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TOWARD AN UNDERSTANDING WHY USERS ENGAGE IN M-COMMERCE

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ABSTRACT

This paper's aim is to review the existing literature in M-Commerce adoption and propose a research model to examine the necessary factors for users to engage in mobile or M-Commerce. First, the stages of commerce are discussed and defined followed by a review of the Technology Acceptance Model and its application for E-Commerce and M-Commerce. Next is an examination of the antecedents and success factors needed for M-Commerce success. Finally, this paper offers a proposed research model for M-Commerce adoption.

Keywords

M-Commerce, Technology Acceptance Model (TAM), E-Commerce, Mobile Devices

INTRODUCTION

Examining the evolutionary changes in the Internet that have occurred over the past ten years yields a prediction that the next ten will prove to be revolutionary. The shift from static, text driven web pages to interactive, rich media has significantly increased user interaction with Internet applications. Technology has become pervasive and integrated in users everyday lives. The continued purchase and adoption of newer and more feature-laden smartphones and tablets indicates that consumers are still not sated. To say that technology has revolutionized how business progresses is an understatement. The aim of this paper is review. The paper is organized as following: First, the stages of commerce are discussed and defined followed by a review of the Technology Acceptance Model and its application for E-Commerce and M-Commerce. Next is an examination of the antecedents and success factors needed for M-Commerce success. Finally, this paper offers a proposed research model for M-Commerce adoption.

LITERATURE REVIEW

Explaining the concept of M-Commerce requires an understanding of the evolutionary stages of commerce: Geographic Commerce, E-Commerce (electronic), M-Commerce (mobile) and U-Commerce (ultimate or universal) which are progressively more complex (Junglas & Watson, 2003b; Junglas & Watson 2003a; 2006). Corresponding with the changing stages in commerce is the evolution of the market place from the traditional face-to-face marketplace to marketspace to u-space (Watson, Pitt, Berthon and Zinkhan, 2002).

E-Commerce, M-Commerce and U-Commerce

Electronic or E-Commerce is a well-known construct that has existed for over a decade. E-Commerce comes from accepted literature and is "the use of Internet technology for communications and transactions between an organization and its various stakeholders to improve organizational performance" and further defines stakeholders as "customers, suppliers, governments, financial institutions, managers, employees, and the public at large," (Junglas & Watson, 2006, p.572; Straub & Watson, 2001; Watson, Berthon, Pitt, & Zinkhan, 2000). Simply put, E-Commerce is a general term typically describing a transactional sale using electronic means. Over the years, with the advent of technology, E-Commerce is now often performed on mobile handheld devices.

Drawing from previous literature, Junglas and Watson (2003a, 2003b, 2006) identified five characteristics that are necessary to differentiate M-Commerce from E-Commerce: portability, reachability, accessibility, localization and identification. The most obvious characteristic, portability is possible by the nature of carrying mobile devices in that they are untethered and it actually enables the other characteristics to be unique and independent of the traditional E-Commerce model (Junglas & Watson, 2006). Reachability in M-Commerce is responsible for the blurring lines between work versus personal time as it describes the idea of being available anytime the device is on and in a service area (Junglas & Watson, 2003a, 2003b, & 2006). Accessibility in M-Commerce depends on the ability to obtain access to the Internet or network and is limited only by telecommunication network constraints. Localization finds and can pinpoint the user's location. Use of identification is a measure to authenticate an individual user. Transitioning from electronic commerce to mobile commerce requires universality and from mobile commerce to ultimate commerce requires ubiquity (Pay, 2012).

