotheses were tested, and all were confirmed. The results revealed that the gamified mm-payment had a significant and positive social impact through internalisation (Kelman, 1958; Malhotra and Galletta, 1999). There are indications that people are likely to adopt the gamified mm-payment system because it is consistent with their value system or helps meet some of their desired needs (Kelman, 1958). Similarly, the results show that the gamified mm-payment can create a significant and positive social impact through identification (Cheung et al., 2011; Kelman, 1974). The results show that through social identification, individuals are more likely to be influenced by others in their social group who identify with gamified mm-payment to use mm-payment services (Kelman, 1958, p. 53). In addition, the group effect of compliance can trigger users of the gamified mm-payment to consent to the suggestions and behaviour of others to use gamified mm-payment services (Kelman, 1974). It is also possible that within a social group, people can be induced to use gamified mm-payments to avoid rejection or disapproval by the group (Kelman, 1958).

The results of our study offer an exciting approach to understanding the adoption and impact of technology (gamified mm-payment) through the lens of social influence (Hamari and Koivisto, 2013). The data for the study confirmed the social influence theory in terms of what gamified mm-payment is expected to accomplish (Ajzen, 1991). Furthermore, the results of Hypothesis 1, 2, and 3 are consistent with other studies that,

Table 4
Factor loadings and item cross loadings.

Items/factors	Customer engagement	Compliance	Gamified m-payment	Identification	Internalisation	Loyalty	Satisfaction
CE1	0.863	0.369	0.426	0.321	0.337	0.621	0.589
CE2	0.901	0.347	0.480	0.288	0.276	0.634	0.585
CE3	0.847	0.296	0.456	0.245	0.205	0.531	0.497
CM1	0.276	0.745	0.369	0.506	0.472	0.449	0.367
CM2	0.323	0.855	0.461	0.642	0.516	0.500	0.356
CM3	0.384	0.885	0.384	0.666	0.605	0.576	0.450
CM4	0.319	0.861	0.435	0.640	0.503	0.454	0.322
Gmp1	0.465	0.365	0.816	0.337	0.368	0.446	0.400
Gmp2	0.416	0.375	0.768	0.346	0.309	0.423	0.371
Gmp3	0.315	0.454	0.728	0.374	0.340	0.382	0.339
Gmp5	0.418	0.271	0.756	0.261	0.224	0.371	0.354
Gmp6	0.416	0.413	0.795	0.349	0.325	0.402	0.272
Gmp7	0.385	0.347	0.759	0.261	0.228	0.388	0.268
ID1	0.294	0.651	0.430	0.907	0.772	0.523	0.413
ID2	0.304	0.674	0.371	0.932	0.668	0.540	0.366
ID3	0.320	0.713	0.377	0.936	0.682	0.533	0.418
IN1	0.187	0.432	0.266	0.546	0.786	0.296	0.266
IN2	0.336	0.550	0.391	0.643	0.891	0.456	0.414
IN3	0.270	0.605	0.340	0.754	0.877	0.451	0.390
LO1	0.608	0.441	0.442	0.419	0.373	0.886	0.770
LO2	0.718	0.351	0.463	0.308	0.258	0.802	0.668
LO3	0.539	0.655	0.465	0.657	0.535	0.902	0.698
SA1	0.579	0.435	0.403	0.390	0.408	0.742	0.890
SA2	0.593	0.380	0.358	0.364	0.360	0.737	0.935
SA3	0.585	0.404	0.420	0.420	0.395	0.744	0.903

Table 5
Heterotrait-Monotrait Ratio (HTMT) for the key constructs.

Construct	Compliance	Customer engagement	Gmmp	Identification	Internalisation	Loyalty	Satisfaction
Compliance							
Customer engagement	0.453						
Gmmp	0.560	0.614					
Identification	0.827	0.372	0.467				
Internalisation	0.738	0.366	0.452	0.876			
Loyalty	0.650	0.843	0.614	0.604	0.525		
Satisfaction	0.508	0.736	0.490	0.475	0.487	0.894	

although using similar or different models (e.g., Venkatesh et al., 2003; Thompson et al., 1991; Moore and Benbasat, 1991), confirmed that people's behaviour is influenced by their views about how others see them using technology (Li, 2011; Lu, 2014; Bagozzi and Dholakia, 2002; Chiu et al., 2013). Thus, the social impact constructs, namely internalisation, identification, and compliance (Kelman, 1974) which respectively correspond with group norms, social identity, and subjective norms (Tsai and Bagozzi, 2014; Venkatesh and Davis, 2000), are key variables that can be exploited to enhance and assess the impact of new technologies on consumers in developing country contexts.

