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Mobile Commerce Competitive Advantage: A Quantitative Study of Variables that Predict M-Commerce Purchase Intentions

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ABSTRACT

Seeking to fill a gap in current research on the conditions that would facilitate user acceptance of m-commerce, the present study investigated m-commerce users' perceptions of performance and effort expectancies, social influence, and facilitating conditions of m-commerce trust and perceived risk. We also analyzed how these aspects affect m-commerce purchase intentions. To this end, a total of 165 adult American users of m-commerce were surveyed and their perceptions of performance and effort expectancies, social influence, facilitating conditions of m-commerce trust and perceived risk, as well as their m-commerce purchase intentions, were measured. Performance and effort expectancies, social influence, as well as the facilitating conditions of trust in the use of m-commerce, were found to significantly predict m-commerce purchase intentions. The findings also provided further clarification of the facilitating conditions of m-commerce purchases suggesting that implicit motivations and approach oriented goals might be significantly associated with m-commerce purchase intentions.

KEYWORDS

Competitive advantage; implicit motivations; mobile commerce; UTAUT model

Introduction

Electronic and web technologies are a powerful economic and social force in contemporary life and business. Commercial activities conducted over computers and mobile networks empower business processes and introduce unique channels for buying and exchanging goods and information for consumers. As of 2017, e-commerce accounted for approximately \$440 billion in U.S. retail sales per annum (U.S. Department of Commerce 2017). Likewise, mobile commerce (m-commerce), a steadily growing segment of digital commerce solutions, was predicted to reach \$669 billion in worldwide sales by 2018 (Statista 2018). Therefore, in order to attract new and preserve existing customers, firms face an increasing pressure to deploy m-commerce strategies (Hofacker, Swilley, and Lamont 2012). Overall, knowledge and intellectual capital pertaining to web and mobile technologies are now widely

acknowledged to be crucial business assets and a source of competitive advantage (Lin et al. 2014).

Within the available body of research on technology acceptance that relates to the context of a competitive advantage (Mahmood et al. 2008; Benou, Vassilakis, and Vrechopoulos 2012), a variety of attitudes and perceptions related to and predictive of m-commerce purchase intentions have been established. First, several studies demonstrated that trust and privacy concerns are reliable predictors of m-commerce purchase intentions (Huang et al. 2009; Yaseen and Zayed 2010; Zhou, Lu, and Wang 2010; Zhou and Lu 2011; Pelet and Papadopoulou 2012; Nassuora 2013; Chunxiang 2014). Second, other studies have shown that usefulness and performance expectations, as well as ease of use and effort expectations, are good predictors of m-commerce adoption behaviors (Song, Koo, and Kim 2007; Wang and Wang 2010; Yaseen and Zayed 2010; Wang and Li 2012; Zhou, Lu, and Wang 2010; Nassuora 2013; Jaradat and Al Rababaa 2013). Third and finally, social influence, or the extent to which an individual adopts m-commerce based on the views of others, was also found to be a reliable determinant of m-commerce purchase intentions (Wang and Wang 2010; Pelet and Papadopoulou 2012; Zhou, Lu, and Wang 2010).

Whereas past research expanded knowledge about attitudes and perceptions toward e-commerce that drive consumer purchase intentions and provide a competitive advantage (Hernández, Jimenez, and Martin 2010; Coursaris and Kim 2011; Foon and Fah 2011; Wang, Wang, and Liu 2016), the fundamental behavioral dynamics associated with m-commerce are yet to be clearly delineated (Budzanowska-Drzewiecka 2015). Among the published m-commerce studies (e.g., Zhou and Lu 2011; Alkhunaizan and Love 2012; Zhang, Zhu, and Liu 2012; Jaradat and Al Rababaa 2013; Okazaki and Mendez 2013; Chunxiang 2014; Lin et al. 2014), none investigated together the relationship between perceptions of m-commerce performance and effort expectancies, social influence, facilitating conditions of m-commerce trust and perceived risk, and customer m-commerce purchase intentions. The research reported in this article addresses this gap in the literature and thereby contributes to a conceptual clarification of which type of facilitating conditions are more or less likely to promote m-commerce purchase intentions and be applied in business to develop competitive advantages.