The espoused concept of ultimate or U-Commerce differs from M-Commerce as it consists of four additional key areas where technology is ubiquitous, unique, universal, and in unison (Watson, Pitt, Berthon and Zinkhan, 2002). Migrating to U-Commerce from M-Commerce requires application, network, device and data (Junglas & Watson, 2006). Applications and devices are both mobile as mobile networks are necessary to run mobile devices. Data refers to data synchronization. Network means the mobile network, which may differ by provider or country. Ultimate commerce further requires the convergence of many different technologies in order for it to work and be successful. The U-constructs combine ideas and characteristics which are mandatory in a U-Commerce environment (Junglas & Watson, 2003a, 2003b, 2006). Ubiquity consists of reachability, accessibility and portability. Uniqueness is localization plus identification and portability. Universality is mobile focused and composed of mobile devices and mobile networks. Finally, unison refers to mobile applications and data synchronization.

U-Commerce also requires a ubiquitous computing environment, which is transformative for business and is more than using portable devices instead it integrates social and technical aspects and impacts organizational processes (Lyytinen et al, 2004). In addition to the above mentioned features differentiating U-Commerce from M-Commerce and E-Commerce, literature suggests that personalization and privacy concerns are significant factors in adoption of these technologies. Customers find that personalization is important and privacy concerns are significant as customers have to share personal information in order for there to be personalization and that creates a paradoxical relationship (Sheng, Nah, and Siau, 2008). Personalization previously has been identified as necessary and significant for U-Commerce, (Junglas & Watson, 2003b) which makes the study findings interesting.

Although a number of researchers and practitioners have attempted to study the concept, commercial use and research on U-Commerce is still in its infancy. Hence for this research, we will focus specifically on M-Commerce Adoption. In this study, M-Commerce will extend to mobile devices that have Internet capabilities including but are not limited to portable music players, upscale e-readers, interactive tablets, tablet computers, and handheld game systems since data is now available anywhere and various devices can be synced together for data exchange.

REVIEW OF TECHNOLOGY ACCEPTANCE MODEL, TAM 2 AND E-COMMERCE

Evaluating technological adoption and use often tests against the Technology Acceptance Model (TAM) (Davis, 1989). TAM has two main constructs in an attempt to predict behavioral intention to use the technology. Briefly, TAM examines perceived usefulness and perceived ease of use which are individually subjective as measures of performance and effort (Davis, 1989).

Since inception, TAM has been empirically tested and validated numerous times against technological innovations under many different circumstances leading to revisions and extensions of TAM. Specifically an extended model, TAM 2, attempts to understand user adoption behavior better by adding constructs referring to social influence processes and cognitive instrumental processes. (Venkatesh & Davis, 2000). Social influence processes construct includes subjective norms, voluntariness and compliance with social influence, internalization, image, and social influence and changes in social influence with experience. Cognitive instrumental processes construct consists of job relevance, output quality, result demonstrability, perceived ease of use, from TAM, and changes in cognitive instrumental influences with experience.

Interestingly, neither TAM nor TAM2 include trust. An extension of TAM applies the model to a vendor customer relationship in an E-Commerce environment, where trust, perceived ease of use and perceived usefulness were necessary to predict existing customers continuing to purchase (Gefen, Karahanna & Straub, 2003). Trust has shown to have a required antecedent of familiarity, which is an understanding and allows the user to reduce uncertainty in a subjective manner and when combined with trust, a general belief that a person has about the actions of another person toward them (Gefen, 2000). In a subsequent study, the concept of familiarity fully mediates its effect on trust and that differed from existing theory at the time (Gefen, Karahanna & Straub 2003). When there is uncertainty in economic and social interactions, trust becomes a critical element (Pavlou, 2003).

Trust is refined for E-Commerce based on numerous conceptualizations of the construct. Focusing on key antecedents of trust, the idea supports that trust is an antecedent of perceived ease of use and perceived usefulness (Gefen, Karahanna & Straub., 2003). The key antecedents examined were knowledge based trust antecedents (familiarity with the e-vendor), calculative-based trust antecedents (the vendor has nothing to gain by cheating the customer) and institutional-based trust antecedents (safety mechanisms built into using the site and having an easy to use interface) (Gefen, Karahanna & Straub., 2003). A practical application of this same study suggested that e-vendors should create easy to use websites that are useful with trust mechanisms built in. (Gefen, Karahanna & Straub, 2003).

