

Explaining customer's continuance intention to use mobile banking apps with an integrative perspective of ECT and Self-determination theory

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Abstract

Digital payments evolve as the next generation system to take over the global commerce landscape in the same manner in which internet and mobile telephony had dominated the traditional communication domains. The use of mobile banking apps has spurred the digital medium across the globe and resulted in a fundamental shift in retailing practices. The purpose of this paper is to comprehend various factors influencing the customer's continuance intention-behavior to use mobile banking apps. In this study, we developed a research model that encompasses the attributes of Expectation confirmation theory (ECT) and Self-determination theory (SDT). The research model was tested using survey data collected from 744 respondents across various demographics and analyzed using structural equation modeling (SEM) to understand the usage behavior of mobile banking apps in a multi-faceted business environment. The various hypothesis of the research model indicate that mobile banking apps continuance intention usage behavior is strongly influenced by the satisfaction, intrinsic and identified regulations, whereas satisfaction is influenced by the expectation-confirmation, trust, and quality. The research findings reveal that, "An enormous potential are available for marketing managers and researchers to tape these opportunities and plan for continual and sustainable growth of mobile banking apps. "

Keywords: Mobile banking apps, Continuance intention, Self-determined regulations, Expectation confirmation, Satisfaction, Quality, and Trust

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Introduction

The use of mobile phones in business-related transactions has increased dramatically in recent decades, however, the usage of mobile phones in financial transactions is still limited. According to a contemporary report, the use of mobile phones has amplified remarkably in the Asia-Pacific region, but still, users are hesitant 'when it came to the level of ease in using their mobiles phones for financial transaction's (KPMG, 2010). This situation has prompted us to recognize the factors that are inhibiting the use of mobile banking apps. The adaptation of mobile phones for banking transactions is becoming increasingly popular with researchers in the fields of banking and marketing, information systems (Suoranta & Mattila, 2003). Although banks are forerunners in embracing technology in their operations globally (Laforet & Li, 2005) but users still have a lack of interest in utilizing its applications for financial transactions are intriguing many researchers and practitioners. In the contemporary situation, mobile technology, internet, smartphones, and e-commerce have played crucial roles in improving the conventional models of business and have created an unprecedented impact on the society. As per MasterCard Advisors (2013), chief drivers for the digital economy are booming e-commerce, increasing smartphone penetration, Government policies and regulations, expanding banking facilities etc. MasterCard Advisors has categorized various countries into four stages according to their digital capacities—advanced stage, tipping point stage, transitioning stage and inception stage. Singapore, having 61% of transactions done by non-cash methods, leads amongst the advanced countries, followed by the Netherlands, France, and Sweden. Most of the developing countries are in the inception state, including India, Thailand, and Malaysia. This indicates huge potential. Most of the developing countries are in the inception stage, including India, Thailand, and Malaysia at 2%. The

distinguishing features among these stages are its culture, technological development, infrastructure, government policies and adoption behaviors etc. This indicates a huge potential for growth for the inception and transitioning stage countries to exploit key enablers of a cashless economy to increase its non-cash transactions.

There are abundant of research articles on initial adoption and usage of mobile services (Sheng et al., 2008; Aldas-Manzano et al., 2009; Kim et al., 2009a; Mohammadi, 2015; Fawzy and Esawai, 2017) whereas the post-adoption (Lee et al., 2009; Kim and Son, 2009; Hsu and Lin, 2015) has received less attention. Initial adoption reflects consumer's first-time usage of mobile services, whereas post-adoption reflects their continuance intention and repeated usage. For mobile service providers, initial adoption means transforming potential users into actual users, whereas post-adoption means customer retention and transforming existing users into loyal users. During the post-adoption period, users have experience/information about mobile banking services and accordingly, they are deciding whether to discontinue or continue usage of the mobile banking apps. To understand post-adoption phase, Expectation confirmation theory is extensively used by current researchers (Thong et al., 2006; Lee, 2010; Bhattacharjee, 2001b), whereas to comprehend the various behavioral and motivational factors, Self-direct regulations are best in the current scenario.

An academic framework that is being progressively applied to study customer motivation, satisfaction, and future behavior is the self-determination theory (Ntoumanis, 2005), whereas expectation confirmation theory (ECT) is extensively used to study customer satisfaction and continuance intention, and their antecedents (Bhattacharjee, 2001a, 2001b). ECT alone might be used to envisage customer loyalty through understanding the direct influence of satisfaction (Dabholkar et al., 2000; Olsen, 2002; Taylor and Baker, 1994), but

such a direct influence on loyalty has been challenged by researchers (Andreassen and Lindestad, 1998) suggesting a probable gap that is unexplored between satisfaction and loyalty. This probable gap was bridged by few researchers (Ntoumanis, 2005; Lin et al., 2009) by introducing self-determined regulators between satisfaction and loyalty. Ntoumanis (2005) has applied SDT as a mediator between student satisfaction and their behavioral intentions; similarly, Standage et al. (2005) used SDT between student satisfaction and their positive effect toward the educational service provided. Lin et al. (2009) studied SDT as a mediator between satisfaction and loyalty. Consequently, it becomes imperative for us to integrate SDT and ECT models together for exploring loyalty, because satisfaction is a critical success factor for both the theories. To bridge this gap between satisfactions vs. loyalty and improve the modeling characteristics of the earlier researches, we conceptualize an integrative model of Expectation confirmation theory (ECT) and Self-determination theory (SDT). We added two new constructs here namely trust and quality because these two constructs having a very strong influence on the satisfaction (Nicolaou and McKnight, 2006; Kuo et al., 2009) and satisfaction is considered here key construct between ECT and SDT. This study improved from previous researches in three critical ways. First, this study is one of the earliest to integrate SDT and ECT to explore continuance intention in the field of Mobile banking apps. Second, there are a number of articles on SDT to learn about users' perceptions in the educational services (Standage et al., 2005), but its application on understanding customers' perceptions in the field of commercial services is still lacking and deserves more attention. Hence, this study focuses on the application of SDT in Mobile banking apps, so that customer perception and subsequent loyalty may be effectively clarified for business management. Third, incorporation of two new constructs namely trust and quality to comprehend complete information about Mobile banking apps has

improved the modeling capabilities of the conventional models and encompasses advanced consumer satisfaction features leading to motivational factors and subsequently continuance intention. The hypothesized model is then validated empirically using data from a field survey of customers using mobile banking apps.

The study is organized as follows: Section 2 presents the literature review and theoretical background of the study. Section 3 proposes the research model and hypotheses along with a brief description of each construct. Section 4 encompasses the instrument development and data collection process. Section 5 presents the results and discussion on the developed model. Section 6 presents the academic and managerial implications. Finally, section 7 concludes with limitations and future scope of the study.

Literature Review

The digital payment segment across the global economy is the most vibrant sector facilitated by the launch of pioneering technologies, innovations and a wide range of applications to consumers. Nevertheless, it is important to mention here that very few academic researches (Bhardwaj et al., 2013; Hsu et al., 2014) have been undertaken in this field. Polasik et al. (2012) illustrated that the academic arena has not complemented with the significant changes and excitement reported in trade literature of digital payments. As per eMarketer (2016) in the US, fewer than 20% smartphone users have embraced mobile payments and the reason for such low acceptance are security concerns, a patchwork of merchant acceptance, and lack of perceived value. A number of previous researches highlight the impact of motivational factors on the intentions to use a new e-learning system (Workman, 2014; Zhu and Chan, 2014) and highlight the importance of self-determination theory motivational factors.

Self-determination Theory (SDT)

A critical framework that has been in use to assess the consumer's motivation, satisfaction and loyalty is the self-determination theory. The theory encompasses two basic types namely intrinsic and extrinsic motivation (Deci and Ryan, 1985, 1991). Intrinsic motivation leads to a behavior that inherently generated towards inherent satisfaction, challenge or enjoyment. Intrinsic motivation is supported by three basic human psychological needs for competence, autonomy, and relatedness (Niemi & Ryan, 2009). Whereas, extrinsic motivation is built upon external factors and can be further categorized into different categories, namely external regulation, introjected regulation, identified regulation and integrated regulations. External regulation is actions controlled by contingencies

external to the humans, such as threat, punishment, reward etc. The Introjected regulations are characterizing by the individual internalizing towards external regulations. For example, a person uses a service not due to his wish, but he feels that he should use it (Lack of confidence or self-guilt). Similarly identified regulation is defined as the acceptance of a regulation as being one's own. Lastly, integrated regulations share many properties with intrinsic motivation, although they are still considered extrinsic because they are executed to attain separable outcomes rather than for their inherent enjoyment. The self-determination continuum illustrated in Figure 1 taking reference from Chen and Jang (2010), Ryan & Deci (2000) encompasses various characteristics of amotivation, extrinsic and intrinsic motivation.