6.2. Social impact of gamified mm-payment and customer values (Hypothesis 4–12)

The second objective of this study was to ascertain the relationship between the potential social impact of Gmmp and customer value. The results on the social impact of the gamified mm-payment on customer value were mixed. While compliance was significantly predictive of user engagement with gamified mm-payment (in support of Hypothesis 6), internalisation and identification were not. Thus, where individuals tend to consent to the views of members of their social groups (Kelman, 1974), they are highly likely to feel engaged with gamified mm-payment services. However, even when users' value systems aligned with the values of the gamified mm-payment (Kelman, 1958; Kelman, 1974; Malhotra and Galletta, 1999), they did not show a significant tendency to engage with the gamified mm-payment services. In addition, the influence of individual members of social groups (Cheung et al., 2011) does not necessarily translate into significant tractions on user

engagement. Therefore, compliance, rather than internalisation and identification, could be exploited to understand and assess the social impact of new technologies, such as gamified mm-payments, on user engagement when promoting financial technologies in developing countries.

The social impact of the gamified mm-payment on user satisfaction was tested. While the proposition that internalisation predicts satisfaction (Hypothesis 7) was rejected, contrasting earlier findings (e.g., Hajli et al., 2017; Beyari and Abareshi, 2018; Marinkovic and Kalinic, 2017), the data for the study confirmed the significant and positive influence of identification and compliance on satisfaction (in support of Hypothesis 8 and 9). Thus, where the values of the gamified mm-payment are consistent with the user's value system (Kelman, 1974), the chances of user satisfaction with the gamified mm-payments are likely to be high. Similarly, when users consent to the views of members of their social groups (Kelman, 1958) on gamified mm-payment, the chances of user satisfaction with mm-payment increases. However, identification did not affect user satisfaction with gamified mm-payment. Thus, even when users are influenced by their social groups (Cheung et al., 2011), they are not necessarily satisfied with the gamified m-payment. In effect, identification and compliance, but not internalisation, could be leveraged to enhance user adoption of a potential gamified mobile money app and create the necessary social impact leading to user satisfaction.

Regarding the effect of social impact on customer loyalty, while internalisation of gamified mm-payment was not significantly predictive of loyalty, identification and compliance were (in support of Hypothesis 11 and 12). The results of the study show that the user's value system (Malhotra and Galletta, 1999; Kelman, 1974), although consistent with

