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A Theoretical Review of Mobile Commerce Success Determinants

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Abstract
Mobile commerce (M-Commerce) involves the delivery of trusted transaction services over mobile devices for the exchange of goods and services between consumers, merchants and across organizations. It may be accomplished through a variety of mobile devices over a wireless telecommunication network in a wireless environment. Despite the rapid pervasiveness of mobile based transactions in Kenya, questions relating to m-commerce success drivers are largely unexplored. This paper reviews prominent information system adoption theories, information systems success concepts and pertinent mobile commerce literature to derive m-commerce success imperatives. Based on the review, an appropriate model for m-commerce success is proposed. A preliminary conclusion that emerges from this study points towards compatibility to user needs, ease of use, pricing and innovation as constructs with the strongest potential for determining the success outcomes of a mobile commerce arrangement. The emergent perspectives and the proposed framework offers value to both theory and practice by providing new insights into various issues that have largely been overlooked when conceptualizing mobile commerce initiatives.
Keywords: Mobile commerce, adoption theories, information system success, m-commerce model

1.1 Introduction

Mobile devices with enhanced computing power and superior display provisions are progressively gaining prominence in the Kenyan market. In line with this trend, organizations continue to steadily deploy innovative products that ride on the back of new found mobile capabilities. Enterprises are continuously turning to the use of mobile technology to reach out to customers everywhere at any time. Even the traditionally technology indifferent firms are steadily devising new mobile based strategies to protect their current market position. The drive towards mobile system reliance is fundamentally aimed at availing a stronger value proposition as well as competitively priced services.

Organizations are consistently exploring into new areas where m-commerce can be exploited to generate additional revenues or create value. Firms are increasingly adopting new value chain options that will enable them increase business capabilities through mobile devices. Inevitably, these mobile based innovations are making the business environment more complex and multifaceted. For organizations that continue to search for innovative business models, to enable them increase their market share and improve the quality of their earnings, mobile commerce promises to be a feasible alternative. Nevertheless, the mobile channel comes with merits as well as challenges for both organizations and users.

This study aims to ascertain the important determinants of mobile transactional behavior, particularly with respect to technology adoption and the information system success research. Different technology acceptance and success models are systematically reviewed alongside their applicability to m-commerce. This work then suggests extensions to the existing models by appraising the viability of aggregating technology adoption models with IS success concepts. The research also considers further enrichment to existing models by highlighting the impact of context. The outcomes of this study's analysis may afford value to various entities, particularly those aspiring to roll out mobile commerce driven value chains.

M-commerce has been described as the execution of any transaction, involving the transfer of ownership or rights to use goods and services, which is initiated or completed using mobile access to computer-mediated networks with the help of an electronic device (Khalifa et.al, 2012). Bouwman et al. (2008) on their part perceive m-commerce as an extension to electronic commerce (e-commerce) such that it enables the accomplishment of commercial transactions at any time and location through wireless connection. Siau and Shen, (2003) regard mobile commerce as a business transaction conducted through mobile communication networks or the Internet. Thus m-commerce can offer value to consumers through convenience and flexibility by enabling time and place independence (Kim et al, 2009).

Apparently, the trend of mobile applications usage is growing speedily creating vast market opportunities and high commercial expectations for mobile commerce. In response, organizations have been

steadily implementing m-commerce as an extra channel into their day to day operations with a view to fulfilling client expectations. Venkatesh et al. (2003) assert that success in m-commerce will go to those firms that enter the field early, and to those that focus on creating compelling value for customers. This implies that m-commerce will require models that are fundamentally different from traditional business models. The question of how to build viable business models for m-commerce thus becomes significant to both organizations and researchers.

1.2 Problem Statement

The enormous penetration of mobile devices in Kenya promises to drastically reorient business processes. Through innovative applications such as mobile payment solutions, organizations are progressively embracing mobile enabled platforms to deliver their products. In this manner firms are extending their scope of service and product delivery beyond the traditional limits. Numerous firms are increasingly prioritizing mobile systems based on their perceived capability to help them match the evolving business trends, support service automation and increase organizational productivity. As this trend intensifies, organizations are steadily edging towards the evolving m-commerce practice.