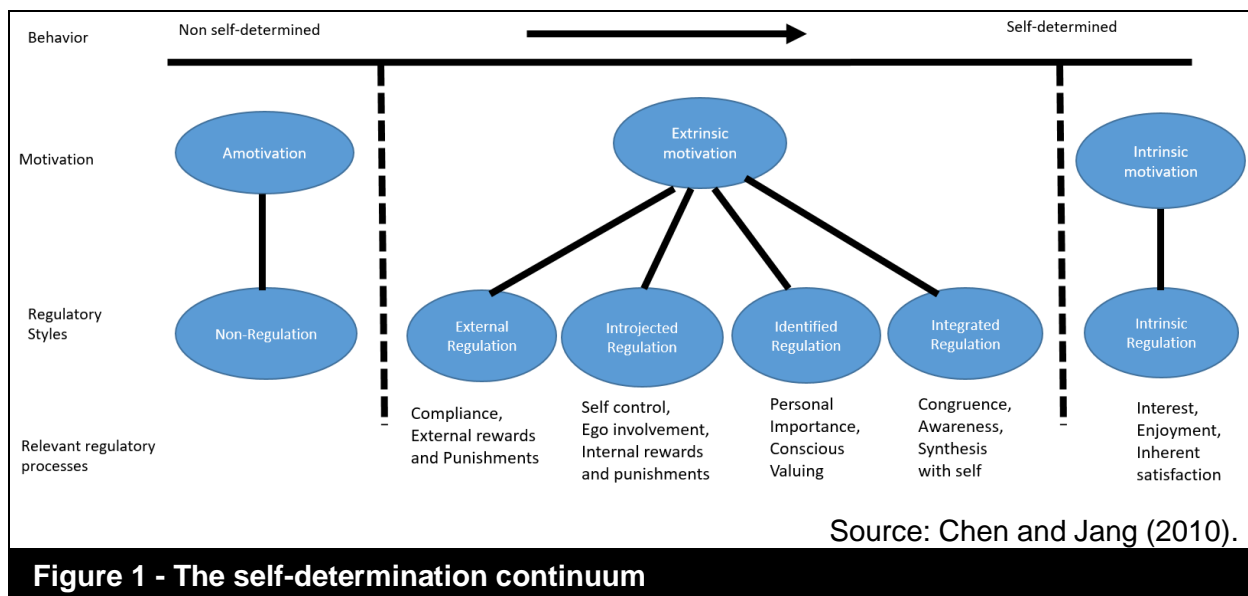


Figure 1 - The self-determination continuum

These dimensions of motivation play an important role in affecting customer's perceptions and subsequently loyalty. In this article, we are considering extrinsic and intrinsic types of motivation for determining the continuance intention of consumers. Amotivation is not considered here because it is a non-self-determined type of motivation

and having least impact on the continuance intention as well as not considered in many studies (i.e. Lin et al., 2009). The role of SDT has been extensively used in many disciplines like, education (Niemi & Ryan, 2009; Naeghel et al., 2016), online learning (Hartnett, 2015; Sørrebø et al., 2009) etc. The motivational factors of SDT play an

important role in determining the continuance intention behaviors (Ntoumanis, 2005; Lin et al., 2009) and linked with expectation confirmation theory. The basics of expectation confirmation theory will be discussed in the next section.

Expectation-confirmation Theory (ECT)

In recent years, the expectation-confirmation theory has received a significant level of attention for the study of post-acceptance behavior and continued usage of IT (Thong et al., 2006; Lee, 2010; Bhattacharjee, 2001b; Hsu and Lin, 2015).

In Expectation-Confirmation model (Figure 2), an expectation vs perceived performance leads to post-purchase satisfaction and thus, a stimulus to repurchase intention. The ECT may be explained as self-perception/expectations theory, where individuals continually adjust their perceptions as they acquire new information by observing others' and their own behaviors (Bhattacharjee, 2001a, 2001b). Therefore, a user may keep updating his/her expectations towards using a product/service as they gain more experiences from using it.

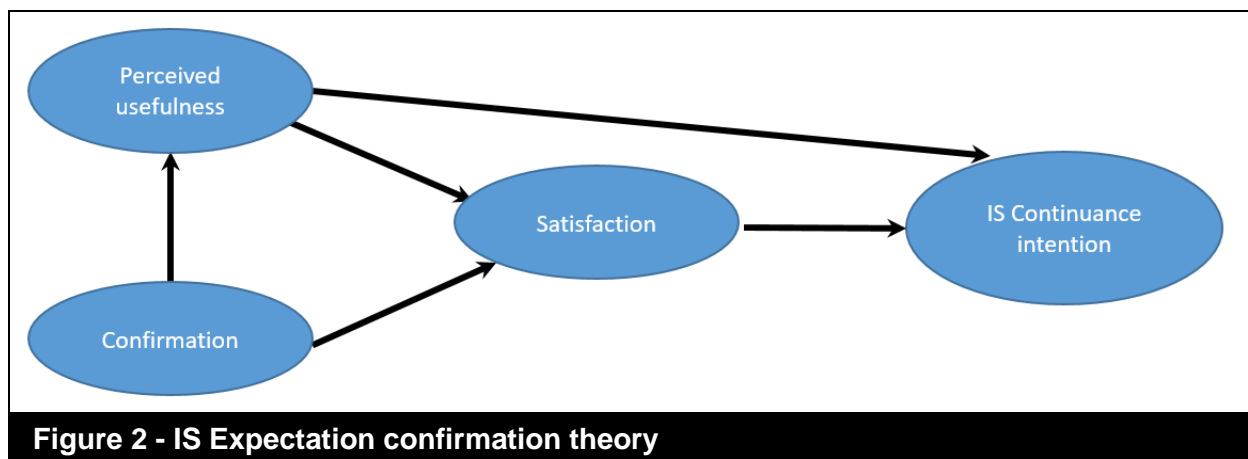


Figure 2 - IS Expectation confirmation theory

Several studies have established the validity of ECT across a wide range of IT products and services (Lin, 2012; Stone and Baker-Eveleth, 2013). Researches have also revised the ECT by integrating additional variables with specific contexts (Thong et al., 2006; Limayem and Cheung, 2008; Lin et al., 2012). For example, Thong et al. (2006) incorporated a new variable named perceived enjoyment to study the mobile internet service continuance intention. The acceptance of the extended expectation-confirmation model is an increasing trend due to its adaptability to accommodate the new variables in different frameworks and laid the foundation for our research. This study adopts ECT as a theoretical base because the mobile banking app continuance intention is analogous to the

post-adoption behavior, which may vary across different applications, service providers and also through various user interfaces. The research model and hypothesis in the field of mobile banking apps will be discussed in the next section.

Integration of SDT and ECT

In order to provide a solid theoretical base to examine the continuance intention to use mobile banking apps, this paper drew upon two theories. SDT has been used in many studies to predict and understand the motivation, and future behavior of online services. The second theory ECT is used to examine the post-adoption behavior of services. Bhattacharjee (2000) tried to use expectation-confirmation theory to explain

continuance use of services after successful adoption, which occurs very often. The more satisfied with the post-adoption experience, the higher the pre-adoption expectations were met, and the more likely that a user continues to use the information system. SDT variables, such as intrinsic regulations, identified regulation, introjected regulation, external regulation, integrated regulation, cannot alone explain the incongruent pre- and post-adoption states. Pre-adoption states require more uncertainty-coping activities than do post-adoption states because "the level of uncertainty declines as individuals move through the stages of the adoption process" (Karahanna and Straub, 1999). Considering the two models and literature discussed, this study advances the literature after post adoption of mobile banking apps and motivational factors which leads to continuance usage of services. This study integrates ECT and SDT to understand the continuance adoption to use mobile banking apps includes two additional constructs – trust and quality of mobile banking apps.