Theoretical background and research model

A widely used methodological approach in technology acceptance research is to employ behavioral path models to predict user intentions and behaviors. Among the most commonly used theories are the technology acceptance model (TAM; Davis 1989; Davis, Bagozzi, and Warshaw 1989), innovation

technology, organization and environment framework (DePietro, Wiarda, and Fleischer 1990), innovation diffusion theory (Rogers 2003), task technology fit model (Goodhue and Thompson 1995), and the unified theory of acceptance and use of technology (UTAUT; Venkatesh et al. 2003). Of these models, the UTAUT approach is particularly beneficial for the following two reasons. First, seeking to explain user acceptance of information technology, the UTAUT approach consolidates a range of theoretically and empirically relevant constructs from other models (Venkatesh et al. 2003). Second, the UTAUT approach is also a flexible method to conceptualize m-commerce acceptance, as it allows for the incorporation of additional variables into a technology acceptance conceptual framework (Hino 2015).

The framework provided by the UTAUT model supports the following four main technology acceptance constructs to predict technology acceptance intentions: (1) performance expectancy; (2) effort expectancy; (3) social influence; and (4) facilitating conditions (see Figure 1). Overall, the UTAUT model was shown to be a relatively strong predictor of technology acceptance. Specifically, several previous studies demonstrated that UTAUT predicted approximately 62% of intentions to adopt mobile banking (Oliveira et al. 2014; Zhou, Lu, and Wang 2010), 70% of the variance in user intentions to adopt a new technology (Venkatesh, Thong, and Xu 2012), 65% of behavioral intentions to use m-Internet (Wang and Wang 2010), 60% of m-commerce purchases of airplane flights (Escobar-Rodriguez and Carvajal-Trujillo 2014), and 61% of behavioral intentions to use business information technology (Pope 2014). As such, the UTAUT model was adopted to frame our study of factors that predict m-commerce purchase intentions.

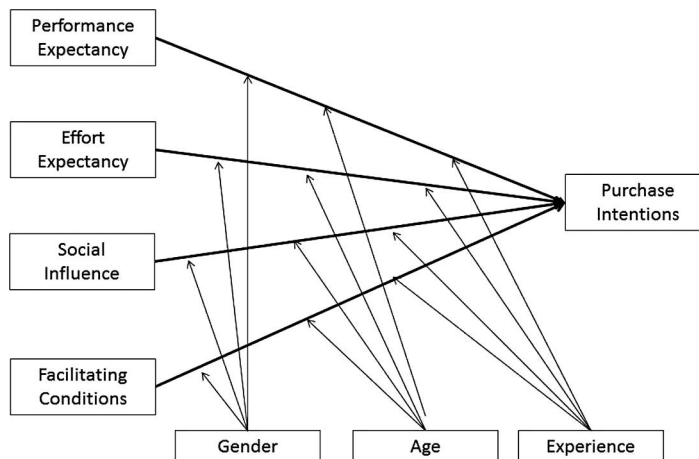


Figure 1. Illustration of the unified theory of acceptance and use of technology research model showing the relationships among performance and effort expectancy, social influence, and facilitating conditions with purchase intentions and the moderating influences of gender, age, and experience. The model is adapted from Venkatesh et al. (2003, 447).

Despite the overall predictive capacity of the UTAUT model, the facilitating conditions aspect of the model has generally been shown to have little impact on technology acceptance (e.g., Foon and Fah 2011; Venkatesh, Thong, and Xu 2012; Jaradat and Al Rababaa 2013; Escobar-Rodriguez and Carvajal-Trujillo 2014; Oliveira et al. 2014). On close examination of the literature, it appears that facilitating conditions are either loosely operationalized (Venkatesh, Thong, and Xu 2012; Attuquayefio and Addo 2014), justified (e.g., Alkhunaizan and Love 2012; Im et al. 2011), or omitted from the UTAUT model altogether (e.g., Wang and Wang 2010; Casey and Wilson-Evered 2012; Pope 2014).