While many of the factors affecting adoption of information systems are believed to also influence success of information systems, available evidence to indicate the precise factors contributing to mobile commerce success in Kenya is scanty and fragmented. In their study that sought to profile the determinants of mobile phone usage for e-commerce among micro and small enterprises in the informal sector of Kenya, Litondo and Ntale (2013), remark that evidence on factors leading to the mobile phones usage for business among micro and small enterprises in Kenya is lacking.

Thus, for the full potential of m-commerce to be realized, it is crucial that organizations, researchers and practitioners comprehend the forces that shape complexities, challenges as well opportunities within a mobile commerce context. Successful m-commerce frameworks can only emerge once major issues, obstacles and success drivers are properly explored and understood.

This paper methodically utilizes diverse literature to build a solid analytical base of the fundamental variables that shape mobile commerce outcomes. The review employs prominent technology adoption models as well as pertinent theories within the broader information systems success domain to examine potential success determinants applicable to the Kenyan mobile commerce context. Based on the outcome of the analysis, an applicable mobile commerce success framework is subsequently proposed.

1.3 Study Objectives

This paper reviews pertinent literature and proposes a model that can be used to evaluate the success determinants of mobile commerce from both an organizational and a users' perspective. To reach this end, the following objectives are addressed:

i. A review of the success factors that support a viable and sustainable success model for m-commerce
ii. Development of a mobile commerce success evaluation model based on a review of the available studies.

2.1 Overview of Mobile Commerce

The advance in information technology from cable based Internet to mobile Internet access is radically impacting business trends. Rapid developments in wireless technologies have seen the emergence of the new and dynamic field of mobile commerce. Despite the wide ranging discussions relating to the benefits, applications and adoption of mobile tools, no comprehensive depiction of critical success factors for m-commerce is apparent from literature. Yet, understanding the potential driving forces of the m-commerce value chain is central towards innovative and adaptive business modeling.

The process of defining, evaluating and choosing particular success factors necessitate a well designed multiple criteria based evaluation (Topcu and Burnaz, 2006). Kim & Hwang (2005) suggest the application of analytical hierarchical process as a suitable method for extracting critical success factors for entering into the mobile commerce market. A clear implication is that for a particular approach to succeed, it should be based on the concepts of accurate measurements and precise assessment parameters.

Over the last decade, mobile technology has prospered across the developing world faster than any other technology in recent history. Mobile devices have become extremely popular, and transformed the field of commercial transactions. As a direct consequence, mobile commerce has taken off in a prominent way. Today, people can literally buy anything they want from wherever they are, without the impediment of having to physically access the shopping outlets.

Due to the massive rise in mobile phone penetration including smart phones, consumers are increasingly spending more time on mobile devices than desktop and laptops. This trend is further spawned by the mobile money phenomenon which has brought to the fore money transfer services in a way that enables

transacting parties to safely send money and pay bills without having to rely on cash. Developments within the mobile money realm have enabled millions of previously financially and commercially underserved categories of people to access formalized funds transfer services hence boosting their transactional capacity.

A large section of the Kenyan populace is currently able to use mobile phones to pay bills, transfer money, pay insurance premiums, borrow money, make account transfers, pay fees, make savings and purchase air time. In response, financial service providers are increasingly leveraging on mobile banking to increase accessibility and deliver services efficiently to a broad range of customers. Financial institutions have now integrated numerous mobile money services with mainstream banking services like account opening, making cash deposits, settling bills, among others, and are continually increasing the scope of mobile based transactions.

The increased uptake of mobile money has seen an upsurge in competition marked by the launch of diverse mobile money products among mobile money providers as they strive for a better grip of the lucrative retail payments market. Key merchant platforms include Safaricom's Lipa Na M-Pesa with a market command of over 75%; Lipa Sasa by MobiKash; Airtel Money and Tangaza Pesa. Equity Bank, a Kenyan financial sector magnate with growing regional footprints has also acquired a mobile virtual network operator (MVNO) license to operate mobile financial services under the Finserve brand.

Besides the mainstream mobile money services by the telecom firms, other firms have emerged to offer complementary services by partnering with the mobile firms in an arrangement that enables them to integrate mobile money platforms into their programs and offerings. The Lipa na M-Pesa service provided by Safaricom Ltd that enables customers or merchants to handle mobile payments at points of sale for services rendered or goods purchased has emerged as a very influential platform in this dimension.

