

An Investigation on Mobile Banking and Co-creation Services Adoption Intention in South Africa

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Abstract—Co-creation of value between the consumer and services providers is an idea that has been receiving much attention. The purpose of this study was to investigate the influence of consumer motivation on attitudes and adoption intention of co-creational banking activities. By means of a quantitative method, 339 surveys were collected. The research instrument was compiled from existing scales that were adopted for the purpose of this study. The proposed conceptual model and hypotheses were tested using Structural Equation Modeling (SEM), while scale reliability and validity was confirmed using SPSS 23. Further, AMOS 23 was used to test the model fit. The findings indicated that all seven proposed hypotheses are significant. Therefore, indicating that consumer motives have a positive influence on a consumer's attitudes toward participating in co-creation activities, which in turn has an impact on relative advantage, complexity and compatibility. Lastly, the results indicate that relationships exist between relative advantage, complexity and compatibility, respectively and adoption intention. This study adds to contextual knowledge of co-creational adoption within digital banking, and provides managers with significant insight into the potential success of digital customization and how banks can benefit from digital co-creation.

Keywords—Co-creation, digital, banking, adoption, South Africa.

1 Introduction

In recent years the adoption of advanced technologies that include mobile banking services has grown exponentially among consumers and service providers in the financial sector [1], [2], [3]. South African financial institutions are described as well developed, proactively regulated and on par with global [4]. Although 'concentrated' with four major players, the banking sector remains competitive as each bank continues to broaden its products and services to attract new customers and satisfy its existing client base [5]. The competitive and dynamic nature of the banking sector is a response to

forces of change in the context of technology, customer behavior and regulation [6]. Banks have evolved from paper-based banking services provider modern paper-less technologies such as mobile banking [7]. In particular, changes in technology and customer behavior have led to the global emergence of digital banking. The emphasis of digital banking is on using technology to design meaningful experiences for the consumer. Furthermore, digital banking focuses on electronic data and online platforms as the core of a bank's operations, instead of being organized around money in branches [8]. Since consumer behavior is changing - consumers want the ability to manage their money anytime and anywhere through personalized digital offers [9] central to the successful implementation of digital banking offerings is the consumer.

The value co-creation process occurs when the supplier provides greater value propositions, with customers deciding value when a product or service is consumed [10]. Previous research on co-creation suggests the outcomes of conducting co-creation activities with consumers are abundant and are mutually beneficial for the firm and its consumers [11], [12]. Research shows that some of the benefits of co-creation include value creation for the firm and consumer [13], [12], [14] increased consumer loyalty and commitment [13], [15] strong competitive advantage [15] and a re-ignition of the firm's growth and innovation capabilities [16], [12]. Thus, the focus of this study is on consumer's motivation on attitudes and adoption intention of co-creational banking activities. In particular, the study aims to fill a gap by determining whether consumer motives influence their attitudes toward participation in co-creation activities in the digital banking industry in South Africa. Additionally, the study presents the impact of relative advantage, complexity and compatibility on adoption intention of co-creational activities.

2 Literature Review

2.1 Mobile banking

Traditional banks expressed their need to engage in mobile banking due to its capability to facilitate services at anyplace regardless of time [17], [18]. Traditionally, banks were organised around the physical distribution of money amongst a network of branches [19]. However, with the emergence of technology, present banks are facing various challenges such as changing consumer patterns and competition, which has resulted in a new kind of banking, mobile banking. Banks such as Egg in Britain [20] and Fidor in Germany [8] exist only on digital platforms. Consequently, a number of banks are extending their services to online platforms, while others are shutting down branches and shifting towards a more digital business model [8]. This is largely done in response to changing consumer behavior patterns as individuals are looking for an experience which is secure and seamless [21]. The results of this transformation in the industry include an enhanced consumer experience, convenience, and consumer empowerment [6], [20], [22]. In addition, banks that pursue a digital transformation can expect improvements in earnings, taxes, depreciation and amortisation of more than 40% [23].