Within the UTAUT model, “facilitating conditions” refers to consumers’ perceptions of the resources and support available to perform a behavior in which they feel they have control over a technology system (Venkatesh et al. 2003). Although the definition of facilitating conditions allows for a wide range of factors that promote or remove barriers to the use of a technology, which facilitating conditions are more or less meaningful predictors of user acceptance of technology remains to be established. Many researchers classify m-commerce as a subtype of e-commerce (e.g., Gupta and Vyas 2014; Hu, Lu, and Tzeng 2015); however, m-commerce has several characteristics that make it distinct from e-commerce. Specifically, considering that wireless data transfer over public networks increases the risk of data theft or fraud, privacy and security issues are more salient concerns in m-commerce (Benou, Vassilakis, and Vrechopoulos 2012). Therefore, the present study focused on two facilitating conditions most frequently addressed in the technology acceptance research: perceived risk and trust issues (Cyr, Head, and Ivanov 2006; Oliveira et al. 2014; Giovannini and Ferreira 2015). As a result, the findings were expected to contribute to a conceptual clarification of the UTAUT model by showing the type of facilitating conditions that promote m-commerce intentions.

Hypotheses development

Effort expectancy

Effort expectancy is generally defined as the extent to which people believe that using (a new) technology would be effort-free and easy to learn and use (Zhou 2012). In the TAM (Davis 1989), effort expectancy reflects the “perceived ease of use” concept defined as the belief that using a system would be free from effort and not arduous. The effect of effort expectancy on technology acceptance was investigated in a wide variety of applications such as the Intranet (Chang 2004), e-banking (Im, Hong, and Kang 2011; Oliveira et al. 2014), and wireless Internet (Tsai and LaRose 2015), as well as the use of biometric authentication technology for e-shopping (Hino, 2015). Taken together, previous research findings convincingly demonstrate that a

lower effort expectancy contributes to more extensive use of technology (e.g., Attuquayefio and Addo 2014; Oliveira et al. 2014; Tsai and LaRose 2015). Therefore, effort expectancies within the UTAUT framework can reasonably be expected to apply to the domain of m-commerce as well.

H1: Effort expectancy would significantly predict consumers' m-commerce purchase intentions.

Performance expectancy

Performance expectancy within the UTAUT framework is defined as the strength of an individuals' belief that m-commerce will help to better perform a task (Venkatesh, Thong, and Xu 2012). Moreover, as noted by Davis, Bagozzi, and Warshaw (1989), the extrinsic motivation underlying performance expectancy is the perception that the use of a technology in an activity can aid in achieving goals other than the activity itself, such as improved job performance and quality of output. In a previous study targeting Saudi users, Alkhunaizan and Love (2012) found that performance expectancy is the strongest UTAUT predictor of intentions to use m-commerce. Similarly, in a sample of Spanish participants, Escobar-Rodriguez and Carvajal-Trujillo (2014) showed performance expectancy to be the strongest predictor of behavioral intentions to use e-commerce for the purchase of airplane tickets. Therefore, in the context of m-commerce, performance expectancy can be expected to positively relate to the use of m-commerce.

H2: Performance expectancy would significantly predict consumers' m-commerce purchase intentions.

Social influence

Societal conditions frequently play an important role in determining users' perception of and approach to technology. Within the UTAUT model, social influence reflects the strength with which important others have influenced a person to adopt or use a technology system (Venkatesh, Thong, and Xu 2012). Moreover, social influence is conceived of as a composite of factors, including components such as informal influence, social image, maintenance, and critical mass (Wang and Wang 2010). Whereas informal influence refers to the user's accepting information from peers as evidence about reality and forming an opinion on that basis (Bapna and Umyarov 2015), critical mass refers to the point when a technology reaches a significant market penetration and its perceived value in society increases, thereby attracting more users and accelerating adoption. Social influence can also maintain an individual's social image (Safeena, Hundewale, and Kamani 2011), specifically by improving that individual's status and performance in a society. Social influence figures

prominently in studies pertaining to technology use behavior (e.g., Foon and Fah 2011; Chong, Chang, and Ooi 2012; Attuquayefio and Addo 2014), with the finding that adoption of new technologies is predicted by social norms and influences. As m-commerce is a relatively new technology, social influence is likely to be an important predictor of its adoption.

- H3: Social influence would significantly predict consumers' m-commerce purchase intentions.