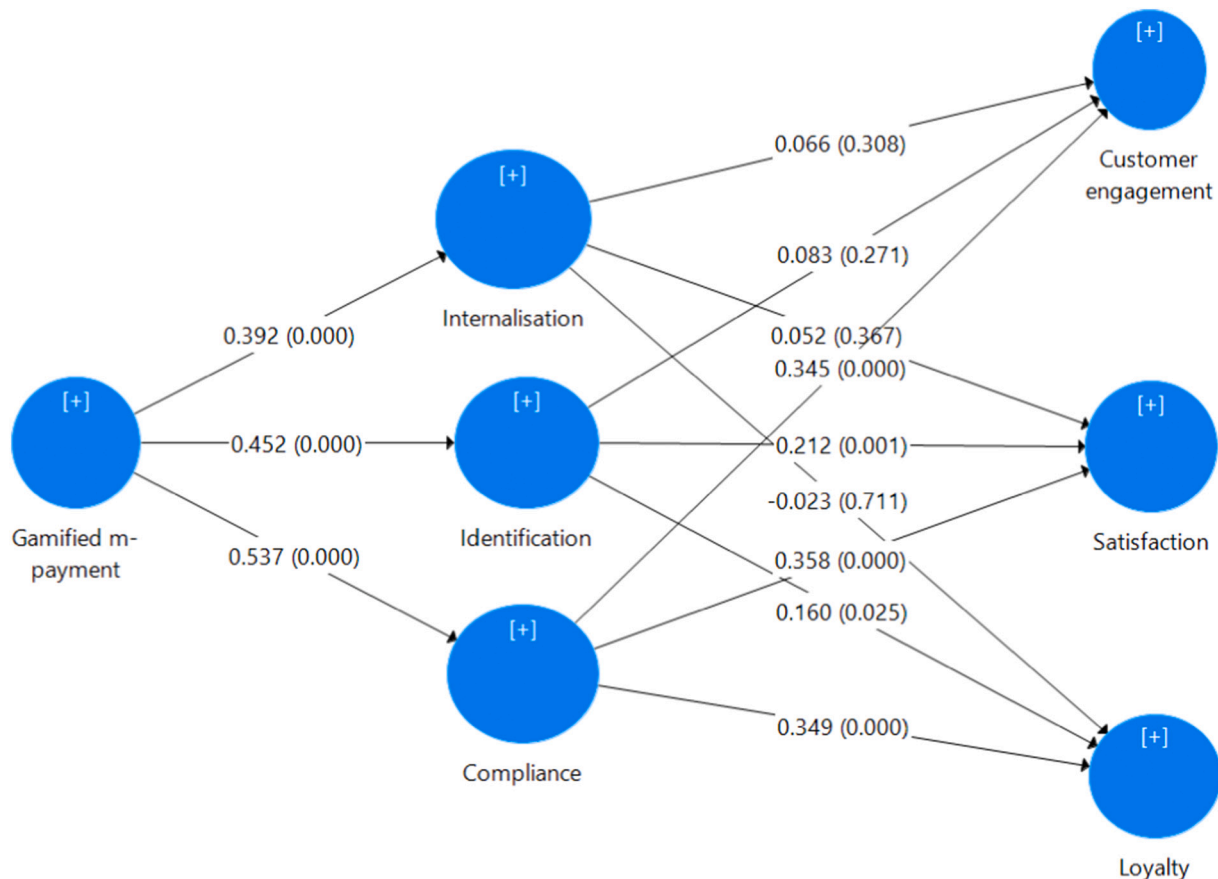


Fig. 2. A path model of the relationship between the key constructs.

the value of gamified mm-payment, does not translate into loyalty. By contrast, identification was significantly predictive of loyalty. This indicates that when users are influenced by those in their social group (Cheung et al., 2011), they are significantly likely to remain loyal to gamified mm-payment. Also, compliance was significantly predictive of loyalty (Kelman, 1974). Thus, when users consent or show a tendency to follow the views and behaviour of their social groups, they are significantly likely to remain loyal to the use of gamified mm-payment.

6.3. Implications for theory

First, this study contributes to knowledge by combining two significant theories (social impact and customer value) in one single study to understand Gmmp, which is rarely done in the gamification and mobile payment literature (Höllig et al., 2020; Bitrián et al., 2021). Combining these two theories to understand how Gmmp induces social influence and creates customer value enhances the literature on gamified mobile payment systems. This is perhaps one of the few studies that integrate the technological concept of gamification with social science theory (social impact) and marketing theory (customer value) to understand customer value generation in the context of gamified mobile money payments. Second, this study elucidates three outcomes (user engagement, satisfaction, and loyalty) of gamified mobile money payments that few studies (e.g., Wolf et al., 2020) have examined. The three multidimensional outcomes of Gmmp examined in this study could serve as an avenue for further research to examine other gamified technological innovation services and enhance theory building in technology and marketing literature. Third, this study has also proven that consumer engagement is not the only outcome of gamification, as seen in the extant literature (e.g., Wolf et al., 2020), and that various outcomes and interactions could enhance the gamification experience and yield

different outcomes for organisations (Hollebeek et al., 2019). For example, this study reveals that compliance leads to customer engagement, satisfaction, and loyalty, which signal that several other customer experiences with gamification could yield several benefits to organisations and thus requires further investigation.

6.4. Implications for practice

This study provides several practical lessons for service providers of mm-payments to support and enhance their decision-making. This includes incorporating gamification into service delivery values, marketing strategies, and customer touchpoints. The results demonstrate enormous potential for developing and deploying gamified mobile money apps in Ghana and similar emerging markets. This study could be useful to managers of mobile money and other electronic payment services to formulate strategies around gamification to retain and attract new mobile money customers, especially in emerging countries where the use of mobile money payment is increasing (Liebana-Cabanillas and Lara-Rubio, 2017; de Luna et al., 2019; Koomson et al., 2021). The study, thus, stresses that Gmmp leads to customer engagement. This outcome is consistent with earlier studies such as Hollebeek et al. (2021) and Bitrián et al. (2021). Therefore, mobile money service providers must develop gamified applications that enhance user engagement. The outcome of this study also provides an opportunity for managers of mobile money services to achieve customer value through gamified social influence activities. Taking time to nurture and develop customer value through the social influence of Gmmp can help retain customers, spur the continuous use of the service, and encourage referrals through word-of-mouth (Wolf et al., 2020). Gamification focuses on customer experience-centeredness (Morschheuser et al., 2018; Syrjäälä et al., 2020). Based on this observation, service providers must not only focus

Table 6
Summary of the model path coefficients from the hypotheses testing.

