A structural model of customer satisfaction and trust in vendors involved in mobile commerce

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Abstract

The purpose of this paper is to provide an explanation of factors influencing customer satisfaction and trust in vendors involved in mobile commerce (m-commerce). The study sample consists of 200 respondents. Data were analyzed by employing structural equation modelling (SEM) supported by AMOS 5.0 with maximum likelihood estimation in order to test the proposed hypotheses. The proposed model was empirically tested and results confirmed that users' satisfaction with vendors in m-commerce was not significantly influenced by two antecedents of the vendor's website quality: interactivity and customisation, and also two antecedents of mobile technology quality: usefulness and ease-of-use. Meanwhile, users' trust towards the vendor in m-commerce is affected by users' satisfaction with the vendor. Interestingly, vendor quality dimensions such as responsiveness and brand image influence customer satisfaction with vendors in m-commerce. Based on the findings, vendors in m-commerce should focus on the factors which generate more satisfaction and trust among customers. For vendors in general, the results can help them to better develop customer trust in m-commerce. Vendors of m-commerce can provide a more satisfying experience for customers.

Keywords: mobile, m-commerce, trust, Satisfaction, structural equation modelling

1 INTRODUCTION

Mobile commerce, or e-commerce using mobile devices and now known as m-commerce, has become a major topic of interest for the IS research community and a key priority for many business organizations (Ropers, 2001). Scholars and industry representatives are turning their attention towards the promise of electronic wireless media, envisaging that the next - or the real phase of e-commerce growth will be in the area of mobile commerce (Bertrand, Caplan, Chab, Fernandez-Moran, & Letelier, 2001; Kalakota & Robinson, 2001; Keen & Mackintosh, 2001; Varshney & Vetter, 2001; Varshney, Vetter, & Kalakota, 2000). Olla, Patel and Atkinson (2003) stated that m-business is mobile Internet applications on ubiquitous mobile networks allowing real-time, anywhere, anytime connectivity to services. This means that customers, partners and employees should be able to access information resources and services of a company wherever and whenever they want (Steendern, 2002).

There is growing demand in the business environment for mobility. eDigitalResearch and Portaltech (2011) found that over one quarter (28%) of users use their Smartphone to shop, browse and research products via their phones. The mobile commerce site of Dover Saddlery Inc., a multichannel retailer of equestrian products, has had a dramatic increase in mobile visitors to their site. This has resulted in 3.3% of total visitors in November 2010 coming from mobile devices, 3.4% in December 2010 and 3.6% in January 2011 (Siwicki, 2011). Every company entering the mobile marketplace has the same goal: leveraging this channel to create customer value (Kalakota & Robinson, 2001). Prior research has identified trust as a research issue in both e- and m-commerce (Hsu & Lu, 2005; Hsu, Lu, & Hsu, 2007; Lai, 2004; Siau & Shen, 2003). Other studies have examined a variety of topics, including the impact of satisfaction on loyalty in m-commerce (Lin & Wang, 2006), factors affecting satisfaction in m-commerce (Choi, Seol, Lee, Cho, & Park, 2008) and the effect of culture on satisfaction (Cyr, Kindra, & Dash, 2008). Relevant to the studies, Li and Yeh (2009) found that the level of satisfaction is a key determinant of gaining customer trust in m-commerce. Hence, this study aims to provide an explanation of the factors that build customer trust towards vendors using m-commerce.

This paper is structured as follows: Section 2 presents the model employed in this study, focusing on the rationale of the constructs used and deriving testable hypotheses. Section 3 describes the research methodology. The next section presents the results and discussions sections. The paper rounds off with conclusions and an agenda for future research in this area.