The primacy of mobile money within the Kenyan context lies in its sound capability to anchor multiple activities and processes that define mobile commerce. Existing mobile money services support a wide range of transactions including transfer of funds from one mobile subscriber to another, deposit and withdrawal of cash via a network of local agents, payment of utility bills, airtime top ups, ATM cash withdrawals, dividend pay outs, m-ticketing services, mobile shopping and cross country mobile money transfers. Being easily amenable to multiple innovations, mobile money technology eliminates the complexities associated with traditional options such as cash and banking cards, a situation that yields a fertile ground for mobile commerce to flourish.

2.2 Technology Acceptance Theories and Models

Various researchers in the field of information systems have ventured to investigate the theories and models that have power in predicting and explaining behavior across usage domains. Majorly, these studies focus on how to promote usage by examining what encourages or hinders technology adoption and usage. Since every prominent technology acceptance theory has different premises and benefits it is vital to analyze each of them and consider how they may contribute towards a sound basis for creating a model that could be applicable to mobile commerce.

2.2.1 Innovations Diffusion Theory (IDT)

IDT is concerned with how innovations spread and consists of two interlinked processes notably the diffusion and the adoption process. IDT gradually evolved towards a polished innovation-decision process introduced by Rogers (Rogers 1962, 1983, 1995; Rogers & Shoemaker 1971). The innovation-decision process is one through which an individual or other decision-making entity passes through the critical stages of knowledge of an innovation; forming an attitude toward the innovation; making a decision to adopt or reject; implementation of the new idea and confirmation of this decision (Rogers 1995).

Using IDT as a baseline theory, Al-Jabri & Sohail (2012) investigated the factors that may help bankers to design mobile services, which are suitable for and adoptable by bank customers. Data obtained from 330 actual mobile banking users revealed that relative advantage, compatibility, and observability have positive impact on adoption. Contrary to the findings in extant literature, trialability and complexity appeared to have no significant effect on adoption.

2.2.2 Social Cognitive Theory (SCT)

The Social Cognitive Theory emanated from the work of Bandura (1986) titled "Social foundations of thought and action: a social cognitive theory." The theoretical perspective of SCT suggests that human functioning should be viewed as the product of a dynamic interplay of personal factors, behavior, and environmental influences. According to SCT, the manner in which people interpret the results of their own behavior informs and alters their environments and the personal factors they possess which in turn, inform and alter subsequent behavior. Bandura revised his theory from social learning to social 'cognitive' both to distance it from prevalent social learning theories of the day and to emphasize that cognition plays a critical role in people's capability to construct reality, self-regulate, encode information, and perform behaviors.

Ratten (2011) used social cognitive theory to examine the behavior of Australian youths toward mobile banking. The conceptual model included five constructs namely media, modeling, outcome expectancy, learning orientation and entrepreneurial orientation, which are proposed to influence an individual's intention to adopt

mobile banking. Study findings supported the link between the media and individual's intention to adopt mobile banking

2.2.3 Theory of Reasoned Action (TRA)

This theory was developed by Ajzen and Fishbein (1980) and forms the backbone of studies associated with attitude-behavior relationships. The model contends that an individual's actual behavior is determined by the person's intention to perform the behavior. TRA postulates that beliefs influence attitude and social norms which in turn shape a behavioral intention that ultimately guides or even dictates an individual's behavior. Intention is the cognitive representation of a person's inclination towards a particular conduct and is considered to be the immediate antecedent of behavior.

Wan et.al (2005) used TRA to investigate the factors that influence Hong Kong bank customers to adopt banking oriented services. Study results showed that TRA was less applicable for habitual behavior.

2.2.4 Theory of Planned Behavior (TPB)

TPB evolved from the Theory of Reasoned Action, with an additional construct termed as perceived behavior control (PBC). TPB recognizes that behavior can be deliberate and planned. Therefore the extra construct aids to account for situations where an individual lacks the control or resources necessary for carrying out the targeted behavior freely (Ajzen, 1991).

For TPB, the intention is determined by three core constructs namely; attitude toward the specific behavior; subjective norms and perceived behavioral control. Perceived behavioral control refers to people's perceptions of their ability to perform a given behavior and influences intention (Ajzen, 1991). TPB perceives human behavior as guided by three kinds of beliefs notably behavioral beliefs, normative beliefs and control beliefs.