Path	Beta	Standard deviation	t statistics	p values	Decision
Gamified m-payment → Internalisation	0.397	0.038	10.351	0.000	Hypothesis 1 — supported
Gamified m-payment → Identification	0.425	0.041	10.453	0.000	Hypothesis 2 — supported
Gamified m-payment → Compliance	0.491	0.040	12.273	0.000	Hypothesis 3 — supported
Internalisation → Customer engagement	0.113	0.081	1.400	0.162	Hypothesis 4 — not supported
Identification → Customer engagement	0.021	0.095	0.217	0.828	Hypothesis 5 — not supported
Compliance → Customer engagement	0.305	0.075	4.076	0.000	Hypothesis 6 — supported
Internalisation → Satisfaction	0.195	0.077	2.548	0.011	Hypothesis 7 — supported
Identification → Satisfaction	0.093	0.094	0.990	0.322	Hypothesis 8 — not supported
Compliance → Satisfaction	0.257	0.075	3.409	0.001	Hypothesis 9 — supported
Internalisation → Loyalty	0.042	0.071	0.584	0.559	Hypothesis 10 — not supported
Identification → Loyalty	0.275	0.087	3.178	0.001	Hypothesis 11 — supported
Compliance → Loyalty	0.365	0.064	5.705	0.000	Hypothesis 12 — supported

on creating only customer experience gamified features when developing mobile money payments but also consider developing gamified features that would facilitate a co-created customer value experience. In addition, the results show that gamified mobile payments lead to satisfaction. Satisfying customers has always been a priority for most organisations, which comes with many responsibilities and strategies. Marketing practitioners should consider gamification as a way of building intense customer satisfaction and loyalty, as noted in this study.

7. Conclusion

This study developed and tested an integrated model of social impact and customer value theories to provide insights into applying gamified mobile money payments to create customer value (Qian et al., 2022). The study contributes to the understanding of how social impact serves as a mechanism through which gamification of mobile money payments yields user engagement (Behl et al., 2021; Yu & Huang, 2022), customer satisfaction (Yin et al., 2022; Torres et al., 2022) and loyalty (Hwang and Choi, 2020; Cui et al., 2022). The outcomes, grounded on the two theories used in the study, can help service providers formulate strategies that would enable them to remain competitive and profitable through the gamification of their services. The results of this study provide a proof of concept based on empirical evidence of the prospects of gamified mobile money services in emerging economies. The sample interface design and prototype user experience design (Interaction Design Foundation, 2020) can be readily adopted by FinTech solution providers, including mobile money service firms in developing countries, to implement real gamified mobile money solutions. This study, therefore, provides empirical evidence of the relevance of gamification of financial technology solutions to engage, motivate and gratify consumers while attracting new customers into the digital technology consumption space (Rather et al., 2022). Thus, the successful implementation of gamified mobile money payment systems will advance financial technology

diffusion and deepen the financial inclusion agenda in emerging economies (Koomson et al., 2021; Lepoutre and Oguntoye, 2018; Asongu et al., 2021) even after the new normal.

The lessons from both the empirical and conceptualisation sides of this study provide an opportunity for continuous research in this area, especially in contexts where research on gamification is still at its infant stage. It is also worth noting that gamification features vary for different domains. Therefore, detailed systems requirement analysis is needed to ascertain features that would fit a particular FinTech solution, such as mobile money. Thus future studies that explore the domain and requirement analysis of gamification of financial technology solutions would be useful. In addition, whilst there are several features of gamification, this study only considered seven features adapted from Eppmann et al. (2018), Putri et al. (2019), and Högberg et al. (2019). Therefore, future studies need to comprehensively analyse domain-specific gamification features to help contribute to understanding the gamification features that are more relevant to specific domains and contexts.