2.2 Co-creation services

Co-creation is based on the premise that firms and consumers must collaborate to create value [14]. This term was initially coined by [14], who emphasized the relevance of co-creation amid the continuously spreading prevalence of the Internet, the challenging competitive environment and consumers who are becoming motivated, empowered and connected. The future of competition and gaining a sustained competitive advantage is therefore based on an individual-centered co-creation system between the corporation and its consumers [14]. The importance of co-creation has been emphasized in a number of related studies. For instance, [12] suggest that consumers are demanding greater levels of personalization and are placing brands under pressure to generate and develop value *with* them, rather than *for* them. Similarly, [24] shares these sentiments and emphasize that co-creation is the strength of the collective intelligence of consumers. Furthermore, the outcomes of conducting co-creation activities with consumers are abundant and are mutually beneficial for the firm and its consumers [11], [12], [14]. According to [25], high levels of consumer involvement in co-creation activities positively influence consumer's attitudes towards a brand, which ultimately leads to high purchase intention. It is therefore imperative for businesses to engage in co-creation with consumers, as they will reap the financial rewards from such engagements.

3 Theoretical Grounding

This study is grounded in two theories, namely [26] Self-Determination Theory (SDT) and [27] Diffusion of Innovation Theory.

3.1 Self-determination theory

Since [26] first proposed the Self-Determination Theory (SDT), it has been popularly used to examine motivational factors that affect an individual's behavior in various contexts. SDT is focused on the processes through which an individual acquires motivation to initiate new behaviors and maintain them over time [28]. Furthermore, the theory is broken down into three areas: needs, level of self-determination and type of motivation. In terms of the present study, the type of motivation is of interest. SDT distinguishes between different types of motivation (intrinsic and extrinsic) based on the reasons that give rise to an action, which regulate an individual's behavior [29].

3.2 Diffusion of innovation theory

The innovation diffusion model developed by [27] is the most popular, in determining how innovations are adopted over time, amongst researchers [30], [31] from various fields such as political science [31], public health [32], and marketing [33]. According to [34], the diffusion of an innovation is the process in which an innovation is communicated through certain channels over time among members of a social system. This

definition suggests that four key elements of the diffusion of innovation exist: (1) innovation, (2) communication channels, (3) time and (4) social system. In terms of the present study, the innovation element is of importance as the theory proposes five attributes (or perceived characteristics) of an innovation, which help consumers decide whether or not to adopt an innovation and the rate at which the innovation is likely to be adopted.

3.3 Hypothesis development

Motives and attitude (H1): Motivation is the driving force behind all behavior and is likely to influence consumers' attitude towards participating in a certain behavior [35]. The relationship between motives and attitudes has been explored in several studies. For instance, [36] conducted a study that investigated the effect of both intrinsic and extrinsic factors in determining the consumer attitudes towards products. The results indicated that intrinsic motives had a positive influence on consumer attitudes toward products. In a study conducted within the context of co-creation, it was found that individuals who participated in co-creation activities are more likely to experience a higher degree of fun and involvement, thus increasing the level of participation with the brand [37]. According to [38], motivations directly associated with attitudes. This assertion was supported by [39] who also suggested that motivation was an antecedent of attitude. Thus, the present study proposes the following:

- **H1:** Motives have a positive influence on attitudes toward participating in co-creation activities.

Attitude and relative advantage (H2): Previous studies have explored the relationship between consumer attitudes and their future behavior intentions [40], [41]. More specifically, in a study conducted by [42] they examined the determinant structure of a consumer's attitude system on the adoption of internet banking among Malaysian customers. The results showed that attitudinal factors play a significant role in the adoption of Internet banking. Thus, if a consumer has a favorable attitude toward participating in co-creation activities, he or she is likely to have intentions to adopt the innovation. Based on the aforementioned studies, it is evident that attitudes toward participation in co-creation activities impact a consumer's perceptions of relative advantage of a co-created innovation. Thus, the present study proposes the following:

- **H2:** There is a positive relationship between attitudes toward participating in co-creation activities and relative advantage.