Shih and Fang (2004) used the TPB in Taiwan to examine effect of customer's attitude and subjective norms on internet banking adoption. The study found that attitude has a significant effect on adoption intention, while subjective norm was found to be insignificant. Khalifa et.al (2011) extended the theory of planned behavior by integrating confidence as a moderator for the relationship between attitude and intention. Trial, communication and observation were identified as the sources for m-commerce confidence with their effects mediated through exposure. The research model was empirically tested and supported.

2.2.5 Decomposed Theory of Planned Behavior (DTPB)

DTPB was introduced by Taylor and Todd (1995b) and comprehensively explores the dimensions of attitude, belief, subjective norm and perceived behavioral control by decomposing them into specific belief dimensions. DTPB suggests that behavioral intention is the primary direct determinant of behavior.

Pedersen (2005) applied a modified version of the decomposed theory of planned behavior to study the behavior of early adopters of mobile commerce services. The study showed that the extended and modified model has good fit to the early adopter data and that it explains 49 percent of the early adopters' intentions to use mobile commerce services. With appropriate modifications the model may be used as a basis for evaluation of the adoption potential of new mobile services (Pedersen 2005). Al-Majali and Mat (2010) investigated twelve factors that may influence internet banking adoption in Jordan. Their study concluded that using the decomposed theory of planned behavior provides a comprehensive model to understand the antecedents of Internet Banking Adoption.

2.2.6 Technology Acceptance Model (TAM)

The Technology Acceptance Model (TAM) was developed from TRA as a theoretical basis for specifying the causal linkages between perceived usefulness, perceived ease of use, users' attitudes, intentions and actual usage behavior (Davis 1989). Davis (1989) developed and validated better measures for predicting and explaining usage which crystallized on two theoretical constructs namely perceived usefulness and perceived ease of use as the fundamental determinants of system use. Hence, TAM replaces determinants of attitude of TRA with perceived usefulness and perceived ease of use.

Hung et.al (2004) used TAM to evaluate the acceptance and usage of mobile commerce by employing data collected from 205 students selected proportionally from nine universities located at the Taipei City in China. Study results revealed that perceived ease of use and perceived usefulness are the fundamental determinants of user acceptance and positively impact on attitude to use as well as behavioral intention to use. Attitude toward using m-commerce was found to have a partial mediating effect on behavioral intention to use while behavioral intention was found to exert a positive, though lesser impact on actual use of m-commerce.

Lule et.al (2012) applied technology acceptance model to examine the factors that influence the adoption of mobile banking in Kenya. The study specifically focused on the evaluation of "M-Kesho", a mobile banking application in Kenya. Results revealed that perceived ease of use, perceived usefulness, perceived self efficacy and perceived credibility significantly influenced customers' attitude towards usage of M-banking.

2.2.7 Technology Acceptance Model 2(TAM2)

Venkatesh and Davis (2000) extended the technology acceptance model to include additional key determinants that explain perceived usefulness and usage intentions in terms of social influence and cognitive instrumental

processes as well as to understand how the effects of these determinants change over time with increasing user experience. Social influence processes entail subjective norm, voluntariness and image while cognitive instrumental processes relate to job relevance, output quality, result demonstrability, and perceived ease of use.

Moeser et.al (2013) undertook a study on the factors that drive the intention to use online social business networks based on the theoretical frame of TAM and its extensions, particularly the TAM2 model. Core results revealed that TAM2 model generally holds in the case of online social business network usage behavior, explaining 73% of the observed usage intention.

2.2.8 Augmented TAM or Combined TAM and TPB (C-TAM-TPB)

Augmented TAM combines the perceived usefulness predictor of TAM and attitude toward behavior, subjective norm and perceived behavioral control from TPB, to provide a more complete test of the important determinants of IT usage. This is based on their predictive utility in IT usage research and their wide use in social psychology (Taylor & Todd 1995b). Since the augmented model accounts for a reasonable proportion of the variance in intention and behavior, Taylor and Todd (1995b) suggest that it provides a perfect model of IT usage for both experienced and inexperienced users.

However, the richness and predictive power of the combined TAM and TPB model has been contested through research. Yayla & Hu (2007) compared four different models namely TAM, TPB and two combined TAM-TPB models in terms of their predictive power and model fit to empirical data using meta-analysis methodology. Data for this study was gathered from meta-analytic calculations of 32 studies found in the technology acceptance literature. Findings demonstrated that when used separately TAM and TPB models offer more theoretical parsimony and clarity as well as a better fit with empirical data than the combined TAM-TPB models.