Moreover, culture and context vary and largely determine the features and norms acceptable within certain domains and geopolitical locations, such as developed and developing countries. Therefore, researchers must explore the role of culture (individual, group and national), religion and personality in understanding what gamification features fit what context (Leisterer-Peoples et al., 2021). For example, in developing countries like Ghana and those other African countries where traditional culture and religion have high stakes, there is a tendency to frown upon gaming and gamification. Therefore, future studies may aim to understand the barriers and enablers of gamification of financial technology solutions in developing countries. This would be useful to academics and technology solution providers in navigating the challenges of developing and deploying novel digital technology solutions in developing countries.

Furthermore, understanding the effect of demographic variables on the attitude, behaviours and intention to use financial technology solutions would be relevant in customising the gamified mobile money payment solutions to consumers. For example, gendered differences have been reported in gamification studies such as Polo-Peña et al. (2020); Qian et al. (2022); and Mustikasari et al. (2022); but these have not yet been explored in the context of gamified mobile money and generally within the gamification of financial technology solutions literature. Therefore, exploring the impact of demographic variables on gamified mobile money payment solutions would undoubtedly help implement financial digitisation programmes that aim to reduce inequality and promote digital inclusion, diversity and accessibility in the uptake of gamified Fintech solutions in developing countries.

It is worth noting that despite the potential positive impact of gamification mobile money services on society, the inherent risk, security, and privacy concerns cannot be overlooked (Behl et al., 2021). The direct negative impact of gaming and gamification in terms of addiction (Balakrishnan and Griffiths, 2018), stress and exhaustion (Yang and Li, 2021a, b) could hurt the personality, behaviour, finances and health (Aydm, 2022) of the individuals using the gamified mobile money payment apps. Technology-induced stress from the potential overuse and misuse of gamified mobile money can affect consumers' mental health, especially the youth. In addition, the potential for financial technology solution providers and mobile money platform owners to exploit consumers through hidden charges and prohibitive consumer costs cannot be overlooked. Another concern is the probable activities of hackers and fraudsters to exploit potential vulnerabilities and loopholes in the proposed gamified mobile money platforms to defraud consumers of their finances. It is, however, hoped that strong policy-driven approaches backed by robust regulations and governance of the entire financial technology ecosystem in developing countries are necessary to prevent the proposed innovative gamified mobile money technology solution from becoming counterproductive to society.

The outcomes of this study were grounded on data generated on a

service provision from a single-country perspective, which limits the generalisation of our findings to only countries with similar characteristics and mobile money users. Future research could investigate the same constructs from multi-country and a combination of service and product firms to see how gamification could trigger various outcomes. This study also assessed how mobile money users' experience leads to outcomes that are beneficial to mobile money service providers based on known gamification elements and did not focus on the user-defined game features which could motivate the mobile money user experience. Future studies could examine the user-defined features of gamification that could also moderate and lead to outcomes that will benefit the user, app developers, and mobile money service providers. This study is exploratory and uses only a quantitative approach. A mixed-method approach would also enhance the understanding of gamification, especially within diverse cultures and institutional contexts.

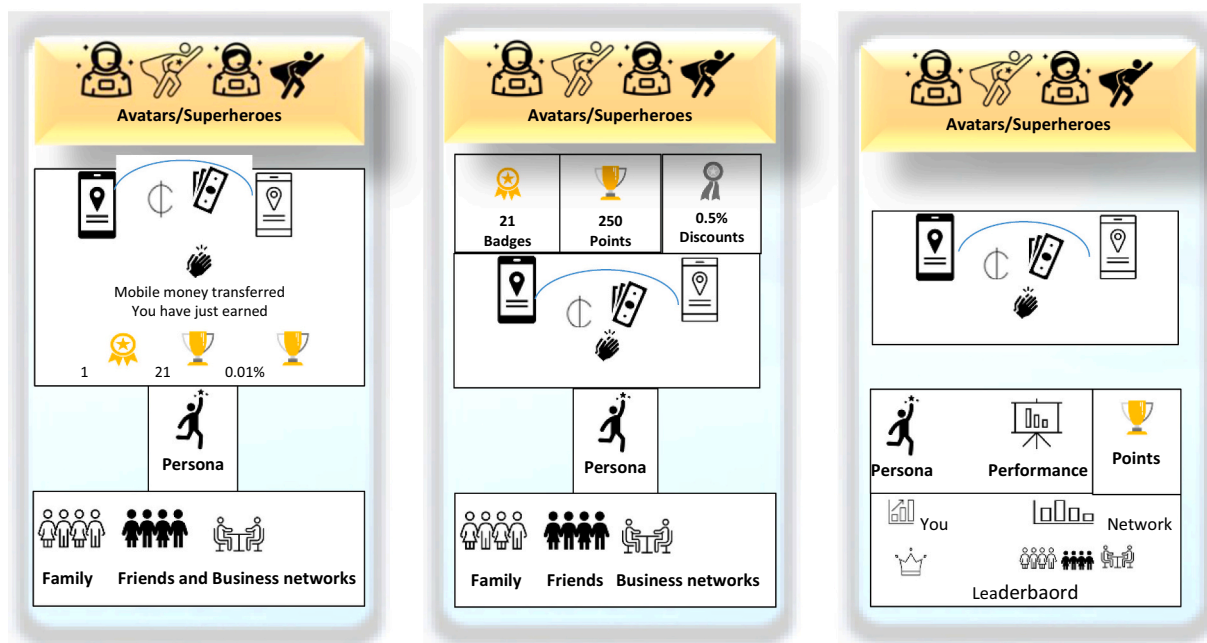
CRedit authorship contribution statement