Research Model and Hypotheses

In this study, as discussed, the expectation-confirmation theory along with Self-determination theory is used to investigate the continuance intention-behavior in the field of mobile banking apps. The developed research model is illustrated in Figure 3. The first part of the proposed model is based on Expectation confirmation theory, whereas the second part focuses on, satisfaction and is linked by intrinsic and extrinsic motivations of SDT and subsequently leading to continuance intention-behavior. Nineteen hypotheses are proposed in the research model and these hypotheses are empirically tested based on survey findings, which will be discussed in subsequent sections. Each construct of research model is elaborated below in detail along with related hypothesis and its association with other constructs.

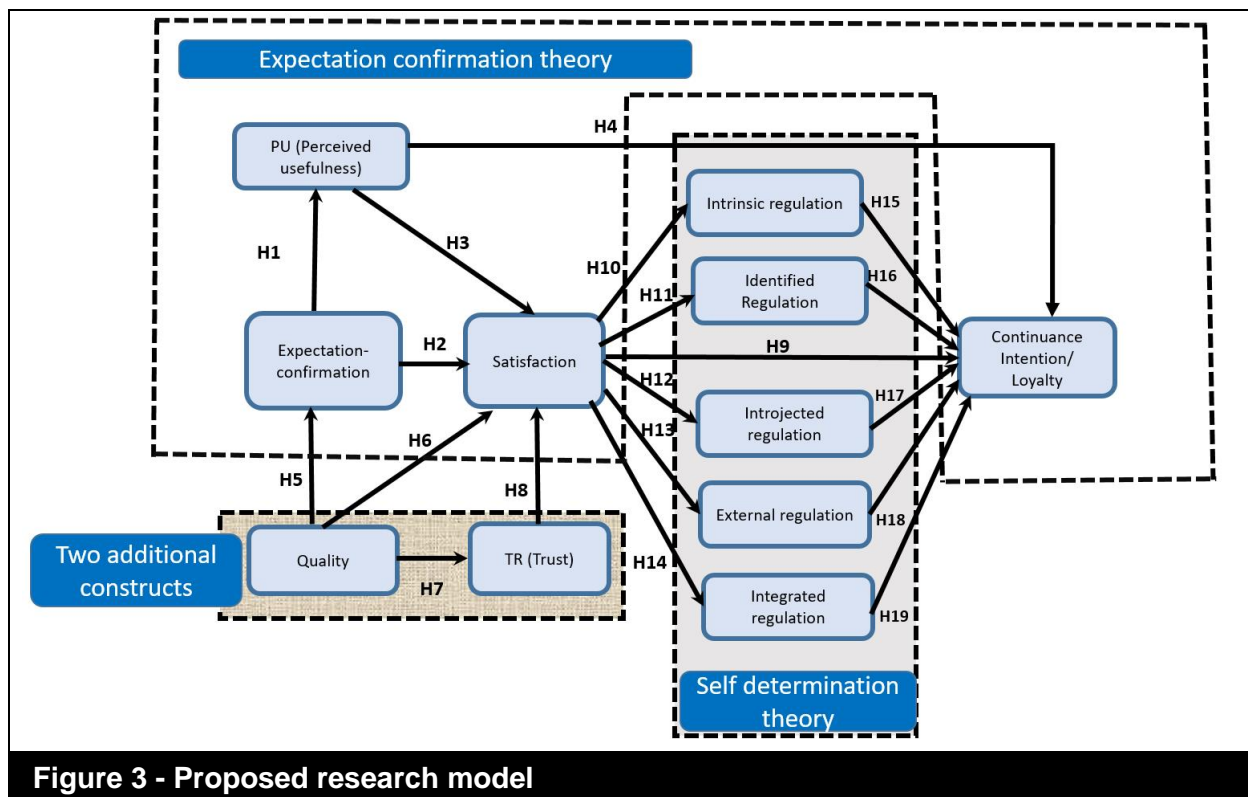


Figure 3 - Proposed research model

Expectation-confirmation and PU, Satisfaction

Expectation-confirmation is defined as the extent to which user perceives that their initial expectations are being confirmed during actual use. Bhattacharjee (2001a, 2001b) proposed a revised expectation confirmation theory to demonstrate users' post-adoption behaviors in the field of information systems and illustrated that users' expectation grows with the increased experience, and post adoption expectation will be based on the actual user experience. When users' expectation is confirmed, their perceived usefulness and satisfaction will be improved (Bhattacharjee, 2001b; Thong et al., 2006; Venkatesh et al., 2011). Users have relatively high expectations towards mobile banking when mobile banking service providers meet these expectations, then users will be satisfied (Laforet & Li, 2005; Chung and Kwon, 2009). Thus, the following hypothesis is derived here to confirm the relation of expectation-confirmation on PU and satisfaction in the field of mobile banking apps.

H1: Expectation-confirmation significantly affects perceived usefulness of mobile banking apps.

H2: Expectation-confirmation significantly affects user satisfaction of mobile banking apps.

Perceived Usefulness and Satisfaction, CI

Perceived usefulness is the main element of the Technological acceptance model (Davis et al., 1989) signifies the utility associated with using mobile services. As per Venkatesh et al. (2003), perceived usefulness is found to be a stable variable envisaging user behavior during both initial adoption and postadoption phase, whereas the effect of perceived ease of use will gradually diminish and become insignificant with the increased user experience. More precisely, PU demonstrates a positive relationship with satisfaction (Bhattacharjee, 2001b; Limayem et al., 2007), and the

continuance intention (Agarwal and Karahanna, 2000; Bhattacharjee, 2001b). In addition, users always expect to acquire useful mobile services, such as ubiquitous and convenient services (Shen et al., 2010). When these expectations are fulfilled, they will be satisfied (Spreng et al., 1996). Earlier research has revealed the significant effects of perceived usefulness on mobile users' satisfaction and continuance intention (Shin et al., 2010; Lee et al., 2007; Thong et al., 2006). Thus following hypotheses are developed.

H3: Perceived usefulness of mobile banking apps significantly affects user satisfaction.

H4: Perceived usefulness of mobile banking apps significantly affects continuance intention.

Quality and Expectation-confirmation, Satisfaction, Trust

In our integrative research model, satisfaction is considered as key construct between ECT and SDT, whereas satisfaction is strongly influenced by two important constructs namely trust and quality (Nicolaou and McKnight, 2006; Kuo et al., 2009). Quality is a broader term comprising many facets of information, data exchange and user behavior aspects of Mobile banking applications. Here, quality includes both technical quality of mobile banking apps and the quality of information being provided to consumers. Technical quality refers to the consistency of the apps accessibility, ease of use, customer interface, system reliability, data accuracy, system flexibility and the response time (Lin, 2008; DeLone & McLean, 1992). Similarly, information quality refers to the reliability, timeliness, relevance, completeness, and accuracy of information generated by mobile phone banking (Chiu, Hsu, & Wang, 2006; Lin, 2008). Many researchers acknowledged the importance of quality in understanding the users' behavioral intention towards information system confirmation, use and satisfaction (DeLone & McLean, 1992, 2003; Jennex, Amoroso &

Adelakun, 2004; Xu et al., 2013; Lee et al., 2009). Earlier research confirmed that quality is a key performance index in mobile communication and an important antecedent to confirmation, satisfaction (Lai, 2004; Roca et al., 2006; Chung and Kwon, 2009). Thus positive relationship between mobile banking apps quality and expectation-confirmation, satisfaction are presented by the following hypothesis.

H5: Mobile banking apps quality significantly affects expectation-confirmation.

H6: Mobile banking apps quality significantly affects user's satisfaction.

In the updated IS success model (DeLone & McLean, 2003), Quality is considered as the key predictors of information system success. Teo et al. (2009) discussed the importance of Quality and trust in e-government successes. In the field of relationship marketing (Athanasopoulou, 2009; Dwyer et al., 1987; Morgan & Hunt, 1994), quality is another important construct required for trust and long-term relationship building with customers. Nicolaou and McKnight (2006) examined the effect of quality on trusting beliefs in inter-organizational data exchange. Hsu et al. (2014) also illustrated that the quality of a website is positively related with the trust of the website for determining continuance intention. Earlier researchers have shown that various quality matrices have a significant impact on the trust in online data exchange (Doney and Cannon, 1997; Teo and Liu, 2007; Nicolaou and McKnight, 2006). Thus, following hypothesis is developed here for quality and trust.

H7: Mobile banking apps quality significantly affects users trust in mobile banking apps.