2.2.9 Model of Personal Computer Utilization (MPCU)

MPCU was largely derived from the theory of human behavior and designed to predict PC utilization. In this model, the constructs that predict usage are job fit, complexity, long term consequences, affect toward use, social factors and facilitating conditions. Job-fit is the extent to which an individual believes that using a technology can enhance the performance of his or her job. Complexity is the degree to which an innovation is perceived as relatively difficult to understand and use. Long-term consequences are outcomes that have a pay-off in the future. Affect towards use relates to feelings of joy, elation, or pleasure, or depression, disgust, displeasure or hate associated by an individual with a particular act. Social factors are the individual's internalization of the reference group's subjective culture, and specific interpersonal agreements that the individual has made with others in specific social situations. Facilitating conditions are objective factors in the environment that make an act easy to accomplish for instance the provision of support for users of personal computers in the IS context (Thompson et al. 1991).

2.2.10 Motivational Theories

Researchers have developed a number of different theories to explain motivation. According to these theories, people are motivated to behave in certain ways because they are evolutionarily programmed to do so (Vallerand, 1997). Generally, rationale behind behavior is explained through extrinsic or intrinsic motivation. Extrinsic motivation relates to the perception that users will want to perform an activity because it is perceived to be instrumental in achieving valued outcomes that are distinct from the activity itself, such as improved job performance, pay, or promotions (Davis, Bagozzi et al., 1992). Intrinsic refers to the perception that users will want to perform an activity for no apparent reinforcement other than the process of performing the activity per se (Davis, Bagozzi et al., 1992). Researchers have applied motivation models to study new technology adoption and use (Venkatesh and Speier, 1999).

2.2.11 Unified Theory of Acceptance and Use of Technology (UTAUT)

Venkatesh et al (2003) reviewed user acceptance based on eight prominent models, formulated a unified model that integrates elements across the models and empirically validated the unified model. The eight original models and theories of individual acceptance synthesized by Venkatesh et al. (2003) comprise the Theory of Reasoned Action (TRA), Technology Acceptance Model (TAM), Motivational Model (MM), Theory of Planned Behavior (TPB), Model Combining the Technology Acceptance Model and Theory of Planned Behavior (C-TAM-TPB), Model of PC Utilization (MPCU), Innovation Diffusion Theory (IDT), and Social Cognitive Theory (SCT). Each of these models and theories has been examined in the preceding section.

Omwansa (2012) applied UTAUT to study mobile money adoption patterns at the bottom of the Kenyan pyramid. Performance expectancy, social influence and perceived trust were found to play an important role in determining behavioral intention to use mobile money among the poor. Facilitating conditions and transaction costs were found to influence actual usage, while the users' age, gender, education and risk moderate the relationships between constructs that determine behavioral intention as well as actual usage.

Jaradat & Al Rabaa (2013) used UTAUT to examine key factors that affect the intention to accept and the subsequent use of mobile commerce among Jordanian consumers. Findings illustrated that user acceptance and use of mobile commerce services can be predicted from the users' behavioral intentions, which are affected

significantly by performance expectancy, effort expectancy, and social influence

2.12 Extended Unified Theory of Acceptance and Use of Technology (UTAUT2)

Venkatesh et al. (2012) extended the unified theory of acceptance and use of technology (UTAUT) to study acceptance and use of technology in a consumer context. Their work culminated in the birth of an extended framework which is termed as "UTAUT2". UTAUT2 incorporates three constructs into UTAUT namely hedonic motivation, price value, and habit. Individual differences in particular, age, gender, and experience are hypothesized to moderate the effects of these constructs on behavioral intention and technology use. Results from a two-stage online survey, with technology use data collected four months after the first survey of 1,512 mobile Internet consumers supported the model. Compared to UTAUT, the extensions proposed in UTAUT2 produced a substantial improvement in the variance explained in behavioral intention (56 percent to 74 percent) and actual technology use (40 percent to 52 percent).

Based on literature, the original UTAUT model appears to have acquired robust usage across multiple studies and user groups. Nevertheless, extensions such as those exemplified in UTAUT2 are a proof that no single research model has absolute applicability across varying technological and organizational settings. Information system research should continuously explore further influences and factors that may alter the behavioral intention to use an information system in diverse settings.