Attitude and complexity (H3): [43] suggested that complexity influences attitudes. In line with the hypothesis proposed by [43], [44] found that adoption rate of technology is higher if it is easy to use. [45] supported this finding that complexity adversely affects Internet usage and thus, complexity in mobile applications would negatively impede the development of a positive attitude towards applications. Similarly, [46] found that if users' view mobile banking services as easy to use, they form positive attitudes towards them [47].

- **H3:** There is a negative relationship between attitudes toward participating in co-creation activities and complexity.

Attitude and compatibility (H4): In the majority of studies on consumer attitudes and compatibility, it was found that the more favorable consumers' attitudes towards an innovation, the more likely that they will perceive it as being compatible with their current knowledge base. Compatibility refers to the degree to which an innovation is perceived to be compatible with individuals existing values, beliefs, habits and previous experiences [48]. Attitude is directly influenced by compatibility [49]. However, compatibility affects attitude toward behaviour with the aid of ease of use and competitive advance offered by the technology [49]. The notion that perceived compatibility directly influenced consumer attitudes toward adopting a technology was also supported by [50] who examined business to customer (B2C) attitudes in the adoption of technological innovations. The present study therefore proposes the following hypothesis:

- **H4:** There is a positive relationship between attitudes towards participating in co-creation activities and compatibility.

Relative advantage and adoption intention (H5): Various researchers have studied the relationship between relative advantage and adoption intention. For instance, [42] suggest that relative advantage is an important factor in determining the adoption of new innovations as the construct is positively related to its rate of adoption. Similarly, [51], and [52] confirmed these findings and concluded that relative advantage is the best predictor of adoption intention. Specifically, [46] examined the effect of innovation attributes such as relative advantage on consumer attitudes and behavioral intentions of consumers to adopt mobile banking. The results of the study found that relative advantage does indeed have a positive impact on intentions to adopt or continue to use mobile banking. Thus, the present study proposes the following:

- **H5:** There is a positive relationship between relative advantage and adoption intention.

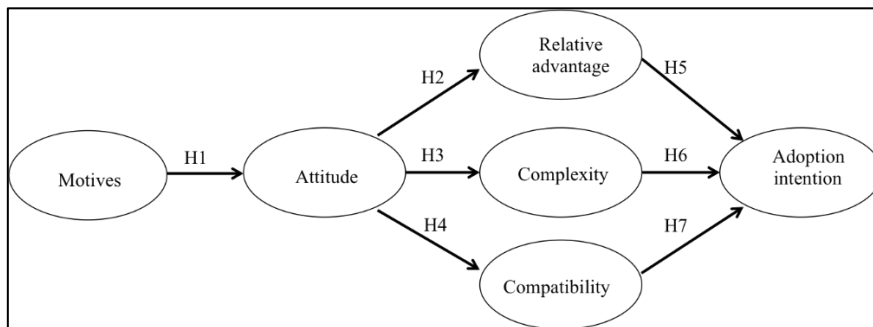
Complexity and adoption intention (H6): Several studies have explored the relationship between complexity and adoption intention. For example, [45] found that complexity negatively influences the adoption of an innovation. For this reason, complexity is described as the opposite of ease of use, which has been found to directly impact the adoption of the internet-based technologies [42]. Thus, it is suggested that the less complex something is to understand and use, the more likely a consumer will adopt it [52]. [53] considered the inherent complexity of new technology and investigated the impact of complexity on a consumer's intention to use a new technology. The results indicated that both complexity and perceived difficulty had a negative impact on the consumer's behavioral intention. Thus, the present study proposes the following:

- **H6:** There is a negative relationship between complexity and adoption intention.