2 LITERATURE REVIEW

Perceived Quality of Mobile Services

In the marketing field Parasuraman, Zeithaml, and Berry (1985) argued that service quality is based on a comparison between what the customer feels should be offered and what is provided. Wang and Liao (2007) included the construct of service quality as one of the dimensions affecting customer satisfaction in m-commerce. Lin and Wang (2006) extended SERVQUAL satisfaction with trust and perceived value, and examined customer loyalty in m-commerce. Feng, Hoegler, and Stucky (2006) suggested that m-commerce is more than e-commerce due to its different interaction style, usage pattern and value chain. Feng *et al*. (2006) stated that m-commerce is a new and innovative business opportunity with its own unique characteristics and functions, such as mobility and broad reach ability. Tiwari and Buse (2007) stated that m-commerce is an integral subset of m-business since the services provided by m-business cover both commercial and non-commercial areas. For usage-dependent contractual goods, a long-term relationship with customers is important for service providers (Gerpott, Rams, & Schindler, 2001). For this reason customer-oriented marketing strategies are essential for mobile service carriers to retain their customers (Kim, Park, & Jeong, 2004).

Trust

Trust is the confidence in the other's goodwill and can also be viewed as being a consensual ideology (Ring & Van de Ven, 1992). The benefits of a relationship based on trust are that it economises on information and commercial transaction costs and creates the condition where exchanges between technologically and legally separate entities can take the form of problem solving rather than bargaining (March & Simon, 1958). Lee (2005) stressed the importance of responsiveness in leading to trust in m-commerce. Expectations are described as the beliefs developed by the consumer relative to the characteristics of a product or service before the purchase (Evrard, 1993). According to Siau and Shen (2003) trust in m-commerce (m-trust) can be divided into two categories: trust in mobile technology and trust in mobile vendors. Lee and Benbasat (2003) and Chae and Kim (2003) agreed that limited system resources (e.g. smaller screens and lower multimedia processing capabilities) can hinder the development of trust in m-commerce.

Since there is no consensus on the nature of quality dimensions, it is necessary to identify the quality dimensions considered important by customers in m-commerce, these include web site quality, mobile technology quality and vendor quality.

Web Site Quality

Satisfaction in the open market depends on transaction experiences (Ha & Liu, 2010). Customers' perception of satisfaction during the use of mobile technology is influenced by mobile business applications that involve interactivity and customisation (Liang and Wei, 2004). Interactivity and customisation interact to influence customers' perceptions of satisfaction during the use of mobile technology (Liang & Wei, 2004). Venkatesh *et al.* (2003) further suggested that customisation's impact can be extended to enhance the mobile interface design and to improve mobile usability, thus raising the level of satisfaction. Accordingly, this study hypothesizes that:

H_1. Interactivity significantly affects satisfaction with the vendor in m-commerce.
H_2. Customisation significantly affects satisfaction with the vendor in m-commerce.

Mobile Technology Quality

Usefulness and ease-of-use are the two vital elements in the Technology Acceptance Model (TAM) that influence individuals' attitudes towards using the system (Davis, 1989). These elements were shown to be closely related to the acceptance of computer technologies (Davis, 1989; Venkatesh & Davis, 2000) and are of great importance for new users (Gefen & Straub, 2000). Perceived ease of use has been considered as an important determinant in adoption of past information technologies such as intranet (Chang, 2004), 3G (Liao, Tsou, & Huang, 2007), online banking (Guriting & Ndubisi, 2006; Jahangir & Begum, 2008), wireless Internet (Lu, Yu, Liu, & Yao, 2003), Internet commerce (Cho, Kwon, & Lee, 2007) and m-commerce (Lin & Wang, 2005; Kurnia, Smith, & Lee, 2006; Luarn & Lin, 2005; Mallat, Rossi, Tuunainen, & Oorni, 2006; Wang & Barnes, 2007). Based on a review of empirical evidence, usefulness and ease-of-use may positively affect satisfaction (Ribbink, Van Riel, & Liljander, 2004). Therefore, this study posits:

H_3. Usefulness significantly affects satisfaction with the vendor in m-commerce.
H_4. Ease-of-use significantly affects satisfaction with the vendor in m-commerce.