Facilitating conditions

Consistent with the UTAUT conception of facilitating conditions (Venkatesh et al. 2003), perceived risk and trust issues relate to the level of control and support users may perceive with m-commerce adoption. The uncertainty created by the open nature of Internet transactions makes risk and trust important elements of m-commerce and related research (Lin et al. 2011). Accordingly, many studies emphasized the need to investigate further the issues of trust and risk related to user intentions and behaviors in the adoption of m-commerce (e.g., Chong, Chang, and Ooi 2012; Chong 2013). In this context, perceived risk can be defined as a user's expectation of loss in terms of product quality, data security, or information theft during an m-commerce transaction (Hille, Walsh, and Cleveland 2015). Therefore, due to consumer uncertainty with online transactions and the risk of associated monetary loss, as well as the risk of loss of privacy linked to the provision of personal data to online retailers, technology risk has been found to be a negative determinant of online purchasing intentions (Pavlou 2003; San Martín and Herrero 2012). By contrast, trust in m-commerce can be defined as a customer's positive beliefs in the security and reliability of m-commerce platforms and in the seller's ability and motivation to provide quality products and services (Chen and Chang 2013; Joubert and Van Belle 2013). From the above, it could be expected that risk concerns and trust in the technology would be associated with m-commerce adoption in complementary ways.

- H4: The facilitating condition of perceived risk would significantly predict consumers' m-commerce purchase intentions, with higher risk associated with lower purchase intentions.
- H5: The facilitating condition of trust would significantly predict consumers' m-commerce purchase intentions, with higher trust associated with higher purchase intentions.

Research method

The main aim of the present study was to contribute to knowledge on the influence of users' perceptions of m-commerce performance and effort

expectancies, social influence, and facilitating conditions of m-commerce risk and trust on their purchase intentions. To this end, a quantitative, predictive study method using survey procedures via the online platform SurveyMonkey was used. The actual research design was based on similar UTAUT studies (e.g., Venkatesh, Thong, and Xu 2012) to enable a test of the predictive capacity of performance and effort expectancies, social influence, and facilitating conditions of m-commerce risk and trust on m-commerce purchase intentions.

Population and sample

The target population of the present study included adults (21 years and older) at various stages of adopting m-commerce use and other new consumer technologies. The focus was on North American consumers within an already well-developed base of information technology users (U.S. Department of Commerce 2017). The final sample of participants ($N = 165$) included 67 men and 98 women with 22.4% aged 21 to 29 years, 25.9% aged 30 to 44 years, 34.7% aged 45 to 59 years, and 14.1% aged 60 years and older. The median annual income of the participants ranged between \$75,000 and \$90,000, and the residence of participants was relatively evenly spread among the nine regions of the United States: 19.4% of the participants were from the South Atlantic region, 18.2% were from the Pacific region, and 17.1% were from the East North Central region.

Measures

The data collection instrument for this study included several items to determine participant demographics (age, gender, income, regional location) and 6 scales to measure the main variables tested in the present study. The scales were adapted from Escobar-Rodriguez and Carvajal-Trujillo (2014) to test the application of the UTAUT model to m-commerce purchase intentions. A total of 20 items were used to measure performance and effort expectancy, social influence, facilitating conditions of m-commerce risk and trust, and m-commerce purchase intentions. The participants rated each item on a 7-point Likert-type scale (1 = *strongly disagree* to 7 = *strongly agree*).

Performance expectancy was measured with a 4-item scale to determine the strength of the participants' belief that m-commerce would help them better perform a task (e.g., "Using m-commerce helps me accomplish things more quickly in the purchasing process"). Effort expectancy was a 4-item measure of the belief that using m-commerce is effort-free and easy to use (e.g., "My interaction with m-commerce sites is clear and understandable"). Social influence was measured with a 3-item scale to determine the strength with

which important others have influenced a person to adopt or use an m-commerce system (e.g., “Other people I know have encouraged me to use m-commerce”). M-commerce trust was a 3-item measure of the strength of an individual’s belief that using m-commerce is secure and has no privacy threats (e.g., “I feel secure about the m-commerce payment systems I use”). M-commerce risk was measured with a 3-item scale to determine the risk perceived while using m-commerce, including fraud and product quality (e.g., “I am concerned about the privacy of my personal information during an m-commerce transaction”). Finally, purchase intentions was a 3-item scale that measured the strength of the participants’ intentions to purchase with m-commerce in the future (e.g., “I intend to continue to use m-commerce sites to make my purchases in the future”). The 20 items from the 6 scales were randomly distributed throughout the survey.