ANTECEDENTS & SUCCESS FACTORS FOR M-COMMERCE ADOPTION

Extending technology acceptance and adoption to M-Commerce from E-Commerce, the focus on mobile will refer most often to the physical portability of the devices. With increasingly sophisticated smartphones and interactive tablets, the consumer has more options when choosing to engage in M-Commerce. Interjecting the construct of fun and attitude toward the act into an extension of TAM indicated that the fun of using a mobile device was more important influencing the behavior intention than attitude (Bruner, II & Kumar, 2003). Simply put, the study asserts if a device is fun to use, a user may engage in an activity just because its use is fun.

This paper identifies seven key factors that users require and antecedents that must be addressed prior to, during and after engaging in M-Commerce examined further in this paper. They are consumer decision making and online purchasing, trust and risk, user experience and ease of use, behavioral intentions to engage in M-Commerce, adoption, acceptance and customer satisfaction.

Factors of consumer decision making and online purchasing

Extending the TAM model to study acceptance of online purchasing, the construct of e-satisfaction has antecedents of trust, perceived risk, expectations based on Internet information and expectations based on web site quality, and inertia, explained as prior Internet behavior having a strong or significant effect on continued usage (Amoroso & Hunsinger, 2009a). The resulting analysis indicated that trust and structural assurances are important influencers for customers' attitudes toward purchasing and that perceived value, e-satisfaction, inertia and convenience have a significant effect on e-loyalty. A qualitative study explored critical factors of consumer decision making across three channels: E-Commerce, M-Commerce and in store and found intention to use M-Commerce developed from grounding in several theories, the Theory of Reasoned Action, Theory of Planned Behavior, Technology Acceptance Model, Information Diffusion Theory and Social Cognition Theory (Maity, 2010). It further validated that users may find similarities between in store, E-Commerce and M-Commerce, but there are differences and they are not exact substitutes for each other. In this paper's research model, these ideas are represented as M-Commerce Interest.

Familiarity, trust and mitigating risk

Trust has been identified as significant as it influences online purchasing (Amoroso & Hunsinger, 2009b). Supporting the importance of trust by examining disposition to trust and familiarity, both are significant influencers on trust (Gefen, 2000). Trust in a web retailer or e-commerce vendor can reduce a consumer's perception of risk about online transactions with that retailer (Pavlou, 2003). One way to improve a consumer's perception about a vendor is by viewing the product reviews. An experimental study examined the perspective of consumers by viewing the rating distributions of online reviews and examined two biases and the impact on consumers' intention to purchase (Yuan, Hong & Pavlou, 2012). The results in this study showed that practitioners who focused on simply raising their mean rating are not necessarily going to get their desired result in incremental consumer purchases, as the increased rating does not always increase purchase intention.

Additional studies addressed social presence as an antecedent to trust and trust was a linkage to purchase intentions with results that infer an increased social presence raises consumer trust and in turn purchase intentions (Gefen & Straub, 2003). Trust also acts as an antecedent of perceived risk in addition to perceived ease of use and perceived usefulness, where trust and perceived risk are representative variables of behavioral and environmental uncertainty (Pavlou, 2003). For M-Commerce, it is clear that e-vendors need to increase the consumer's familiarity with and trust in the business while simultaneously mitigating risk to a consumer's personal satisfaction level. The types of risk that most likely are encountered come from behavioral uncertainty, which yields economic risk, personal risk, seller performance risk and privacy risk (Pavlou, 2003).