Vendor Quality

Responsiveness and brand image are possible sources of perceived vendor quality. The first represent an e-retailer's commitment to providing rapid feedback (Dholakia, Miao, Dholakia & Fortin, 2000; Ku, 1992) or generally refer to being responsive to the service subscribers (Heeter, 1989). Its applications can be found in different areas of e-commerce such as web-based services (Kuo, 2003), Internet retailing (Barnes & Vidgen, 2001) and electronic banking (Zhu *et al.*, 2002). The latter acts as a diagnostic tool for uncovering areas of service quality strengths and shortfalls (Kettinger & Lee, 1997, 1999; Pitt, Watson, & Kavan, 1995; Van Dyke, Kappelman & Prybutok, 1997). A high level of responsiveness, representing a trust cue, can convey the trustworthiness of the vendor in m-commerce to customers (Corritore, Kracher, & Wiedenbeck, 2003). Therefore, the study hypothesizes that:

H_5. Responsiveness significantly affects satisfaction with the vendor in m-commerce.

Brand image is the other possible source of vendor quality, this involves more than just a name given to a product. Similar classifications of brand image distinguish product-related and non-product-related attributes, as proposed by Keller (1998) and Aaker (1997). While the former refers to the components of the core product or function sought by customers, the latter are external to the function or process of the product or the service provided (Keller, 1998). These two attributes can be formed from customers' own experiences with the brand or through the image portrayed via marketing channels (O'Cass & Grace, 2004). Geyskens, Steenkamp, Scheer, and Kumar (1996) suggested ease of relationships with service operators can improve the level of satisfaction. Accordingly, it seems that a strong image will lead to better customer satisfaction. Hence, the study hypothesizes that:

H_6. Brand image significantly affects satisfaction with the vendor in m-commerce.

Satisfaction

Geyskens, Steenkamp and Kumar (1999) stated that satisfaction can be raised by economic conditions (e.g. monetary benefits) or psychological factors (e.g. promise fulfilment or ease of relationship with retailers).

Consequently, the consumer's post-trust level is affected directly by the level of satisfaction (Singh & Sirdeshmukh, 2000). Past research has suggested that customer satisfaction is the antecedent of trust (Garbarino & Johnson, 1999; Pavlou, 2003). When performance is worse than expected, a low level of satisfaction occurs because of negative disconfirmation (Yi, 1990). When customers make transactions with the vendor, they may have different reactions towards the transaction, thus affecting overall satisfaction (Spreng, MacKenzie & Olshavsky, 1996). Chae, Kim, Kim & Ryu (2002) and Li & Yeh (2009) found factors affecting quality of service in m-commerce have an impact on behavioural intention to use 3G services through improved levels of satisfaction. Satisfaction was the fundamental performance variable affecting customer perceptions with regard to m-commerce (Siau, Sheng, Nah & Davis, 2004; Yeh & Li, 2009). In addition, customer acceptance leads customers to use m-commerce, subsequently customer satisfaction is built (Lee, Lee & Park 2007). The most powerful trust emerges from positive customer experiences, whilst knowledge-based trust has the strongest impact on customer satisfaction (Yoo, Lee & Julian Hoffmann, 2008). Hence, the study posits:

H$_7$. Satisfaction significantly affects trust in the vendor in m-commerce.