2.2 IS Success Models

Organizations and institutions invest large amounts of money and time in various information systems. IS investments are typically justified by the expected increase in economical effectiveness. The success of the investments is a critical concern of both academic and practitioner communities (Sylla and Wen, 2002). Managers are particularly eager to recognize the benefits achieved by IS investments. Though various approaches for measuring the success of IT investments exist, IS related benefits are still difficult to quantify owing to multiple factors that influence organizational outcomes. The measurement of IS effectiveness and success remains a highly complex issue. Sector specific models identify distinct critical success factors or new success dimensions within a restricted context.

2.2.1 Delone & McLeon IS Success Models

A prominently cited model for analyzing multiple dimensions of IS success is the one developed by Delone & McLeon (1992). This model is based on Shannon and Weaver's (1949) pioneering work on communication and Mason's (1978) extensions to it. The original model is a comprehensive framework with six interrelated dimensions of success namely; system quality, information quality, system use, user satisfaction, individual impacts, and organizational impacts.

Though the original model has been used in a large number of studies, many modifications and improvements to the model have been suggested (Seddon, 1997; Wilkin and Hewitt, 1999). Rai et al 2002) empirically and theoretically assessed Delone & McLean's (1992) and Seddon's (1997) models of IS success. Their findings supported Delone & McLean's focusing on integrated IS success models. Their findings also supported Seddon's (1997) three construct categories namely system and information quality, general perceptual measures about net benefits of IS use and IS behavior.

Ten years after the original model, DeLone and McLean revisited their own model and made slight modifications to it. Delone & McLean's (2003) aver that IS quality has three major dimensions notably information quality, system quality and service quality. Information quality is related to the semantic level and the information product characteristics such as accuracy, meaningfulness, and timeliness. System quality describes the technical level characteristics of the information system. Service quality has to do with the information system support level where the focus is not on the product but on the services like end-user support which affect "use" and "user satisfaction". The updated model captured the service quality dimension to reflect the importance of service and support in successful systems. All quality dimensions of the model influence both user satisfaction and intention to use the system. Use and user satisfaction bring certain net benefits that affect the future use and satisfaction either positively or negatively.

2.2.2 Task Technology Fit (TTF)

In an attempt to better understand the linkage between information systems and individual performance, Goodhue & Thompson (1995) explored the linkage between two complementary streams of research notably "utilization focus" research and "fit focus" research and subsequently proposed a new comprehensive model. Essentially, utilization research is based on theories of attitudes and behaviors among other situational factors that lead to intentions to increase utilization of systems. Fit focus research is premised on the notion that performance impacts will only result if technology provides features and support that fit the requirements of a task.

Lee et al (2007) proposed and validated a modified task-technology fit model to explore the factors affecting the effective adoption of mobile commerce in the Taiwan insurance industry. The study established that experience, cognitive style, and computer self-efficacy are major factors that can predict the fit of applying

mobile based technology to insurance tasks. Conventional wisdom and other demographic variables such as gender and age were found to be non-significant.

Based on TAM and TTF theory, He and Wang (2012) constructed an adoption model to analyze factors that influence users' adoption of m-commerce. The resultant model indicated that perceived fit has positive effect on perceived usefulness. Perceived security and perceived value were found to be positively related to intention to adopt m-commerce. Perceived value was shown to mediate the effect of perceived usefulness and perceived security on users' intention to use m-commerce.

2.3 Integrating Technology Acceptance and IS Success Concepts

As evidenced by literature, researchers have analyzed system success from multiple viewpoints. Each theory propounded has its own merits and limitations. The unique character of mobile commerce has not received enough attention in the earlier research. Noticeably, mobile commerce is ubiquitous and entails multiple service elements potentially offered by different providers. There is therefore need for a model that puts to perspective the unique characteristics of a mobile based commercial environment.

In an effort to overcome various practical limitations, some scholars suggest the integration of different approaches into a single framework (Wixom and Todd, 2005). Arguably, the integration of acceptance and success theories provides a more comprehensive view and use by combining various quality dimensions, beliefs, attitude, and intentions. Thus, an integrated approach which blends elements from different methods and models better offers more reliable insights to the fundamental question of why mobile commerce would succeed or fail.