Data collection procedure

Data collection commenced when an invitation was sent to North American adult members of the online SurveyMonkey audience panel. This approach to data collection provided the advantages of (1) access to a wider population base; (2) time efficiency; (3) relative validity; (4) cost-efficiency; and (5) easier means of data collection (Wright 2005). Moreover, online survey data collection methods have been shown to equal the reliability and validity of other methods, such as pencil-and-paper questionnaires or mail surveys (Deutskens, de Ruyter and Wetzels 2006). Via an initial screening process, the use of the online site ensured that potential participants could only proceed with the study if they met the selection criteria of being a North American adult, 21 years of age or older, and a user of m-commerce. If potential participants met the inclusion criteria and wanted to complete the study, they were directed to an online informed consent letter to read and complete prior to responding to the survey. Once the participants completed the informed consent form, they were directed to an online site for administration of the research questionnaire via SurveyMonkey. The participants were self-selected, and sampling was completed when the desired number of participants fully completed the questionnaire. Power analysis showed that a sample size of 146 participants provided power of 0.95 with a medium effect size of .15.

Results

Preliminary analysis

Preliminary analysis was conducted to determine the factor structure of the five predictor variables: performance expectancy, effort expectancy, social influence, m-commerce trust, and m-commerce risk. A direct oblimin

rotation was applied, as there was an expectation that the variables would be moderately correlated (Reio and Shuck 2014). For ease of interpretation, factor loadings below .5 were suppressed in the factor analysis output. Factor analysis confirmed the expected factor structure of the items, as each item loaded on its respective dimension and there were no significant cross-loadings of items on alternative factors. The rotated solution supported a five-factor structure that explained 77.9% of the total variance in item responses. Effort expectancy (factor 1) explained 43.86%, risk (factor 2) explained 13.0%, performance expectancy (factor 3) explained 8.87%, social influence (factor 4) explained 7.35%, and trust (factor 5) explained 4.78%. The factor intercorrelations were low to moderate and further supported the construct validity of the scales used to measure the predictor variables.

The mean and standard deviation of each measure, as well as their intercorrelations and reliabilities, are summarized in Table 1. As suggested by the results, the participants' responses were relatively high on risk as compared to the midpoint of the scale, which highlights safety and security concerns for conducting m-commerce. Similarly, the participants' responses were quite high on effort expectancy as compared to the midpoint of the scale, which indicates a belief that m-commerce is easy to use and free from hassles. Conversely, the participants' responses were relatively low on social influence or the extent other people influence them in their m-commerce activities. Except for risk, which showed no significant correlation with any of the variables, moderate and significant correlations between each of the variables were observed. Finally, Table 1 shows high to moderate alpha coefficients, indicating the reliability of each measure.

Main analysis

To test the hypotheses of this study, the ordinary least squares linear regression model was used to determine the predictive capacity of m-commerce performance and effort expectancies, social influence, and facilitating conditions (trust and perceived risk) on m-commerce purchase

Table 1. Descriptive statistics for the measures including means, standard deviations, and scale intercorrelations and Reliabilities.

	<i>Mean</i>	<i>SD</i>	1	2	3	4	5	6
1 PE	4.64	1.39	.91					
2 EE	4.91	1.32	.70 ^a	.92				
3 SI	3.73	1.29	.62 ^a	.49 ^a	.74			
4 R	4.97	1.25	.12	.08	.03	.77		
5 T	4.54	1.24	.64 ^a	.64 ^a	.41 ^a	-.10	.74	
6 PI	4.18	1.48	.84 ^a	.71 ^a	.68 ^a	.04	.64 ^a	.87

Note. PE = performance expectancy, EE = effort expectancy, SI = social influence, R = risk, T = trust, PI = purchasing intentions.

Alpha reliabilities are shown on the diagonal; ^a $p < .01$.

Table 2. Significance test of the regression coefficients.

	<i>B</i>	<i>SE</i>	Standardized <i>B</i>	<i>t</i>	<i>p</i> value
(Intercept)	−.62	.33		−1.88	.06
Performance expectancy	.55	.07	.51	8.18	.00
Effort expectancy	.19	.06	.17	3.02	.00
Social influence	.28	.06	.24	5.07	.00
Risk	−.05	.05	−.04	−1.00	.32
Trust	.12	.06	.09	1.81	.07

intentions. Overall, the results of the regression analysis showed that performance and effort expectancies, social influence, and facilitating conditions (trust and perceived risk) explained 77.9% of the variance in m-commerce purchase intentions, $F(5, 164) = 112.02$, $p < .001$. The impact of each independent variable is shown in Table 2 and indicate that effort expectancy, performance expectancy, and social influence ($p < 0.001$) were significant predictors of purchase intentions. Whereas trust showed a somewhat weaker positive relationship with purchasing intentions that approached significance, risk was not significantly related to purchase intentions.