Studying trust and customer satisfaction toward vendors in M-Commerce situations, responsiveness, brand image and satisfaction were found to influence trust (Suki, 2012). Additionally, responsiveness and brand image influenced satisfaction and trust in the same study implying that an e-vendor should consider making sure to invest in systems that will allow them to be responsive to the customer that exhibit a positive brand image and suggests that as a customer trusts an e-vendor, they will be more satisfied with them. Focusing on an older demographic, where respondents ranged in age from 52 to 87 years of age, trust has an effect on the frequency of online shopping by this group (McCloskey, 2006). Surprisingly, in this study, trust is not a limiter in terms of whether or not a user will engage in online shopping. However, trust still needs to be examined further in this research study. Another study shows internet use from mobile devices was easier for users who were higher on visual on visual orientation than those who were lower on visual orientation (Bruner, II & Kumar, 2005).

With underlying trust first, the user will engage in the electronic commerce behavior. What is interesting is redirecting the idea of trust not toward the vendor but toward the device or medium used for commerce (Vance, Elie-Dit-Cosaque & Straub, 2008). The idea that consumers using technology while engaging in e-commerce tend to trust is an alternative model view of the constructs of perceived ease of use, perceived usefulness, trust and intention to adopt (Wang & Benbasat, 2005). Adding an online recommendation agent to perceived ease of use in this model leads to trust in the agent, and from trust, it leads to either, perceived usefulness of the agents and intention to adopt the agent's technology.

User experience and ease of use

There are seven design elements necessary for an effective M-Commerce customer interface: context, content, community, customization, communication, connection, and commerce (Lee & Benbasat, 2003). The intent is establishing these elements as best practices for M-Commerce and not just as an extension for E-Commerce. Many M-Commerce sites and applications originate from E-Commerce sites when the difference in the medium requires a different user experience. Most important to a vendor is commerce, which is actual engagement in online purchasing but it must be supported by built in secure payment systems (Lee & Benbasat, 2003). Discussions of personalization and privacy concerns often occur when examining a user's experience with a website. Personalization necessary for U-Commerce (Junglas & Watson, 2003a, 2003b, 2006), also has a time dimension (Sheng, Nah & Siau, 2008) in that there may be a time savings, due to preferential settings or there may be time sensitive information sharing such as receiving current sports scores, weather, flight status and other time based activities.

M-Commerce is facing adoption and use obstacles due to a lack of standards, hence the attempt at establishing best practices for design. An important success factor for E-Commerce or M-Commerce sites is ensuring that the user experience meets their needs (Venkatesh, Ramesh & Massey, 2003). This study indicated that designing for M-Commerce needs to integrate time savings features, location based services and, convenience tied in with personalization to individualize the user experience.

Behavioral intentions and adoption of E-Commerce or M-Commerce

In an attempt to predict consumer intention to use online shopping, a study combined constructs from TAM with the Theory of Reasoned Action (TRA) and the Theory of Planned Behavior (TPB) focusing on the behaviors of consumers (Vijayasathy, 2004). In that research model, usefulness and ease of use combine with compatibility, privacy and security as antecedents of attitude, adopted from TRA, which in turn affects intention. The results showed that usefulness, ease of use, compatibility and security were important in affecting attitude toward shopping making a good case for the creation of an augmented extension of TAM as a model for online shopping adoption. Examining the drivers of mobile commerce identified that users intentions can predict user adoption and mobile commerce use (Wu & Wang, 2005). Additionally, perceived usefulness influences behavioral intention directly while perceived ease of use influences the intention indirectly through perceived usefulness.

An examination of perceived ease of use and perceived usefulness in e-commerce adoption reveals their impact and importance on the constructs of intended inquiry and purchase (Gefen & Straub, 2000). TAM identifies perceived ease of use as having an influence on perceived usefulness, via the original TAM model (Davis, 1989); this study (Gefen & Straub, 2000) tests its effect when using the Internet for an inquiry task and for a purchasing task. The authors also describe the two processes a user might engage in when examining an e-commerce site with inquiry referring to a customer learning more about products or services and purchase referring to acquiring the products or services.