Compatibility and adoption intention (H7): A number of studies have investigated the relationship between compatibility and adoption intention and the majority of results point towards evidence that an innovation is more likely to be adopted when it is compatible with an individual’s current value system. [42] suggest that compatibility may be the most relevant attribute influencing the potential adoption of an innovation. Intention to adopt is influenced by attitudes [54]. The findings of [55] confirmed that the compatibility of an innovation with a consumer’s value system has a significant positive and direct effect on the consumer’s intentions. Thus, it can be said that a lack of compatibility of an innovation with a consumer’s lifestyle, needs and experiences may negatively affect his/her use of the innovation [31]. [56] investigated the intentions of taking up e-learning were examined and the findings revealed that compatibility had a significant influence on the e-learning adoption intention when compared to other relevant innovation attributes. Accordingly, it is evident that compatibility has a relationship with adoption intentions. Thus, the present study proposes the following:

- **H7:** There is a positive relationship between compatibility and adoption intention.

Figure 1 presents the proposed conceptual model for the study. Firstly, consumer motives represent the predictor variable with adoption intention as the outcome variable. Within the proposed model, there are four inter-construct variables, namely: attitude toward the act, relative advantage, complexity and compatibility. It is therefore proposed that consumer motives have a positive influence on attitudes toward participating in co-creation activities, which in turn has a positive impact on relative advantage and compatibility and a negative impact on complexity. It follows that relative advantage and compatibility have a positive relationship with adoption intention, respectively, while complexity has a negative relationship with adoption intention.



Source: Venter de Villiers, Chuchu & Chavarika (2020)

Fig. 1. Proposed Conceptual Model

4 Research Methodology

The present study assumed a positivist research approach and examined the relationships between the dependent and independent variables. By means of a quantitative

method, the research instrument was compiled from existing scales that were adopted for the purpose of the present study. The proposed conceptual model and hypotheses were tested using Structural Equation Modeling (SEM), while scale reliability and validity was confirmed using SPSS 23. Further, AMOS 23 was used to test the model fit.

4.1 Sample and data collection

The population of interest for the purpose of this study was individuals between the ages of 18 and 64 years of age, all who have active bank accounts within South Africa. A convenient sample of 400 respondents were selected, with a response rate of 85% and therefore 339 completed surveys were collected. The data collection was conducted amongst two hundred and fifty respondents that belong to the Generational Y cohort. By means of random sampling, respondents were selected on university campuses as well as the researcher's Facebook friends that fall within this age group. [57] recommended a minimum sample size of at least 100, whereas researchers with more recent work argue that 100 is a poor sample size and suggest that 200 is fair and 300 is good [58]. [59] suggest that when using Structural Equation Modeling, the minimum size of a sample should be 200. Thus in light of all the above recommendations in past literature, the study obtained 339 completed surveys from an initial sample of 400. The sample included both male and female students from different social and financial backgrounds.

4.2 Measurement instrument and questionnaire design

The measurement instrument comprised a questionnaire of 30 statements. The research scales were adopted from previous measurement scales to suit the context of the present study. The first variable, motives, was measured using an adaptation of [60] and [61] motivational scales. To measure attitude, and adaption of [62] scale was used. Relative advantage, complexity and compatibility were measured using [63] scale items, while adoption intention was measured using an adaptation of [64] and [65] scale items. All scales were measured using a 7-point Likert scale.

4.3 Ethical considerations

In relation to research ethics, the researchers received an ethics clearance certificate that granted permission to collect data from human subjects. This was because the data concerned confidential banking habits of consumers. All participants were informed that the research was anonymous and confidential. Last, the participation in the research was voluntary and respondents were allowed to withdraw at any stage.

5 Findings / Results

This section provides an overview of the respondent profile, the model fit and hypotheses results.