A further test of the overall model of relationships between the variables employed in this study was conducted using Amos 4.0. Several commonly used goodness-of-fit indices (GFIs) were analyzed to determine the model fit. Based on this analysis, the best-fitting model excluded the direct path of risk on purchase intentions and is shown in Figure 2. The main GFIs of the model indicated a satisfactory model fit: $\chi^2 = 1.04$ ($p = .31$), Comparative Fit Index (CFI) = 0.99, GFI = 0.99, Root Mean Square Error of Approximation

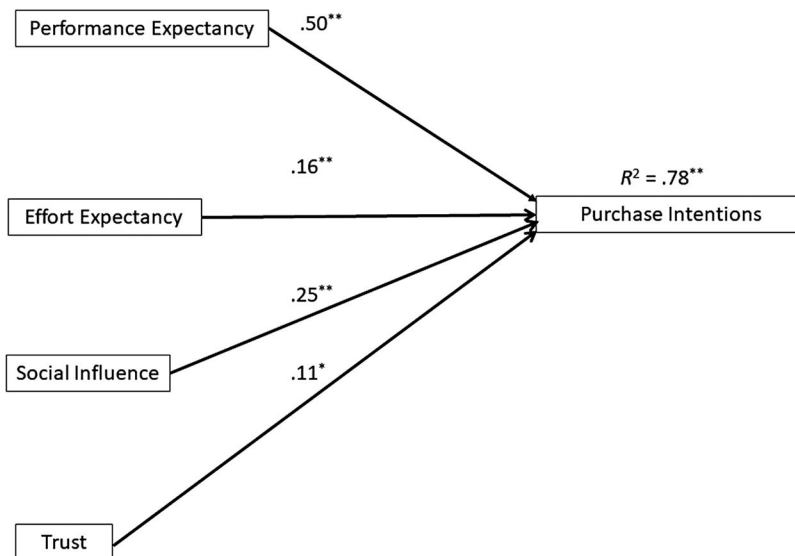


Figure 2. Path model results showing regression weights and explained variance. Note. * $p < .05$; ** $p < .01$.

(RMSEA) = 0.02, Tucker Lewis Index (TLI) = 0.96, Adjusted Goodness of Fit Index (AGFI) = 0.96. The regression weights indicated that performance expectancy, effort expectancy, social influence, and trust significantly affected purchase intentions with performance expectancy being the strongest predictor.

Discussion

Taken together, the results of the present study suggest that performance and effort expectancies, social influence, the facilitating conditions of trust and perceived risk in the use of m-commerce explain a significant amount of variance in m-commerce purchase intentions. Indeed, a very high portion (77.9%) of the variance in m-commerce purchase intentions was explained by the UTAUT variables, which compares favorably to previous research findings (e.g., Wang and Wang 2010; Venkatesh, Thong, and Xu 2012; Escobar-Rodriguez and Carvajal-Trujillo 2014). Furthermore, consistent with previously reported findings, our results also support the hypothesis that performance expectancy would be a strong individual predictor of purchase intentions (H2). Therefore, the capacity for m-commerce to help users more quickly and efficiently perform purchasing tasks would appear to be a comparatively strong selling point.

Our results also support the hypothesis that effort expectancy would be an individual predictor of m-commerce purchase intentions (H1), although the relationship was comparatively weak. Other studies yielded similar results of effort expectancy being a significant, albeit weak predictor of m-commerce purchase intentions (e.g., Alkhunaizan and Love 2012; Escobar-Rodriguez and Carvajal-Trujillo 2014). The relatively low importance of effort expectancy in explaining m-commerce purchase intentions found in the present study appears to relate to the findings reported by Davis (1989) that the effect of perceived ease of use was not significant after controlling for usefulness, suggesting that effort expectancy operates through performance expectancy.