Figure 1: Theoretical Framework
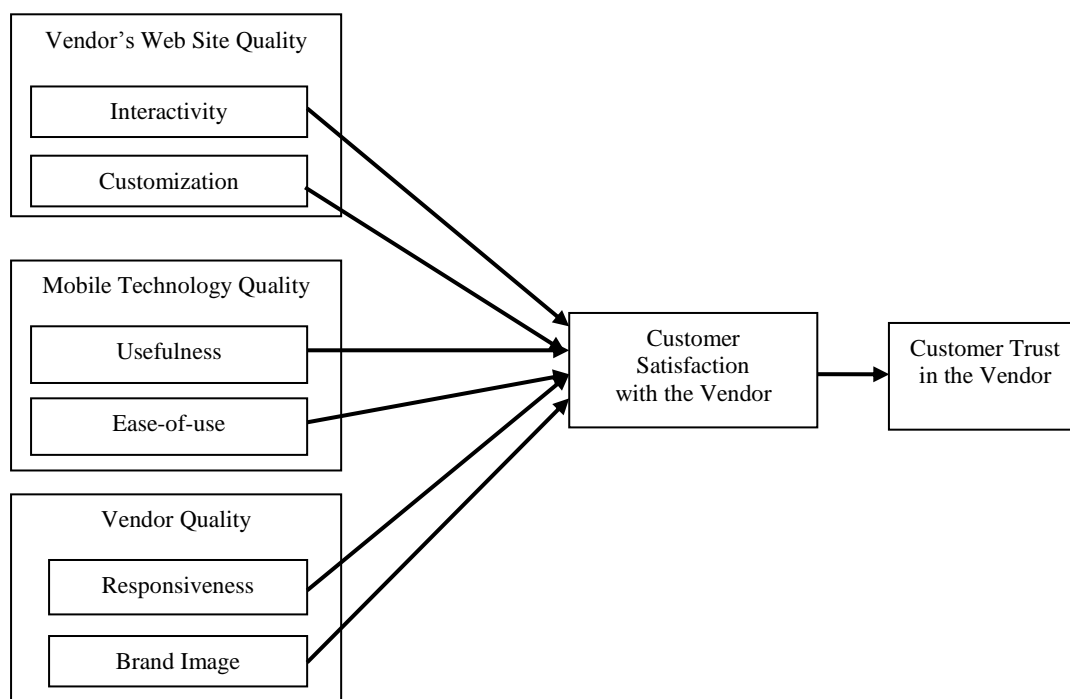
3 METHODOLOGY

Two hundred questionnaires were distributed to students conveniently sampled at a higher learning institution in the Federal Territory of Labuan, Malaysia. It took a week to complete the data collection. Convenience sampling does have limitations, however, as the sample is not representative of the total population. Consequently there is a constant difference between the results from the sample and the theoretical results from the entire population. The scale items for web site quality (i.e. interactivity and customisation) were adapted from Lee (2005) and Ribbink et al. (2004). The scale items for mobile technology quality (i.e. usefulness and ease-of-use) were taken from Davis (1989). Items for vendor quality (i.e. responsiveness and brand image) were adapted from Parasuraman et al. (1985) and Hsieh and Li (2008). The constructs for satisfaction and trust were adapted from Lin & Wang (2006), Hsu et al. (2007) and Heijden et al. (2003). Hence, the items selected represent the concepts in the empirical model under investigation and ensure the content validity of the scales. Appendix 1 shows the detailed constructs in the proposed model. The questionnaires were designed using a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Data were collected and analysed using structural equation modelling (SEM) supported by AMOS 5.0 with maximum likelihood estimation in order to test the proposed hypotheses. SEM is a second-generation multivariate

technique that combines multiple regressions with confirmatory factor analysis to estimate simultaneously a series of interrelated dependence relationships. SEM is a widespread technique in several fields including marketing, psychology, social sciences and information systems (Hull et al., 1991; Methlie & Nysveen, 1999; Seibert et al., 2001).

Data Analysis

Table 1 summarizes the socio-demographic profile of the sample. There were 200 students who participated in the survey with 82 of them males and 118 females. Eighty eight percent of the students, or 176 of them, are between the age of 19-23 and the remaining 12 percent of the students, 24 of them, are aged between 21-24 years. The survey revealed that 196 respondents are degree pursuers and 4 of them hold Masters Degrees. Seventy eight percent are cell phone users, 16 percent are PDA phone users and 6 percent are Smartphone users. These technologies are being used more and more as an essential lifestyle accessory. This allows companies to increase the number of touchpoints with their customers, and to drive increased sales in order to generate a dramatic increase via Smartphone apps. The survey shows that 29 percent have experienced 1-3 types of m-commerce experiences, 33 percent have experienced 4-6 types, and 38 percent have experienced more than 7 types of m-commerce.