Trust and Satisfaction

The recognition of mobile banking depends not only on the user's acceptance of internet technologies as a means of feasible transactions but also on individuals' acknowledgment of web merchants as trustworthy (Pavlou, 2003). Trust can be

defined as the belief that other party will behave in a socially accountable way and by doing so, will satisfy the trusting party's expectations without taking advantage of its vulnerabilities (Gefen, 2000). Information exchange in a trustful environment is crucial for online banking. Consumers' trust can only be encouraged if the risks related to online purchase are reduced to a level consumers can tolerate (Chen & Tan, 2004). Few studies (Suh and Han, 2003; Narayanasamy et al., 2011) illustrated that importance of trust in the adoption of an electronically based financial system and subsequently impacting intention and satisfaction. Trust is specifically important for customers to adopt products with inherent risks such as internet banking (Lee and Turban, 2001) and play a pivotal role in deciding the satisfaction. Many researchers have demonstrated that trust is an essential factor for customers to shop and do transactions on the internet (Lee and Turban, 2001; Lu et al., 2008). The study of Kim and Hwang (2005) on mobile commerce also indicated that to adopt mobile commerce systems, 'trust' was the most prominent factor among the seven factors affecting the adoption and satisfaction. Howcroft et al. (2002) also pointed out that consumers generally had high trust in the bank, whereas they have weak trust in the new mobile technology, thus generating a trustful mobile banking app is the prime task for services providers to generate confidence among users. Many recent pieces of research (Chung and Known, 2009; Kim et al., 2009a; Hsu et al., 2014) highlighted the importance of trust on satisfaction in the field of mobile technology and online commerce, which is developed through continual interactions between buyers and sellers. Kim et al. (2009b) establish that trust has direct and indirect effects on a customer's purchase decision and also has a long-term influence on consumer e-loyalty through satisfaction. Thus, a more trusting buyer has a more satisfaction as compared to a less trusting buyer and the following hypothesis is derived.

H8: Trust in mobile banking apps significantly affects user's satisfaction.

Satisfaction and CI

Satisfaction is a key determinant in the post-adoption behavior (Bhattacharjee, 2001b; Limayem et al., 2007) and influences the information system use and system success. Satisfaction is the result of comparison followed by evaluation and an important construct of ECT. If users are satisfied with the mobile banking apps based upon their previous usage experience, then a high level of trust will be formed and they will continue to use mobile banking apps. Limayem and Cheung (2008) illustrated that satisfaction has a strong impact on the continuance intention with regards to information system usage. ECT states that the customers' intention to re-purchase a product or service is primarily determined by their satisfaction with the previous use of the product or service (Hsu and Chiu, 2004; Bhattacharjee, 2001b; Zhou, 2011). There are many pieces of research in the field of mobile banking/mobile services (Kuo et al., 2009; Shin et al., 2010, Kim et al., 2009b) highlighted the significant relationship between satisfaction and continuance intention. Thus following hypothesis is made stating a positive relationship between satisfaction and CI:

H9: Mobile banking apps satisfaction significantly affects user continuance intention.

Satisfaction and SDT Variables

As per Deci and Ryan (2000), customer satisfaction based upon customer needs is requisite for optimal psychological functioning. Satisfaction is an important mediator between confirmation and SDT motivational variables (Standage et al., 2005; Lin et al., 2009). The motivation of customers is strengthened once they have experienced the good post-purchase services, consequently leading to their Continuance intention-behavior. In this article, we are considering intrinsic and extrinsic motivational factors between

satisfaction and continuance intention of mobile banking apps. When the customer satisfaction is accomplished, customers are strongly motivated by their intrinsic interests towards the service (intrinsic regulation), acknowledgment of the importance of the service (identified regulation), prevention of guilt, feelings of worth (Introjected regulation), compliance of rules and avoidance of punishments (external regulation) and reinforcing own beliefs (integrated regulation) in accordance with self-determined factors.

The intrinsic motivation is most self-determined type of motivation which refers to the engagement in activities for their own sake of pleasure, interest, and satisfaction that derives directly from the use of mobile banking apps. The intrinsic motivation construct here describes the natural preference towards unprompted interest, adaptation, mastery, and exploration that characterizes a principal source of enjoyment and vitality throughout life. There are many researchers (Ntoumanis, 2005; Lin et al., 2009) highlighted that satisfaction is essential for intrinsic motivation. Thus following hypothesis are derived for satisfaction and intrinsic motivation.

H10: Users satisfaction significantly affects intrinsic motivations to use mobile banking apps.

While intrinsic motivation is marked by involvement for their own inherent interest, extrinsic motivation highlights the variety of regulatory styles that are characteristically influenced by external factors. As discussed, four types of extrinsic motivations are used in this article, namely identified, introjected, external and integrated regulations. Identified regulation is a form of extrinsic motivation referred to as a relatively autonomous regulatory style described by the acceptance of a regulation as being one's own. Deci and Ryan (1991) highlighted that identified regulation signifies fully integrated and self-determined forms of behavior, but still, it is an extrinsically motivated behavior because it is

accomplished in order to achieve individual goals and not for its inherent appeal. The Introjected regulation was positively related to expending more effort, meanwhile, it was also linked to feeling more anxiety and managing more poorly with failures. The external regulation is the least self-determined form of extrinsic motivation, referring to actions controlled by contingencies external to the individual i.e. threat of punishment, rewards (Deci & Ryan, 1985). It could be, various initiatives launched by the government like. launching of new mobile app for cashless transactions, new offerings by digital wallets, withdrawal limits from an ATM etc. motivate consumers to accept cashless transactions due to external factors. Finally, the most autonomous form of extrinsic motivation is termed as integrated regulation. Integration happens when identified regulations have been fully embraced by the self. This transpires through self-examination and bringing new regulations into congruence with one's other values and needs. Integrated forms of motivation having many features similar to intrinsic motivation, being both autonomous and unconflicted, still, it is an extrinsic form of motivation because behavior motivated by integrated regulation is presumed to have instrumental value with respect to some outcome that is separate from the behavior, although it is volitional and valued by the self. Aligned with the postulation made by earlier researchers (Vallerand, 1997; Ntoumanis, 2005; Lin et al., 2009) elaborating the importance of satisfaction on extrinsic motivation, following hypothesis are developed here for satisfaction and extrinsic motivation.

H11: Users satisfaction significantly affects identified regulations to use mobile banking apps.

H12: Users satisfaction significantly affects introjected regulation to use mobile banking apps.

H13: Users satisfaction significantly affects external regulations to use mobile banking apps.

H14: Users satisfaction significantly affects integrated regulations to use mobile banking apps.

SDT Variables and CI

The role of self-determined motivations is an important driving factor whenever dealing with human behaviors. It is important to mention here that satisfaction indicates the customer satisfaction after using the mobile apps, self-determined motivations of customers is reasonably generated only after experiencing the effectiveness of their mobile banking apps. Thus, we need to understand the effects of intrinsic and extrinsic motivations on continuance intention behaviors in the field of mobile baking apps. Cognitive evaluation theory as explained by Deci and Ryan (1985) within SDT having the aim of identifying factors that explain variability in the intrinsic motivation. The CET framework advocates that social environments can facilitate intrinsic motivation by supporting people's inherent psychological needs. It is important to mention here that human will be intrinsically motivated only for those activities that generate intrinsic interest for them, activities that have the charm of novelty, challenge, or aesthetic significance. These in turns signifies that intrinsic regulation is positively influenced their future intention and behavior towards an entity (Store/Brand/Service) and repeat patronage (Ntoumanis, 2005; Lin et al., 2009). Thus following hypothesis is derived for mobile banking apps.

H15: Intrinsic regulation significantly affects Continuance intention to use mobile banking apps.

For activities having no charm, the principles of CET do not apply, because those activities will not be experienced as intrinsically motivated, to begin with. To recognize the motivation for other activities, we need to comprehend the dynamics of extrinsic motivation. As discussed earlier, identified regulation occurs when the person has come to value the behavior due to

some identified external factors, and thus it becomes fully a part of the self. In establishing the identified regulation for mobile banking apps, a person must have his own personal goal to acquaint themselves with these apps, and then only he may likely to pursue and use mobile banking apps. The introjected regulation is another form of extrinsic motivation related to ego involvement (Nicholls, 1984), where humans are motivated to demonstrate the ability to maintain feelings of worth. Though internally driven, introjected behaviors still have an external apparent locus of causality and are not really experienced as part of the self. An example of introjected regulation is consumers who use mobile phone banking, not because he wants to use it, but because he feels that he should use it to avoid self-guilt or lack of confidence. The external regulations are a subset of extrinsically motivated behaviors having least autonomous in nature. Such behaviors are executed to satisfy an external demand or reward exigency and may be deliberate as the slimmest self-determined type of extrinsic motivation. Integrated regulation involves emitting an activity choice-fully, and fully integrating it with the individual's coherent sense of self-such as values, needs, and identities (Deci & Ryan, 1991). Actions characterized by integrated motivation share many qualities with intrinsic motivation, although they are still considered extrinsic because they are done to attain separable outcomes rather than for their inherent enjoyment. Many researchers (Ntoumanis, 2005; Standage et al., 2005; Lin et al., 2009; Deci & Ryan, 2000) demonstrated that various form of extrinsic motivations is important in determining the continuance intention-behavior and represented by the following hypothesis.