Table 1. Sample Profile

Gender		
	<i>Frequency</i>	<i>Percent</i>
Male	201	59.3
Female	138	40.7
Total	339	100.0
Age		
	<i>Frequency</i>	<i>Percent</i>
18 – 24	203	60
25 – 34	54	16.0
35 – 44	34	10.0
45 - 54	48	14.0
Total	339	100.0
Level of Study		
	<i>Frequency</i>	<i>Percent</i>
High school	38	11.0
Diploma	14	4.0
Undergraduate	122	36.0
Postgraduate	166	49.0
Total	339	100.0

Source: Compiled from SPSS output (2018)

5.1 Assessing measurement model fit

This section presents the analysis of model fit by means of assessing various indices in order to determine the degree of acceptable or good model fit (Table 2). The following indices are examined: Chi-square (CMIN), the normed fit index (NFI), relative fit index (RFI), incremental fit index (IFI), Tucker-Lewis Index (TLI), goodness of fit index (GFI), and the Root Mean Square Error of Approximation (RMSEA). Table 2 presents the results of the model fit indices.

Table 2. Model Fit

CMIN	NFI	RFI	IFI	TLI	CFI	RMSEA
2.39	0.96	0.92	0.98	0.95	0.98	0.06

Source: Compiled from AMOS output (2018)

It is evident from Table 2 that all the model fit indices reach the required thresholds: the RMSEA indicated a value of 0.06, which is below 0.08 as recommended by [66]. Furthermore, the CMIN, NFI, RFI, IFI, TLI and CFI all meet the recommended threshold of 0.9 [67].

Table 3. Hypothesis Results

Hypothesis		P Value	Outcome
Motives → Attitude (H1)	0.77	***	Supported and Significant
Attitude → Perceived Relative advantage (H2)	0.81	***	Supported and Significant
Attitude → Perceived Complexity (H3)	-0.32	***	Supported and Significant
Attitude → Perceived Compatibility (H4)	0.54	***	Supported and Significant
Perceived Relative advantage → Adoption intention (H5)	0.27	***	Supported and Significant
Perceived Complexity → Adoption intention (H6)	-0.17	0.002	Supported and Significant
Perceived Compatibility → Adoption intention (H7)	0.34	0.001	Supported and Significant

Source: Compiled from AMOS output (2018)

5.2 Hypotheses results and path coefficients

An examination of the results recorded in Table 3, found that all of the hypotheses were significant, with two of the seven hypotheses indicating an inverse relationship (H3 and H6). On closer inspection, the strongest relationship was found to be hypothesis two, which tested the relationship between attitude and perceived relative advantage (0.77). This implies that if consumers have a positive attitude towards co-creational innovation, they will perceive a greater level of relative advantage towards engaging in co-creational activities. Another strong relationship was found between motives and attitude (H1). In other words, if they have a strong motivation for engaging in a co-creational activity, they are more likely to have a positive attitude towards co-creation. The weakest relationship exists between perceived relative advantage and adoption intention (H6), with a path coefficient of 0.27. From this result it is evident that although consumers may perceive the co-creational activity as providing them with a relative advantage, they may be hesitant towards adopting the innovation. The two inverse relationships were found to be between attitude and perceived complexity (H3), and perceived complexity and adoption intention (H6) respectively. This indicates that the more positive their attitude is towards co-creation, the less complex they would perceive the activity to be.

6 Discussion and Conclusions

The findings of the present study provide consistent results in light of previous literature. For instance, the first hypotheses indicated that consumer’s motives have a positive influence on attitude towards participating in co-creation activities. Previous literature from a number of authors have found that intrinsic and extrinsic motives influence consumers’ attitude towards adopting an innovation, a product or participation in a certain behavioural activity [36], [37], [68], [69]. The second hypothesis indicated that consumers’ attitudes have a positive influence on participating in co-creation activities if they perceive to gain a relative advantage. Previous studies have explored the relationship between these constructs and found a positive relationship [40], [41]. In other words, if consumers perceive to gain an advantage from purchasing a product, they are more likely to have a favorable attitude towards toe innovation. Thirdly, a negative

relationship was found between consumers' attitudes towards participating in co-creation activities and their perceived complexity of engaging in such activities. This finding is consistent with a number of studies [47], [45], [44], [46], which provided evidence that consumers' are more likely to have a favourable attitude towards adopting an innovation if they perceive it as being easy to use. Fourthly, attitude was found to have a positive relationship with consumers' perceived compatibility of engaging in co-creation activities. In the majority of studies on attitude and compatibility, it has been found that consumers are more likely to have a favorable attitude towards an innovation if they perceive it to be consistent with their current knowledge base, beliefs and value systems [72], [49], [50]. The fifth hypothesis provided evidence of a positive relationship between perceived relative advantage of participating in co-creation activities and adoption intention. In previous studies, [42] found that relative advantage is an important determinant of adoption intention of new innovations. Similarly, a number of studies provided consistent results [51], [52]; [46].