The findings of the present study also support the hypothesis that social influence would predict m-commerce purchase intentions (H3). Previous research also indicated social influence to be an important determinant of Internet and m-commerce usage intentions. For example, Foon and Fah (2011) found social influence to be among the strongest predictors of Internet banking adoption, whereas Lu, Yao, and Yu (2005) reported that social influence had a direct positive impact on intention to adopt mobile Internet services. Therefore, facilitating the impact of social influence on m-commerce adoption and use in the purchasing process would appear to provide a potential point of competitive business advantage.

With regard to H5, structural equation modeling showed that trust had a significant impact on m-commerce purchase intentions. Similarly, other

researchers (e.g., Oliveira et al. 2014; Escobar-Rodriguez and Carvajal-Trujillo 2014) found that trust in and assurances about information quality, security, and privacy significantly predicted behavioral intentions to use m-commerce to purchase airline tickets. The concept of trust reflects the strength of a person's belief that using m-commerce is secure and poses no privacy threats (Zhang, Zhu, and Liu 2012). The findings of this study indicate that trust in m-commerce is an important independent factor to m-commerce purchase intentions, but its significance is attenuated when considered among other factors, such as performance and effort expectancy.

The hypothesis that the facilitating condition of perceived risk would predict m-commerce purchase intentions (H4) was not supported in this study. Moreover, m-commerce risk was not independently correlated with m-commerce purchase intentions. By contrast, previous research found some relationship between risk and acceptance of e-commerce (e.g., Lin et al. 2014; Pavlou 2003). Nevertheless, in the present study, perceived risk had little bearing on m-commerce purchase intentions, suggesting that m-commerce is a domain in which perceived risk may not be a focal issue for users.

Implications

The results of this study provide some conceptual clarification to the UTAUT model and the impact of facilitating conditions on technology acceptance. Facilitating conditions as defined in the UTAUT framework include factors that promote or remove barriers to the use of technology (Venkatesh, Thong, and Xu 2012). The findings from this study showed that m-commerce trust was significantly related to purchase intentions; however, perceived risk did not relate to m-commerce purchase intentions. Similarly, previous research generally found users' trust in a system to be a consistent predictor of m-commerce purchasing intentions (e.g., Lin et al. 2014; Escobar-Rodriguez and Carvajal-Trujillo 2014), whereas the relationship between perceived risk and purchase intentions is equivocal in the research literature (e.g., Pavlou 2003; Joubert and Van Belle 2013). Together, previous findings and those from the current study suggest that facilitating conditions that promote m-commerce purchase intentions, such as trust, are perhaps more important than factors that can operate as barriers to m-commerce, including perceived risk.

Consistent with approach/avoidance goal theory (Elliot 2006), the facilitating condition of m-commerce trust reflects a goal approach orientation and an intrinsic motivation associated with a desired outcome, such as satisfaction with a purchase of product or service. In terms of the current findings, m-commerce purchase intentions did not relate to the avoidance goal of reducing m-commerce risks. Moreover, the notion of facilitating conditions in the UTUAT framework may be appropriately defined by factors that reflect

an approach goal orientation and intrinsic m-commerce motivations rather than including those oriented toward removing barriers to m-commerce or focus on avoidance-oriented goals associated with m-commerce. Indeed, previous research found that intrinsic motivations such as website aesthetics and pleasure-seeking motives promote technology acceptance and use (e.g., Cyr, Head, and Ivanov 2006, Escobar-Rodriguez and Carvajal-Trujillo 2014), whereas barriers such as cost are weak predictors of usage intentions (e.g., Alkhunaizan and Love 2012). Future research might seek to investigate the approach and avoidance goals and motivations behind m-commerce purchase intentions to provide further clarification of the facilitating conditions construct within the UTAUT theoretical framework.

In addition to the theoretical implications of the findings, the results of the study raise certain practical implications in terms of their relationship to business competitive advantages. A competitive advantage can be defined as the ways in which an organization implements a business strategy that results in cost leadership, product differentiation, or product focus (Porter and Millar 1985; Wang, Lin, and Chu 2011). The findings of this study showed that performance expectancy was the strongest predictor of m-commerce purchase intentions and imply that businesses relying on m-commerce transactions may gain a competitive advantage by developing the utilitarian or practical aspects of their m-commerce services.