Acceptance

Articles address the topic of acceptance of E-Commerce and M-Commerce, many choosing to extend TAM to apply to the electronic marketplace. One focuses on the acceptance of online shopping using antecedents of e-shopping quality, enjoyment and trust integrating into TAM (Ha & Stoel, 2008). E-shopping quality influenced the perceptions of usefulness, enjoyment and trust which when taken together affect the customer's attitude toward online shopping and the study found trust and enjoyment to be extremely important in online shopping. The research also differed with prior studies (Bruner, II & Kumar, 2005) in that enjoyment did not have as strong an effect on attitude as with ease of use or usefulness (Ha & Stoel, 2008).

Another extension of TAM explains consumers' acceptance of online shopping adding the constructs of social influence and voluntariness discussing the effects of trust, privacy, risk and e-loyalty (Amoroso & Hunsinger, 2009b). The results indicated that a more positive attitude toward the Internet leads to a higher behavioral intention to use the Internet and then use of the Internet. Interestingly, the research results indicate that trust is an important factor in influencing a consumer's attitudes

toward purchasing. This suggests that adding trust to an extension of TAM validates it as a key construct when examining consumer engagement in online shopping.

DISCUSSION

A Proposed Model for M-Commerce Adoption

Figure 1 contains a proposed model for M-Commerce Adoption. Rooted in the Technology Acceptance Model and integrating the key factors and antecedents of M-Commerce engagements as described in literature, it offers a framework for further empirical testing. In addition to TAM, inspiration for the model comes from prior literature - trust and familiarity (Gefen, 2000), risk (Pavlou, 2003), user experience (Venkatesh, Ramesh & Massey, 2003), M-Commerce interest - based on research on consumer decision making (Maity, 2010) and actual engagement in e-commerce – in the model as adoption of e-commerce (Lee & Benbasat, 2003). Testing and further empirical study is necessary evaluate user intention to engage in m-commerce using specific mobile devices (phone, tablet, and others).

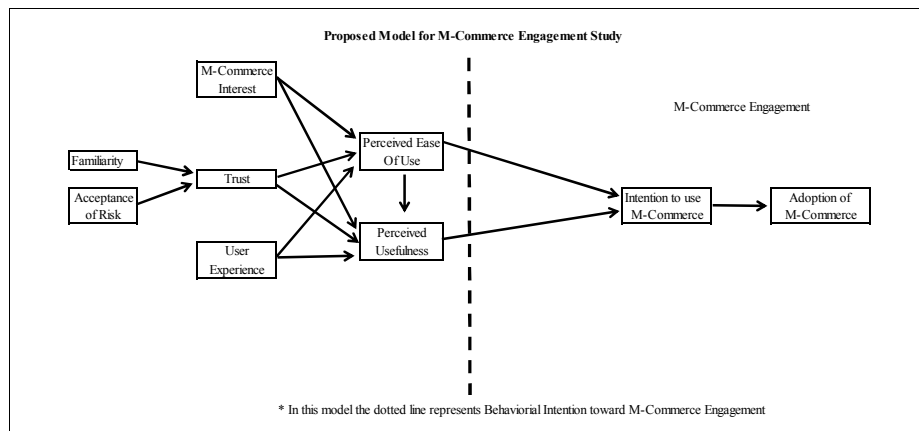


Figure 1: Proposed Model for M-Commerce Adoption

Limitations

Since the proposed model has not yet been tested, hypotheses must be finalized and tested. The plan is to perform a quantitative study using undergraduate students at a large southeastern university. The specifics will involve testing intention to engage in mobile commerce using mobile devices such as iPads, tablets and smartphones. Survey questions will be based primarily on existing validated instruments. Data analysis will be completed using SPSS 20, AMOS and will employ Structural Equations Modeling.

CONCLUSION

This paper has offered a review and exploration of the antecedents to engaging in M-Commerce. A proposed model of best practices necessary for user engagement was presented. The stages of commerce, Technology Acceptance Model, application for M-Commerce were reviewed. Antecedents and success factors needed for M-Commerce success were presented. Finally, the plan for the proposed research model was indicated. Comments and recommendations are welcome.

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