Table 1: Socio-demographic Profile of Respondents

Variable		Frequency	Percent
Gender	Male	82	41.0
	Female	118	59.0
Age	19-23	176	88.0
	24-28	24	12.0
Highest Education Level	Undergraduate	196	98.0
	Masters	4	2.0
Wireless Handheld Equipment Type	Cell Phone	156	78.0
	PDA Phone	32	16.0
	Smart Phone	12	6.0
Number of M-Commerce Experience	1-3 years	58	29.0
	4-6 years	66	33.0
	> 7 years	76	38.0

Structural Equation Modelling

The results of SEM include two components: the measurement model and the structural model. The measurement model, giving relationships between latent variables and observed variables, aims to provide reliability and validity based on these variables. The structural model studies path strength and the direction of the relationships among the latent variables.

The Measurement Model

A confirmatory factor analysis (CFA) using AMOS 5.0 was conducted to test the measurement model. It is necessary to test that the measurement model has a satisfactory level of validity and reliability before testing for a significant relationship in the structural model (Fornell & Larcker, 1981; Ifinedo, 2006). The psychometric properties of the measurement model in terms of reliability, convergent validity and discriminant validity were evaluated (see Table 2).

Table 2: Reliability and Item Loadings

Constructs	Items	Standardized Loadings	Composite Reliability	Average Variance Extracted
Interactivity	I1	.660	0.963	0.897
	I2	.861		
	I3	.754		
Customisation	C1	.807	0.976	0.931
	C2	.892		
	C3	.782		
Usefulness	U1	.900	0.980	0.961
	U2	.871		
Ease of Use	EU1	.835	0.982	0.947
	EU2	.908		
	EU3	.821		
Responsiveness	R1	.826	0.979	0.939
	R2	.914		
	R3	.799		
Brand Image	BI1	.848	0.974	0.925
	BI2	.820		
	BI3	.763		
Trust	T1	.848	0.979	0.941
	T2	.822		
	T3	.812		
Satisfaction	S1	.824	0.978	0.958
	S2	.848		

Construct Reliability

Composite reliability (CR) was used to measure the reliability of a construct in the measurement model. CR offers a more retrospective approach of overall reliability and estimates consistency of the construct itself including the stability and equivalence of the construct (Hair, Black, Babin, Anderson, & Tatham, 2010). The formula to calculate CR is $(\Sigma$standardized loading$)^2$ / $(\Sigma$standardized loading$)^2 + \Sigma\varepsilon j)$ (where ε = error variance and Σ is summation). A value of 0.70 or greater is deemed to be indicative of good scale reliability (Hair et al., 2010). Table 2 portrays the result of the calculated composite's reliability to support construct reliability. The reading of composite reliability of all latent variables is above 0.70 and suggests that all latent variables have good reliability.

Convergent Validity

Convergent validity shows the extent to which indicators of a specific construct converge or have a high proportion of variance in common (Hair et al., 2010). This validity was measured using standardized factor loadings. The factor loadings of latent to observed variables should be above 0.50 (Byrne, 2001, 2006; Hair et al., 2010). The result of the confirmatory factor analysis in Table 2 shows that the standard regression weight or standard factor loadings of all observed variables are adequate ranging from 0.660 to 0.914. This finding indicates that the constructs conform to construct convergent validity.

Discriminant Validity

Discriminant validity shows the extent to which a construct is truly distinct from other constructs (Hair et al., 2010). A commonly used statistical measure of discriminant validity is a comparison of the Average Variance Extracted (AVE) value with correlation squared (Fornell & Larcker, 1981). To satisfy the requirements of discriminant validity, the AVE of two constructs must be more than the square of the correlation between the given two constructs. The formula to calculate discriminant validity is Variance Extracted (VE) = $(\Sigma$standardized loadings^2 / Σstandardized loadings$^2 + \Sigma\varepsilon j)$ (where ε = error variance and Σ is summation). Table 3 demonstrates the average AVE, the latent variable correlations and the square root of the AVE. The square root of the AVE is shown on the diagonal of the table. No correlations were equal to or greater than the square root of the AVE indicating there was discriminant validity. Each AVE value is found to be more

than the correlation square, thus discriminant validity is supported, or in other words multicollinearlity is absent (Byrne, 2001).