The findings also showed social influence to be a comparatively strong predictor of m-commerce purchase intentions. Social influence reflects the strength with which important others have influenced a person to adopt or use an m-commerce system (Venkatesh, Thong, and Xu 2012). The implication of the findings is that providers of m-commerce services may gain a competitive advantage by communicating to existing and potential customers what other people are doing when it comes to making their purchases. Social influence may be employed as a bridge between m-commerce purchases intentions and other online applications, such as social media, for online services to develop a competitive advantage.

To a lesser degree, the results showed that effort expectancy and m-commerce trust positively associate with m-commerce purchase intentions. From a practical perspective, the findings imply that providers of m-commerce may gain a competitive advantage to the extent that their systems are free from effort and not difficult to use (Venkatesh, Thong, and Xu 2012). Moreover, the design of m-commerce service delivery should demonstrate and promote trust between users and technology to facilitate a competitive advantage with information such as third-party security verifications (Casey and Wilson-Evered 2012). Finally, the results from the study imply that perceptions of m-commerce risk do not directly predict purchase intentions. These findings imply that assurances to customers that a system is free from risk are likely to be a precondition or basic requirement to

developing trust in m-commerce and facilitating purchase intentions and behaviors (Escobar-Rodriguez and Carvajal-Trujillo 2014).

Limitations and future research

Despite the theoretical and practical implications of the results of this study, several methodological limitations impact on the generalizability of the findings. In terms of the sample of participants, the findings are limited by the number of participants who completed the survey questionnaire. Moreover, participants on the SurveyMonkey panel may not be a representative sample of North American m-commerce users (Evans and Mathur 2005). In addition, self-selection bias is another potential limitation of online survey research (Wright 2005). A further limitation of the study was that rating m-commerce purchase intentions does not necessarily translate to participants' actual m-commerce usage and behaviors. Despite these issues, the study used a reasonable sample size that broadly represented the North American population in terms of gender, age, geographic location, and income, and similar research has shown that purchase intentions are a good predictor of m-commerce usage behavior (Escobar-Rodriguez and Carvajal-Trujillo 2014).

Whereas the findings from this research provide some clarification to the facilitating conditions construct in the UTAUT framework, further research is needed in this direction. The findings suggested that the notion of facilitating conditions may be defined by factors that reflect an approach goal orientation (Elliot 2006), as well as intrinsic m-commerce motivations, rather than including those oriented toward removing barriers to m-commerce or focus on avoidance-oriented goals associated with m-commerce. Future research might include investigation of the motives behind m-commerce purchase intentions to further clarify the nature of m-commerce facilitating conditions. From the nature of the findings of this study, it would be expected that achievement goals and intrinsic motivations such as website aesthetics and pleasure-seeking motives (Cyr, Head, and Ivanov 2006; Escobar-Rodriguez and Carvajal-Trujillo 2014) are stronger predictors of technology acceptance and use than barriers to usage intentions, such as cost and risk.

Like most research methods in the technology acceptance empirical literature (Escobar-Rodriguez and Carvajal-Trujillo 2014), this study employed a correlational design to test the effects of m-commerce perceptions and attitudes on subsequent purchase intentions. Although the findings from correlational designs provide certain methodological benefits, they lack the capacity to show causal relationships. Future experimental research that manipulates performance and effort expectancies, social influence, and facilitating conditions to determine their independent effects on m-commerce purchase intentions would be worthwhile. Future research might also log usage of m-commerce for an extended period to see how performance and

effort expectancies, social influence, and facilitating conditions may change over time. As m-commerce continues to grow and develop in the marketplace, knowledge developed from longitudinal research about how people relate to m-commerce over time may provide a significant competitive advantage.

Conclusion

The findings of the research provide support of the efficacy of the UTAUT framework for developing knowledge about the predictors of m-commerce purchase intentions. The results also provided further clarification of the facilitating conditions of m-commerce purchases, suggesting that implicit motivations and approach-oriented goals might be significantly associated with m-commerce purchase intentions. Despite some limitations of the findings, the results provide solid knowledge and implications about the predictors of m-commerce intentions and how they may translate into competitive advantages for m-commerce providers. Future research can be conducted to further develop knowledge about the extent of the relationships among m-commerce performance expectancies, social influence, implicit motivations, and purchase intentions. Developing knowledge on m-commerce purchase intentions has the potential to provide leverage to businesses seeking to gain a competitive advantage through their m-commerce purchasing domains.

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