The results from hypothesis six indicated a negative relationship between consumers' perception of the complexity of participating in the co-creation and their adoption intention. A number of studies have explored this relationship [45], [52], [42], [53]. These studies found that the less complex an innovation is to understand, the more likely that consumers will consider adopting it. Lastly, a positive relationship was found between consumers' perceived compatibility with participating in the co-creation activity and their intention to adopt such. Previous studies [56], [42], [31], [55] have confirmed that the more compatible an innovation is with an individual's values, current knowledge base and value system, the more likely that they will adopt the innovation.

6.1 Managerial implications

Based on the results of the present study, a number of practical managerial implications for banks exist. The study acts as a guide for banks when developing marketing strategies relating to innovation and co-creation in digital banking. For instance, banks could initiate activities that speak to their consumers' sense of fun, interest and excitement. In other words, if consumers are motivated by the act of enjoying the co-creational activity, they are likely to have a favorable attitude towards using it. Marketers should therefore focus on the 'fun' and 'enjoyment' aspect in their branding and marketing message. For example, invite consumers to be part of the brainstorming session when creating banking products or designing the smartphone application/website. Further, banks should communicate and emphasize the advantage that consumer will get from using the innovation. For example, have a campaign that focuses on the time that they may save from using the innovation or the ability of the customer to 'customize' their banking experience. Banks could also explore benefits such as user-friendliness of the innovation when consumers are involved in the co-creational process of using the innovation. The advantage that the consumer may get from participating will benefit them, as they might have been part of the development process and such, the product offerings are customized to suit their individual needs. Additionally, attitudes towards participating in co-creation activities have a positive impact on a consumer's perception of the compatibility of the innovation.

6.2 Limitations and direction for future research

Although this study has made great contributions to literature and practitioners, some limitations exist. Firstly, this study was conducted in the context of digital banking. This may limit the results to the banking industry only and may influence the generalizability of the results. Additionally, the study was conducted in an emerging economy, South Africa, and the results may not be generalizable to emerged economies. Lastly, the study was conducted using various channels including online and in person. The online channel may have posed a limitation, as respondents may have not been forthcoming when discussing banking habits online. Additionally, online surveys are sometimes rushed through or not fully understood as a researcher is present to monitor and assist respondents if need be. Having highlighted the importance of this study, future research could compliment this study. For example, researchers can determine the perceptions of co-creation within the organization (employees and management). For co-creation to be successful management in the organization must be willing to lead the firm into a new marketing logic (Service-Dominant Logic) and employees must buy into the transformed role of the firm which focuses on on-going mutually beneficial relationships [15]. Additionally, researchers can replicate the study, but instead apply it to different context instead of the banking industry. [70] suggest that co-creation strategies can exist in various contexts including in social innovation where citizens are involved to develop solutions in areas of healthcare and education [71]. Conceptually, potential hypothesis could be tested that were left-out of this study. For instance, further research could involve the analysis of the relationship between relative advantage and complexity. In addition it could also be necessary to test the relationship between complexity and compatibility. This is because of the perception of risk that banking customers in South Africa place on banking services [73]. This would possibly reveal how important the mediators between attitude and adoption and intention are? The mediators, relative advantage, complexity and compatibility could be removed in order to assess the direct impact that attitude has on adoption intention. Lastly, researchers can consider a study that looks at the tangible results of co-creation, rather than consumers' intentions to adopt.

7 References

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