Michael D. Dzandu: Conceptualization, Methodology, Data Analysis,

Appendix A. Survey questionnaire

Scenario & prototypes

This study assumes that a gamified mobile payment system or app has been developed (as shown below). The app allow you to send mobile money to your friends, family and businesses whilst providing you with some fun gaming elements. The app has gameful features, you can interact with other users or your networks, earn badges, points and discounts whenever you transfer money to family and friends as well as make payments for goods and services. Examples of the interfaces of the prototype of the gamified mobile money app are shown below.



Based on your experience of and interaction with the above gamified mobile money app, please answer the following questions by indicating the extent to which you agree with each statement. Use the scale 1 — strongly disagree, ..., 4 — neither disagree/agree ... and 7 — Strongly agree.

Gamified mm-payment

- Gmp1 I will use an m-payment system with features that gives me points for using the service.
- Gmp2 I will use an m-payment system with features that has a sort of a league table to show my performance position compared with others in using mobile payment services.
- Gmp3 I will use an m-payment system with features that allows me to interact with other people.
- Gmp4 I will use an m-payment system with features that has options for which I can customise images to represent my persona.

(continued on next page)

(continued)

Gamified m-payment		
Gmp5	I will use an m-payment system with features that has a progress bar to show me how I am using the mobile payment services.	
Gmp6	I will use an m-payment system with features that shows my points on a diagram when using the services.	
Gmp7	I will use an m-payment system with features that rewards me for using the services.	
Social influence		
Internalisation	IN1	I know the importance of an app with games for m-payment systems.
	IN2	I reason I would prefer an app with games for m-payment systems is because of the value it offers me.
	IN3	I would like apps with games for m-payment systems because they are similarity to my values and use.
Identification	ID1	I would feel a sense of personal control when using gamified m-payment systems.
	ID2	I would recommend the use of an app with games for m-payment to my friends and/or colleagues.
	ID3	I will be proud about using an app with games for m-payment systems.
Compliance	CM1	My private views about apps with games for m-payment systems are different than those I express publicly.
	CM2	If I am rewarded for using an app with games for m-payment systems, I see no reason not to spend extra effort in using it.
	CM3	For me to get rewarded by my m-payment company, it is necessary to use mobile payment system that has game features.
	CM4	I would often use m-payment systems that has game features often if I am rewarded by my m-payment service provider.
Customer value from marketing outcomes		
User engagement	CE1	I will continue supporting my mobile payment service provider.
	CE2	I will let the mobile payment service provider know how to improve the brand experience.
	CE3	I will let the mobile payment service provider know of ways to better serve my needs.
Satisfaction	SA1	I am satisfied with my total experience with my mobile payment service provider.
	SA2	I am content with the services of my mobile payment service provider.
	SA3	I am pleased with the overall quality of service of my mobile payment service provider.
Loyalty	LO1	I intend to remain loyal to this mobile payment service provider in the future.
	LO2	I think of myself as a loyal customer of this mobile payment service provider.
	LO3	I would continue to use a mobile payment system with game features in order to support my mobile payment service provider.

Demographics

Gender: 1) Male 2) Female 3) Other (please state).....

Age (years):

Most preferred mobile payment system: i) MTN MoMo ii) TigoCash iii) VodafonCash

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