Since the prime objective of this study is to generate a model of mobile commerce success that is expected to have a capability in predicting and explaining success determinants, these renowned theories and models were found to have specific characteristics and significant benefits that yield the theoretical framework of this research. Based on the principles above, an integrated model for mobile commerce is conceptualized as shown below:

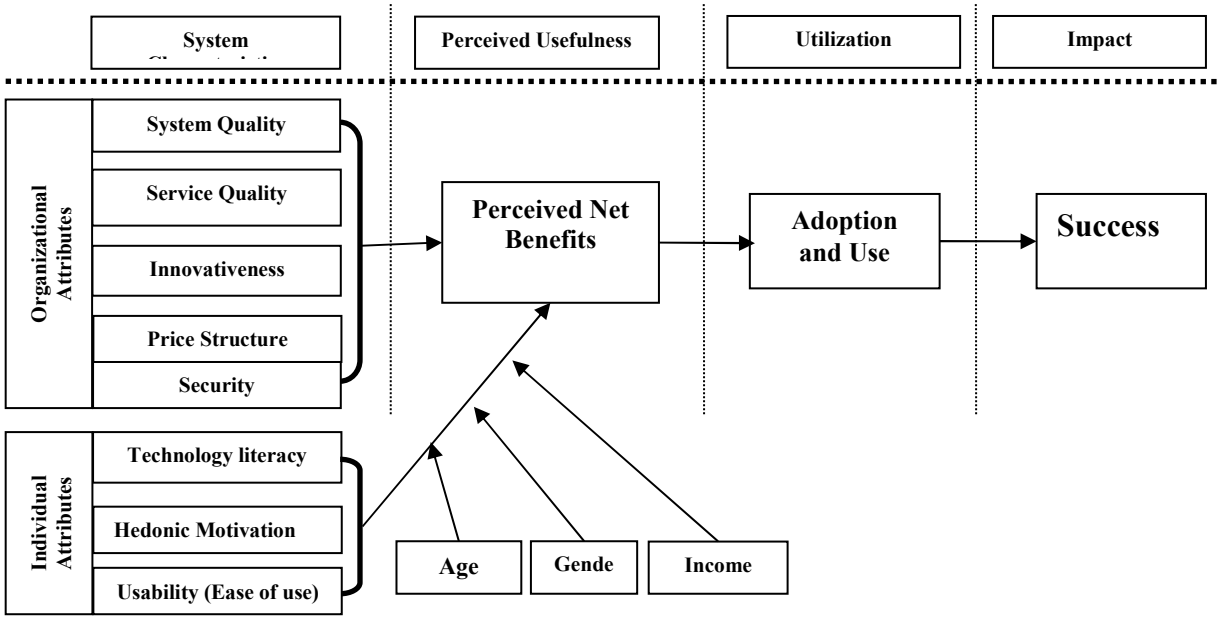

Figure 1: Proposed mobile commerce success model

By capturing the fundamentals of earlier studies and the important dimensions of m-commerce, the proposed model simplifies the formulation by limiting success determinants to the most proximate constructs. The various constructs in the proposed model are described followed by the suggested hypotheses.

System Quality is the principal criterion for judging whether system performance is efficient and flawless in m-commerce. Important attributes of investigation would include reliability of the system, online response time, round the clock availability, page loading speed and visual appearance. Also important is the extent to which a system can be customized to match the needs of diverse contexts. Customization reduces the effort implication on the user within a particular mobile commerce context. A low effort requirement potentially increases transactional probability by boosting usability of the system.

Service Quality is very central in attracting customers to m-commerce. Service quality includes the attributes of the content that are presented directly on mobile devices. Literature is emphatic on the importance of information quality as one of the determinants of usage impact. Key attributes identifiable with service quality include; content quality, currency, understandability, timeliness, and preciseness (Delone & Maclean, 1992). A

mobile commerce system that provides appropriate client support is likely to yield a suitable customer experience hence encouraging repeated use and ultimate success. Support aspects revolve around transaction status tracking, payment alternatives and availability of a mechanism for addressing frequently arising questions.
Innovativeness: The scale of features and diversity of use of a mobile commerce system have an influential bearing on the success of a system. By its nature, m-commerce incorporates both informational and transactional components. A system that encompasses multiple transactional functionalities is bound to realize a speedy success.