H16: Identified regulation significantly affects continuance intention to use mobile banking apps.

H17: Introjected regulation significantly affects continuance intention to use mobile banking apps.

H18: External regulation significantly affects continuance intention to use mobile banking apps.

H19: Integrated regulation significantly affects continuance intention to use mobile banking apps.

These nineteen hypotheses will be tested with survey data and analyzed by confirmatory factor analysis with the help of SPSS and AMOS software. The association between each construct and their relationship to continuance intention in the field of mobile banking apps will be confirmed based on survey findings. The details of research methodology, research questionnaire design, and measuring instruments will be discussed in the next section.

Research Methodology

In the current scenario, a new set of young consumers, especially from urban /semi-urban areas are evolved, who is embracing mobile for various functionalities. The exploratory study was conducting having the aim of exploring and identifying various factors contributing to the continuance intention-behavior and recognizes the association among various factors that are influencing the adoption and usage of mobile banking apps.

Sampling and Data Collection

The online survey qualtrics software was used for the data collection. The questionnaire includes two sections. The first section measured the basic demographics of the population, whereas the second section captured the information about each construct items. During the survey, the respondents were given instruction to furnish information about their attitude and behavior towards mobile banking apps. The questionnaire items are listed in appendix A. The questionnaire was pre-tested by 55 respondents having experience with mobile banking apps in

India. Subsequently, the data were collected from Aug 21, 2017, to Sept 10, 2017, using an electronic questionnaire posted on the qualtrics online survey tool. In total, 852 surveys were collected. After eliminating

incomplete answers, total 744 valid responses were taken for further analysis. The demographic composition of the data is presented in Table 1.

Table 1 - Demographic characteristics of a sample (N=744)			
Items	Category	Frequency	Percentage (%)
Gender	Male	488	65.6
	Female	256	34.4
Age Category (Yrs)	18-25	120	16.1
	26-35	368	49.5
	36-45	186	25.0
	46-55	41	5.5
	Above 55	29	3.9
Education level	High school/H Sec school	36	4.8
	Graduate	336	45.2
	Post graduate and professionals	372	50.0
Monthly Income	None	82	11
	Below 10,000	31	4.2
	10001-25000	80	10.8
	25001-50000	153	20.6
	50001-100000	199	26.7
	Above 100000	199	26.7
How familiar with mobile banking apps	Slightly familiar	164	22.1
	Moderately familiar	203	27.3
	Very Familiar	243	32.7
	Extremely Familiar	134	18.0
How long using mobile banking apps	Last 1 month	125	16.8
	Last 6 months	115	15.5
	Last 1 year	173	23.3
	Last 2 years	121	16.3
	Above 2 years	210	28.2
Use of mobile banking apps for personal banking needs	Sometimes	373	50.1
	About half of the time	89	12.0
	Most of the time	206	27.7
	Always	76	10.2

From the table, it is clear that male respondents (65.6 %) are higher as compared to female respondents (34.4%). Age wise data stratification signifies that almost half of the population (49.5 %) belongs to the age group 26-35 years category, whereas only 8.4 % belongs to 46+ years. This indicates that mobile banking apps are more popular among younger generations. Education wise data stratification illustrates that 95.2 % population having graduated and above

qualification or professionals. The mobile banking apps usage time data stratification indicates that still 16.8 % of the samples are not using it and only 28.2% of respondents are using it for more than 2 years. It means that mobile banking apps are in the initial phase of acceptance; hence continuance intention plays a major role in sustainable growth. Various features associated with the mobile banking apps and its usage characteristics are presented in Table 2.

Table 2 - Usage characteristics of Mobile banking apps			
Features	Category	Frequency	Percentage (%)
Mini statements	Never	210	28.2
	Some times	282	37.9
	About half the times	61	8.2
	Most of the times	116	15.6
	Always	75	10.1
Fund transfer	Never	174	23.4
	Some times	206	27.7
	About half the times	74	9.9
	Most of the times	175	23.5
	Always	115	15.5
Utility bill payments	Never	244	32.8
	Some times	253	34
	About half the times	67	9.0
	Most of the times	120	16.1
	Always	60	8.1
Credit card payments	Never	318	42.7
	Some times	154	20.7
	About half the times	52	7.0
	Most of the times	120	16.1
	Always	100	13.4
Fixed deposits	Never	522	70.2
	Some times	114	15.3
	About half the times	29	3.9
	Most of the times	43	5.8
	Always	36	4.8
Stock prices	Never	547	73.5
	Some times	97	13.0
	About half the times	29	3.9
	Most of the times	43	5.8
	Always	28	3.8
Checkbook and credit requests	Never	364	48.9
	Some times	216	29.0
	About half the times	38	5.1
	Most of the times	65	8.7
	Always	61	8.2
Complain filling and tracking	Never	395	53.1
	Some times	214	28.8
	About half the times	40	5.4
	Most of the times	56	7.5
	Always	39	5.2
ATM location	Never	403	54.2
	Some times	223	30.0
	About half the times	30	4.0
	Most of the times	54	7.3
	Always	34	4.6

From Table 2, it is clear that most of features offered by mobile banking apps like a mini statement, fund transfer, utility bill payment, credit card payment, fixed deposits etc. are very less used by customers. Such low usage pattern indicates that there is a huge potential for growth of mobile banking apps and this can only be achieved by creating a reliable, trustful mobile banking app, which satisfies customers on a continuous basis and fostering the continuance intention-behavior.

Measurement Instrument

The variables in the proposed model are well established in the human-computer interface, information systems, and cognitive science literature. The instruments were adapted from previous versions (appendix B) but modified accordingly to reflect mobile banking apps. The participants indicated their agreement using a seven-point likert scales ranging from totally disagree (1) to totally agree (7), with a set of statements drawn from previously validated instruments. A pretest was undertaken comprises of 55 respondents who had experience with mobile banking apps and similar services. The complete data collected from 744 respondents are analyzed and discussed in the next section. For measuring constructs, we adopted scales used by different researchers. Continuance intention with five items are drawn from Lin and Ding(2005), Lin et al.(2009) and modified here to suit the mobile banking apps. This construct is conceptualized here to study in terms of repeat patronage, loyalty and word-of-mouth recommendations that facilitate continuance intention. The self-determined motivations with three-four items for each construct are adapted (Goudas et al.,1994; Standage et al., 2005; Lin et al., 2009) and modified here to suit the mobile banking apps context in the current scenario. Perceived usefulness and Expectation-confirmation are measured using scales developed by Bhattacharjee (2001b). Satisfaction is measured by items taking

reference from Bhattacharjee(2001b); Lin et al., (2014). Quality (QA) was measured by scales used by Lee & Chung(2009); Talukder et al. (2014). Similarly, Trust (TR) was measured by scales used by Luo et al. (2010); Talukder et al. (2014). Slight modifications in scale items are done to make it understandable by consumers using mobile banking apps. Finally, individual scale items are listed in "Appendix B".

Results

Our main objective in this article was to study mobile banking apps satisfaction and continuance behavior in the multifaceted business environment. Overall, 744 complete responses are gathered from respondents across various demographics. We conducted confirmatory factor analysis (CFA) to test the reliability and validity of the data. This includes convergent validity and discriminant validity. Convergent validity measures whether items can effectively reflect their corresponding factor, whereas discriminant validity measures whether two factors are statistically different (Gefen et al., 2000). Finally, model fitness and path analysis are done by AMOS modeling package.