Table 3: Correlation between the Factors

	1	2	3	4	5	6	7	8
(1) Interactivity	.947							
(2) Customization	.615(**)	.965						
(3) Responsiveness	.561(**)	.687(**)	.969					
(4) Brand image	.514(**)	.558(**)	.485(**)	.962				
(5) Satisfaction	.483(**)	.594(**)	.618(**)	.631(**)	.979			
(6) Trust	.530(**)	.665(**)	.638(**)	.706(**)	.759(**)	.970		
(7) Ease of use	.340(**)	.426(**)	.373(**)	.469(**)	.549(**)	.541(**)	.973	
(8) Usefulness	.379(**)	.425(**)	.361(**)	.468(**)	.516(**)	.562(**)	.742(**)	.980
Mean	3.270	3.287	3.113	3.240	3.185	3.287	3.373	3.380
Std. Deviation	0.828	0.894	0.893	0.764	0.884	0.789	0.861	0.836

** Correlation is significant at the 0.01 level (2-tailed).

The Structural Model

The test of the structural model was performed using SEM in order to examine the hypothesized conceptual framework by performing a simultaneous test. Table 4 depicts that the goodness-of-fit for the model was met: Chi-square/df = 2.121, CFI = 0.945, GFI = 0.868, AGFI = 0.807, NFI = 0.902, and RMSEA = 0.075. The overall values provided evidence of a good model fit. All of the model-fit indices exceed the respective common acceptance levels suggested by previous research, following the suggested cut-off value, demonstrating that the model exhibited a good fit with the data collected. Thus it was possible to proceed to examine the path coefficients.

Properties of the causal paths for the structural model (standardized path coefficients (β), standard error, and hypotheses result) are signified in Table 5. The number of distinct sample moments for the model is 253. The number of distinct parameters to be estimated is 80 and degrees of freedom is 173. The level of significance (α) was set at 0.05. The square multiple correlation for the structural equations index connotes that the predictors interactivity, customisation, usefulness, ease of use, responsiveness, and brand image have together explained 79.9% of the variance in satisfaction. In other words, there are other additional variables that are important in explaining satisfaction and trust that have not been considered in this study.

Table 4: Goodness-of-fit Indices for Structural Model

Fit Indices	*Accepted Value*	*Model Value*
Absolute Fit Measures		
χ^2 *(Chi-square)*		*366.950*
df (Degrees of Freedom)		*173*
Chi-square/df (χ^2/df)	*< 3*	*2.121*
GFI (Goodness of Fit Index)	*> 0.9*	*0.868*
RMSEA (Root Mean Square Error of Approximation)	*< 0.10*	*0.075*
Incremental Fit Measures		
AGFI (Adjusted Goodness of Fit Index)	*> 0.80*	*0.807*
NFI (Normed Fit Index)	*> 0.90*	*0.902*
CFI (Comparative Fit Index)	*> 0.90*	*0.945*
IFI (Incremental Fit Index)	*> 0.90*	*0.946*
RFI (Relative Fit Index)	*> 0.90*	*0.869*
Parsimony Fit Measures		
PCFI (Parsimony Comparative of Fit Index)	*> 0.50*	*0.708*
PNFI (Parsimony Normed Fit Index)	*> 0.50*	*0.676*