Price Structure: Prior literature reveals that cost and pricing structure may have a significant impact on consumers' use of technology (Chan et al. 2008). In order to determine the perceived value of products or services, monetary cost is usually appraised alongside the quality of services. Mobile commerce value will probably be positive when the benefits of using it are perceived to be greater than the monetary implication.

Security poses a significant challenge in the m-commerce environment. Users are usually apprehensive about the level of security when transacting electronically. Key issues of concern relate to trust, protection of personal and financial data and recovery of transactional information in the event of a calamity.

Technology literacy is the ability to use, assess and understand technology (ITEA, 2007). It influences an individual's ability to responsibly, appropriately and effectively use technology tools to access, manage, integrate, evaluate, create and communicate information. Technology literacy would enable individuals to appreciate how mobile technology evolves and how it can best shape commercial practice.

Hedonic motivation is conceptualized as perceived enjoyment or pleasure derived from using a technology (Thong et al 2006). Hedonic motivation has been found to be an important determinant of technology acceptance and use (Brown and Venkatesh 2005; Venkatesh et al., 2012). Thus, hedonic motivation is included as an antecedent of perceived benefits.

Usability relates to the ease of use as well as broad principles behind a system's perceived efficiency. Usability also takes into account the efficacy of a system such that if a system has multiple uses to which it can be put to, then it is perceived to have more benefits.

Perceived net benefits are the potential merits that may arise from using mobile commerce while weighed against the sacrifice to be made in order to enjoy the benefits in question. The scope of utilization is influenced by the perceived benefits and in turn influences the scale of use as well as adoption behavior. When users perceive mobile commerce as useful, it prompts them to use the service repeatedly. Repeated use as sustained by recurrent benefits provides basis for adoption and ultimate success.

3.1 Summary and Conclusions

In this paper, criteria have been proposed for use by entities intending to launch an m-commerce arrangement. Both organizational and individual based considerations have been put forward. With the pervasive penetration of mobile and internet technologies, many Kenyan customers have unlimited access to the information they require and may enjoy a wider range of choices of products and services at highly competitive prices. On their part, firms are increasingly adopting mobile based concepts in pursuit of their business missions. Further, mobile based service delivery is gaining traction even within government circles which historically tend to be associated with technology resistance.

Arguments have been advanced that the structure of a firms systems affects its ability to realize the performance objectives. While providing a link between IS Success and firm performance literature is categorical that firms which are able to launch successful systems eventually outperform those with weak systems. This is evident in the Kenyan mobile telecommunication sector, where firms with perceived higher quality m-commerce systems have significantly outmaneuvered firms with systems viewed as considerably inferior. The inconsistency in success outcomes across different mobile commerce service providers exposes potential gaps in strategy which warrant research attention.

Undoubtedly, a viable mobile commerce system should be one that enables an organization to achieve successful outcomes in line with its strategic objectives. It should encompass a set of themes which integrate the interests of stakeholders, notably the customers, clients and all those that are likely to be impacted on by the operations of the entity.

Validity of the proposed m-commerce success determinants is significant since it constitutes the ultimate test for the worth of a system investment. A study that rigorously examines the propounded constructs would therefore tender a valuable outlook and enhance precision in the explanation of mobile commerce success determinants. It is necessary to have in place a clear model not only for individual mobile commerce entities, but one that is broadly applicable across the mobile systems field in broad.

A critical aspect that would render significance on the value of a model revolves around the context within which a model is presented and examined. Contextual analysis is therefore a vital dimension when considering the sustainability as well as the applicability scope of a framework like the one conceptualized through this paper. Modeling efforts for mobile commerce systems should therefore go beyond the mere

duplication of generic information system success models. This is because certain relationships may be occasioned by a concentration of certain attributes within a specific research context or even for a particular period, resulting in momentary correctness of modeling variables. For a sustainable framework to be derived, a flexible and inquisitive procedure which challenges uncorroborated assumptions through a systematic evaluation of alternatives is desirable.

Since there is ordinarily a time lag between the manifestation of variables and their impacts, conclusions regarding critical determinants should be drawn over a period of time rather than at a specific point in time. Ultimately the purpose of establishing the determinants of success should be to aid the continuous improvement of the mobile commerce success model. Thus, assessing how different variables shape up or change within a context and over time would be a key dimension to enhancing the suitability of a sound m-commerce success model.

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