Confirmatory Factor Analysis

A confirmatory factor analysis method was used to ensure convergent and discriminant validity, as well as reliability. All items of constructs were loaded with more than 0.5 are considered for CFA as indicated in Table 3 and statistically significant, indicating internal consistency (Martins et al., 2014). Construct reliabilities (CR) and Cronbach's alphas were greater than the recommended value of 0.7 as shown in Table 3 reflecting reliability (Hair et al., 2013). The Average variance extracted (AVE) ranged from 0.651 to 0.832 exceeded the threshold of 0.5, indicating convergent validity (Bagozzi and Yi, 1988).

Table 3 - Confirmatory Factor analysis statistics						
Construct	Measured variable	Standardized Loading	(R²)	AVE	Construct Reliability (CR)	Cronbach's Alpha
Satisfaction	SAT1	0.901	0.811	0.805	0.943	0.957
	SAT2	0.888	0.788			
	SAT3	0.880	0.774			
	SAT4	0.919	0.844			
Confirmation	CONF1	0.922	0.850	0.832	0.937	0.939
	CONF2	0.914	0.835			
	CONF3	0.900	0.810			
Continuance Intention	CI1	0.649	0.421	0.686	0.895	0.903
	CI2	0.790	0.624			
	CI3	0.964	0.929			
	CI4	0.877	0.769			
Perceived Usefulness	PU1	0.916	0.839	0.824	0.933	0.931
	PU2	0.949	0.900			
	PU3	0.855	0.731			
Quality	QA1	0.863	0.744	0.720	0.911	0.920
	QA2	0.830	0.689			
	QA3	0.830	0.689			
	QA4	0.870	0.756			
Trust	TR1	0.899	0.808	0.822	0.949	0.948
	TR2	0.904	0.817			
	TR3	0.911	0.829			
	TR4	0.912	0.831			
Intrinsic Regulations	INTR1	0.878	0.770	0.701	0.875	0.864
	INTR2	0.890	0.792			
	INTR3	0.734	0.538			
Identified Regulations	IDEN2	0.860	0.739	0.659	0.794	0.791
	IDEN3	0.760	0.577			
Integrated Regulations	INTE1	0.785	0.616	0.743	0.896	0.894
	INTE2	0.881	0.776			
	INTE3	0.914	0.835			
Introjected Regulations	INTRO1	0.764	0.583	0.651	0.847	0.843
	INTRO2	0.898	0.806			
	INTRO3	0.750	0.562			
External Regulations	EXT1	0.900	0.810	0.774	0.911	0.907
	EXT2	0.939	0.881			
	EXT3	0.793	0.628			

Further for discriminant validity, when square root of the AVE is higher than the correlation coefficient between any other pair of constructs then that construct demonstrates satisfactory discriminant validity (Fornell and Larcker, 1981; Chin, 1998). From Table 4, it is clear that all constructs attained satisfactory discriminant validity. In order to confirm the common

method bias, we used Harman's one-factor test (Podsakoff et al., 2003) by entering all variables into the factor analysis; all items were loaded onto a single factor and constrained to ensure that no rotation occurs. The variance explained by the first factor lower than 50% indicates that common method bias was not a substantial threat in this study.

Table 4 - Assessment of discriminant validity

	Mean	SD	Correlation Matrix											
			INTR	IDEN	INTE	INTRO	QA	EXT	PU	CI	CONF	SAT	TR	
INTR	4.844	1.471	0.837											
IDEN	5.135	1.544	0.752	0.812										
INTE	4.684	1.689	0.719	0.688	0.862									
INTRO	3.808	1.757	0.62	0.586	0.592	0.807								
QA	5.029	1.548	0.78	0.761	0.67	0.519	0.849							
EXT	4.106	1.849	0.573	0.519	0.631	0.651	0.483	0.88						
PU	5.111	1.651	0.644	0.651	0.618	0.424	0.711	0.386	0.908					
CI	2.725	1.743	0.274	0.197	0.284	0.155	0.192	0.154	0.218	0.828				
CONF	4.807	1.563	0.728	0.727	0.27	0.552	0.748	0.571	0.632	0.27	0.912			
SAT	4.871	1.584	0.772	0.723	0.783	0.578	0.763	0.546	0.682	0.285	0.848	0.897		
TR	4.78	1.642	0.732	0.715	0.698	0.521	0.796	0.509	0.757	0.23	0.694	0.748	0.907	

Model fit

Structural equation modeling results indicate that an overall fit index for SEM model is a good fit to the data: all goodness of fit statistics is in the acceptable range of a well-fit model with CMIN/DF = 3.81, $p=0.00$, goodness-of-fit index (GFI) =0.88, comparative fit index (CFI)=0.94, normative fit index (NFI)=0.92 and root mean square error of approximation (RMSEA)=0.061. All

fit indices were acceptable. Therefore, integrated model of ECT and SDT would provide additional information to predict the continued usages of mobile banking apps. The hypotheses were estimated by the structured model (ECT+SDT). The results and all the completely standardized path coefficients, t-values of the research model are presented in Table 5.

Table 5 - Results of hypothesis testing

Hypothesis	Path coefficient	T value
H 1 (CONF >PU)	0.673	19.878 ***
H2 (CONF>SAT)	0.657	14.912***
H3 (PU>SAT)	0.048	1.938
H4 (PU>CI)	0.038	0.929
H5 (QA>CONF)	0.831	25.972***
H6 (QA>SAT)	0.137	2.429 *
H7 (QA>TR)	0.946	27.554***
H8 (TR>SAT)	0.172	4.539***
H9 (SAT>CI)	0.379	3.789***
H10 (SAT>INTR)	0.551	16.872***
H11 (SAT>IDEN)	0.636	17.681***
H12 (SAT>INTRO)	0.616	16.652***
H13 (SAT>EXT)	0.679	16.053***
H14 (SAT>INTE)	0.896	28.474***
H15 (INTR>CI)	0.214	4.110 ***
H16 (IDEN>CI)	-0.233	3.667***
H17 (INTRO>CI)	-0.063	-1.381
H18 (EXT>CI)	-0.068	-2.322 *
H19 (INTE>CI)	0.137	2.302 *

Note: *** represents significant at 0.001 level, **represents significant at 0.01, *represents significant at 0.05 level.

From Table 5, it is clear that confirmation (CONF) to perceived usefulness (PU) and the satisfaction (SAT), both hypotheses are significant at 0.001 level (***). Perceived usefulness (PU) to satisfaction (SAT) was found insignificant at 0.05 level. Perceived usefulness (PU) to continuance intention (CI) is not significant having a p-value of 0.353 and t value 0.929. Quality (QA) to confirmation (CONF), trust (TR) and satisfaction (SAT), all were found significant as indicated in the Figure 4. This signify that mobile banking apps quality has strong influence on expectation-confirmation,

building trust and satisfaction among users. Trust (TR) to satisfaction was also found significant indicate that trust in mobile banking apps has strong influence on satisfaction. This research finding are in accordance with previous literature results (Armstrong and Yee, 2001; Flaherty and Pappas, 2000; Liu and Leach, 2001) and validate that consumers' trust has a positive influence on consumers' satisfaction. All hypothesis were confirmed at different significant levels (0.001, 0.01, and 0.05 level) as indicated in Table 5.

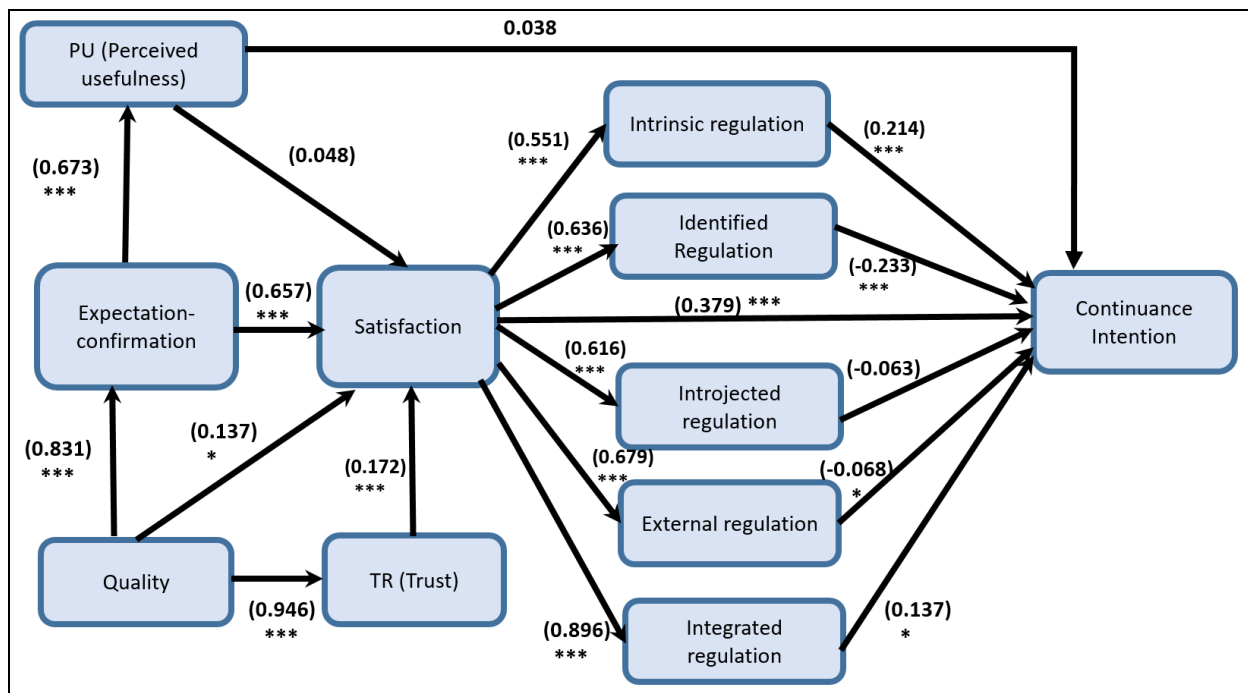


Figure 4 - Results of structural model testing

Note: *** represents significant at 0.001 level, **represents significant at 0.01, *represents significant at 0.05 level.

From satisfaction to all SDT variables i.e. intrinsic, identified, introjected, integrated and external regulations were found significant. This indicates that satisfaction had strong influence on SDT motivators in field of mobile banking apps and propounded the new research dimensions with integration of ECT and SDT concepts. The intrinsic and identified regulations to CI were found significant at 0.001 level (***),

this indicates that intrinsic motivations like feeling of joy, happiness and identified regulations like improving the performance, skill etc. had major influence on continuance intention usage behavior in the field of mobile banking apps. Similarly external and integrated regulations were also found significant at 0.05 level (*) and had influence on continuance intention (CI). This indicate that external regulations like, government

initiatives for cashless economy, policies, banks promotions etc. and integrated regulations like, supporting my beliefs for cashless economy, its suits me etc., had also influence on continuance intention usage behavior in the field of mobile banking apps. The introjected regulations to CI was found insignificant having p value of 0.167. Overall, this result indicates that in the developing stage of mobile banking apps, role of self-determined regulations were very important in determining the continuance intention usage behavior for mobile banking apps. There are significant association between quality and trust on satisfaction, which leads towards continuance intention usage behaviors. Perceived usefulness and confirmation were also positively related to satisfaction which will be linked to SDT motivators and then subsequent re-usage intention.

For the main body of the research model, expectation-confirmation, quality and trust all had a significant positive relationship with satisfaction having a path coefficient of 0.657, 0.137, and 0.172 respectively as indicated in Figure 4, supporting hypothesis H2, H6 and H8. Quality and trust were also positively related having a path coefficient of 0.946 and supporting hypothesis H7. The reason behind such strong relationship was the value associated with quality and trust was significantly impacting customer's satisfaction. Satisfaction and continuance intention is also positively correlated with a path coefficient of 0.379 and confirming hypothesis H9. The hypothesis H4 was from the PU to continuance intention having path coefficient of 0.038 and t value 0.929 indicates that this hypothesis was not supported. From satisfaction to all regulations denoted by hypothesis H10, H11, H12, H13 and H14 (Figure 3) were also significantly related having a path coefficient of 0.551, 0.636, 0.616, 0.679, and 0.896 respectively as shown in Figure 4. The hypothesis H15, H16, H18, H19 having a path coefficient of 0.214, -0.233, -0.068 and 0.137 respectively were also significantly related to continuance intention,

whereas introjected regulations denoted by hypothesis H17 was not significantly related to continuance intentions usage behavior in the field of mobile banking apps. The non-significance of hypotheses H17 is interesting, because introjected regulation reveal the perceived external locus of causality (Ryan and Deci, 2000) that may be least autonomous regarding consuming behaviors, leading to no adaptive response (Standage et al., 2005). This is in consistent with previous works (Ntoumanis, 2001; Standage et al., 2005; Lin et al., 2009), this study did not find introjected regulation to significantly predict the continuance intention usage behavior.

Conclusions and Implications

This study explored the relationship between various motivational factors and continuance intention in the field of mobile banking apps. We put forth the structural model based on expectation confirmation theory and self-determination theory, which offer a sound theoretical foundation for the research model. To our best knowledge, this research is a unique empirical study to test all intrinsic and extrinsic regulations along with satisfaction to understand its impact on continuance intention for mobile banking apps. With a large number of online users adopting mobile phones for innumerable purposes, this model is best suited to comprehend most of the behavioral forms that facilitate continuance intention of mobile phone apps across the globe. Unlike most other studies which do not consider trust as an antecedent, we consider here trust as an antecedent of satisfaction because many of previous researches (Chung and Known, 2009; Kim et al., 2009a; Hsu et al., 2014) highlighted the importance of trust on satisfaction in the field of mobile technology and online commerce, which is developed through continual interactions between buyers and sellers and important for continuance intention behaviors. This idea is developed

through studying the current stage of mobile banking apps usage, where consumers are familiar with these new mobile banking apps would already possess trust in it, but further consideration of possible risks might interact with their trust which still affects their satisfaction.

Implications for Academia

This study represents an important step towards understanding the mobile banking apps continuance intention-behavior in the current scenario. From a theoretical perspective, this study provides a comprehensive analysis of consumer behavior in the context of developing mobile banking apps environment, distinct from previous studies concerning on early stage of a new technology. Furthermore, this combined model bridges two important constructs, satisfaction and continuance intentions with self-directed regulators and introduced two new constructs of quality and trust to better explain the mobile banking apps consumer behavior.

In particular, the different quality and trust perceptions which were identified as significant in this study provide a new direction to understand trust implications that tend to persist or disappear with the development of new technology. The advantage of mobile banking app attributes to more on its ease of use as obviously different from traditional payment methods. Nevertheless, the insignificant relationship between PU and CI requires further explanation to identify whether, in the developing stage of mobile banking apps, the influence of some factors may vary. Finally, the analysis of other variables like age, education, experience etc. as background factors do affect consumer's continuance intention in the context of mobile banking apps over a longitudinal timeframe that needs of more research.

Implications for Practitioners

The results from this study support the contention that mobile banking apps are less risky and will be trusted and intended to be used more. From a pragmatic perspective, the discovery of trust, quality, and expectation-confirmation as important factors that contribute to continuance intention-behavior offers a hint to organizations involved in mobile banking apps to recognize the importance of these factors. For business corporations, improvement in maintaining a good reputation by protecting consumers' privacy and more input in stabilizing the mobile banking environment will be the best approach to attracting potential consumers and satisfying the existing customers. This will bridge the huge gap between mobile banking app users and nonusers and also help the country to move towards the digital economy. In addition, this study also suggests that mobile banking app platforms should promote the relative ease of use of their simple procedure, trusted and instrumental design to their customers.

The research results indicate the development of mobile banking apps as a new way of transactions has been accepted and adopted by customers in a fast upward trend, especially for those who are more experienced with online transactions and show more trust beliefs in online payment. For practitioners such as public policymakers and mobile banking app service providers, understanding this trend and developing the more suitable environment is critical to ensure the long-term trusting relationship with customers. Furthermore, understanding what key control variables affect consumer behavior across different groups is also necessary for effective planning and, thus, implementing the continuance intention-behavior for better and more successful future development.

Limitations and Future Directions

The present research domain is in India and this limitation compromises the generalization of the findings to other countries with different business context. Thus, future research should consider replicating this study in other emerging or developing countries with different contexts. Regarding development of continuance intention behavior, it has been noted that continuance intention develops gradually over time, which suggests that consecutive study on different stages of time would describe the continuance intention usage behavior more completely. The omission of actual behavior is another limitation because the use of intention as a proxy for continuance behavior are not acknowledged by few researchers (Venkatesh et al., 2006). Thus, further research should consider a cross group comparison between adopters and non-adopters of mobile banking apps.

The insignificant relationship between PU and CI requires further explanation to identify whether in the developing stage of mobile banking apps, the influence of some factors may vary leading to such low influence. Similarly the non-influence of introjected regulations on CI require further exploration and research. The analysis of other variables like age, education, experience etc. as background factors do affect consumer's continuance intention in the context of mobile banking apps over longitudinal timeframe that need of more research. For future work, an ideal empirical design for testing an integrative model of ECT and SDT would be a longitudinal comparison of customers' pre and post-satisfaction behaviors, which can capture the complicated, dynamic interrelationships between satisfaction and continuance intention. In addition, interesting research topics such as changes in mobile banking apps expectation and perceived apps performance across satisfaction and loyalty phases may be also explored in future research.

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Appendix A

SECTION 1: Basic Information

Q1. How familiar are you with Mobile banking apps?

- Slightly familiar
- Moderately familiar
- Very familiar
- Extremely Familiar

Q2. How often do you use mobile banking apps for performing your personal banking needs?

- Sometimes
- About half the time
- Most of the time
- Always

Q3. Using mobile banking apps, which of following banking operations do you perform?

Sl. No.	Activity	Never	Sometimes	About half the time	Most of the time	Always
1	Mini statements					
2	Fund transfer					
3	Utility bill payments					
4	Credit card payments					
5	Fixed deposits					
6	Stock prices					
7	Cheque book and card requests					
8	Complain filing and tracking					
9	ATM location					

Q4. How long have you been using mobile banking apps for performing your personal banking needs?

- Last one month
- Last six months
- Last 1 year
- Last 2 Years
- Above 2 years

Q5. Your gender?

- Male
- Female

Q6. Your age category (Years)?

- 18-25
- 26-35
- 36-45
- 46-55
- Above 55

Q7. Your level of Education?

- High school / H. Sec. School
- Graduate
- Postgraduate and professionals

Q8. Your Monthly income (in Rs)?

- None
- Below 10,000
- 10,001 – 25,000
- 25,001 – 50,000
- 50,001 – 1,00,000
- Above 1 Lakh

SECTION 2: Capturing Behavioural aspects

For following questions, Linkert 7 scale format is used for data collection.

Perceived usefulness:

- Using mobile banking apps improves my working and living performance.
- Using mobile banking apps improves my working and living effectiveness.
- Overall, mobile banking apps are useful.

Confirmation:

- My experience with mobile banking apps was better than what I expected.
- The various features of mobile banking apps was better than what I expected.
- Overall, most of my expectations towards mobile banking apps were confirmed.

Trust:

- I believe Mobile banking apps are trustworthy.
- I experienced that Mobile banking apps keeps its promises.
- I consider Mobile banking apps are as reliable as normal banking.
- I trust in the technology that mobile banking apps are using.

Quality:

- Mobile banking apps is a stable system.
- The speed of Mobile banking apps is quick and fast.
- Mobile banking apps features and navigation is user friendly.
- Overall, Mobile banking apps quality is good and better than other form of banking.

Satisfaction:

- I feel satisfied with using mobile banking apps.
- I feel contented with using mobile banking apps.
- I feel pleased with using mobile banking apps.
- Overall, I am satisfied with mobile banking apps.

Intrinsic Regulation:

- I enjoy the use of Mobile banking apps.
- The features of mobile banking apps are attractive.
- Using the Mobile banking apps is an enjoyment.

Identified regulation:

- The Mobile banking apps helps me to improve my performance.
- I can easily learn the skill for using mobile banking apps.
- I can apply my learning skills of mobile banking apps for other apps also.

Introjected regulation:

- I want others to feel that I am performing better than before after using Mobile banking apps.
- I would feel bad if I did not use the Mobile banking apps for banking transactions.
- Once I stop using the Mobile banking apps, I feel my confidence decreases.

External regulation:

- I am quite motivated by the prime minister message regarding importance of using Mobile banking apps.
- Government initiatives, ideas motivate me to use mobile banking apps.
- Various bank promotions, advertisements motivate me to use Mobile banking apps.
- Using the Mobile banking apps helps me to improve the way others treat me.

Integrated regulation:

- I use mobile banking apps because I am tech savvy.
- I use mobile banking apps because it suits me.
- I use mobile banking apps because it is right for me.
- I use mobile banking apps because it reinforces my beliefs of cashless economy.

Continuance Intention:

- I intend to continue using mobile banking apps rather than discontinue its use.
- My intentions are to continue using mobile banking apps rather than use any alternative means.
- I will suggest friends or relatives to use the Mobile banking apps.
- I offer others some positive information about Mobile banking apps.
- If I could, I would like to discontinue use of mobile banking apps (reverse item).

Appendix B: Measuring instrument

Sl. No.	Constructs	References	Coding	Items
1	Perceived usefulness (PU)	Bhattacharjee (2001b)	PU1	Using mobile banking apps improves my working and living performance.
			PU2	Using mobile banking apps improves my working and living effectiveness.
			PU3	Overall, mobile banking apps are useful.
2	Expectation-confirmation (CONF)	Bhattacharjee(2001b)	CONF1	My experience with mobile banking apps was better than what I expected.
			CONF2	The various features of mobile banking apps was better than what I expected.
			CONF3	Overall, most of my expectations towards mobile banking apps were confirmed
3	Satisfaction (SATIS)	Bhattacharjee (2001b); Lee and Chung (2009); Lin et al. (2014)	SAT1	I feel satisfied with using mobile banking apps.
			SAT2	I feel contented with using mobile banking apps.
			SAT3	I feel pleased with using mobile banking apps.
			SAT4	Overall, I am satisfied with mobile banking apps.
4	Trust	Luo et al. (2010); Gu, Lee & Suh (2009); Talukder et al. (2014)	TR1	I believe Mobile banking apps are trustworthy.
			TR2	I experienced that Mobile banking apps keeps its promises.
			TR3	I consider Mobile banking apps are as reliable as normal banking.
			TR4	I trust in the technology that mobile banking apps are using.
5	Quality	Lee & Chung (2009); Luo et al. (2010); Talukder et al. (2014)	QA1	Mobile banking apps is a stable system.
			QA2	The speed of Mobile banking apps is quick and fast.
			QA3	Mobile banking apps features and navigation is user friendly.
			QA4	Overall, Mobile banking apps quality is good and better than other form of banking.
6	Intrinsic regulation	Ntoumanis (2005); Lin et al. (2009)	INTR 1	I enjoy the use of Mobile banking apps.
			INTR 2	The features of mobile banking apps are

				attractive.
			INTR 3	Using the Mobile banking apps is an enjoyment.
7	Identified regulation	Ntoumanis (2005); Standage et al. (2005); Lin et al. (2009)	IDEN 1	The Mobile banking apps helps me to improve my performance.
			IDEN 2	I can easily learn the skill for using mobile banking apps.
			IDEN 3	I can apply my learning skills of mobile banking apps for other apps also.
8	Introjected regulation	Ntoumanis (2005); Ryan and Deci (2000); Lin et al. (2009)	INTRO 1	I want others to feel that I am performing better than before after using mobile baking apps.
			INTRO 2	I would feel bad if I did not use the Mobile banking apps for banking transactions.
			INTRO 3	Once I stop using the mobile banking apps, I feel my confidence decreases.
9	External regulation	Lin et al. (2009); Ntoumanis (2005); Ryan and Deci (2000)	EXT 1	I am quite motivated by the prime minister message for use of mobile banking apps.
			EXT 2	Government initiatives, ideas motivate me to use mobile banking apps.
			EXT 3	Various bank promotions, advertisements motivate me to use mobile banking apps.
			EXT 4	Mobile banking apps helps me to improve the way others treat me.
10	Integrated regulation	Deci & Ryan (1985, 1991); Ntoumanis (2005); Standage et al. (2005)	INTE1	I use mobile banking apps because I am tech savvy.
			INTE2	I use mobile banking apps because it suits me.
			INTE3	I use mobile banking apps because it is right for me.
			INTE4	I use mobile banking apps because it reinforces my beliefs of cashless economy.
11	Continuance Intention	Bhattacharjee(2001b); Lin et al. (2009)	CI 1	I intend to continue using mobile banking apps rather than discontinue its use.
			CI 2	My intentions are to continue using mobile banking apps rather than use any alternative means.
			CI 3	I will suggest friends or relatives to use the Mobile banking apps.
			CI 4	I offer others some positive information about Mobile banking apps.
			CI 5	If I could, I would like to discontinue use of mobile banking app (reversed item).

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