Figure 2: The Result of Proposed Research Model (Standardized Path Coefficients)
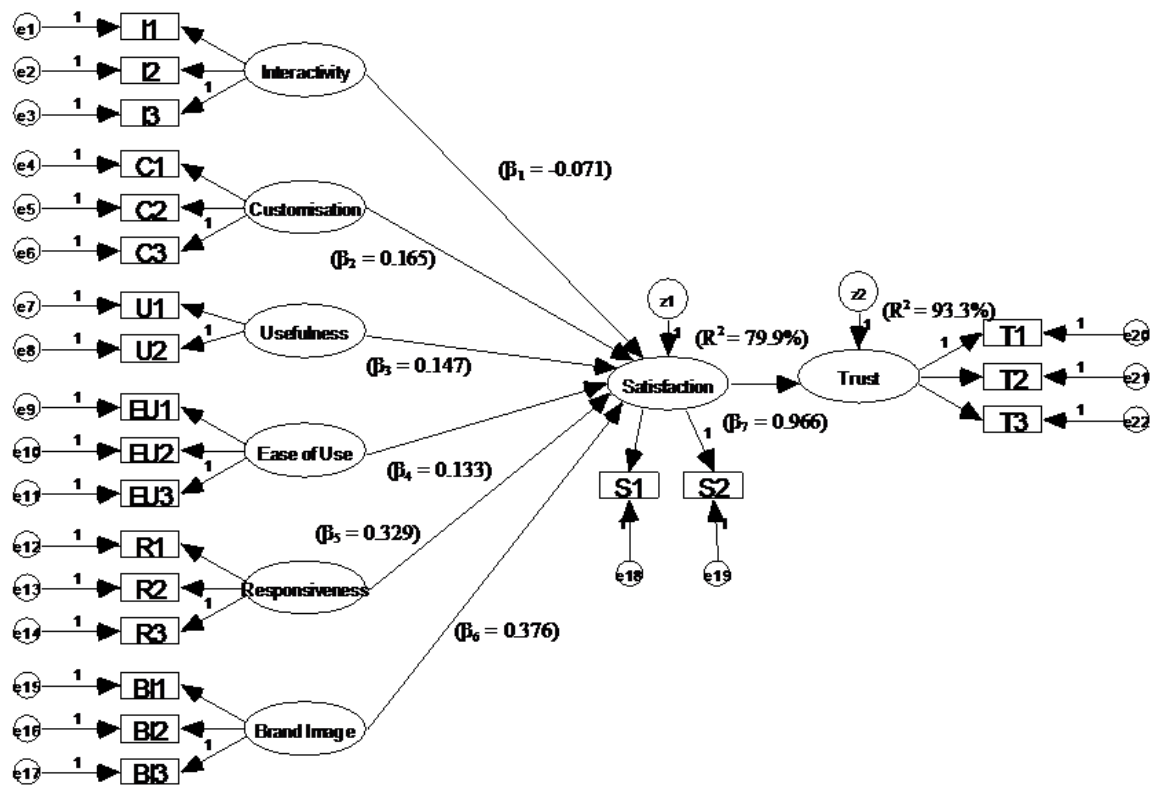
Hypotheses 1 and 2 postulate the associations between satisfaction with the vendor or the service/application in m-commerce and two antecedents of vendor's website quality: interactivity and customisation. Hypotheses 3 and 4 propose the associations between satisfaction with the vendor or the service/application in m-commerce and two antecedents of mobile technology quality: usefulness, and ease-of-use. As evident in Table 5, satisfaction of vendors or the service/application in m-commerce were not significantly influenced by the two antecedents of vendor's website quality: interactivity (β_1 = -0.071) and customisation (β_2 = 0.165). The two antecedents of mobile technology quality: usefulness (β_3 = 0.147) and ease-of-use (β_4 = 0.133) also had insignificant results as $p>0.05$. All in all, Hypothesis 1 to 4 targeting the vendor or the service/application, which then impacts on the vendor. Hence, the proposed hypotheses are not supported, $p>0.05$.

Table 5: Summary of Hypotheses Testing Results

Path			Estimate (β)	S.E.	C.R.	p	Results
Satisfaction	<---	Interactivity	-.071	.084	-1.008	.313	Not Supported
Satisfaction	<---	Customisation	.165	.109	1.629	.103	Not Supported
Satisfaction	<---	Usefulness	.147	.100	1.610	.107	Not Supported
Satisfaction	<---	Ease of Use	.133	.092	1.514	.130	Not Supported
Satisfaction	<---	Responsiveness	.329*	.087	3.896	.000	Supported
Satisfaction	<---	Brand Image	.376*	.088	5.315	.000	Supported
Trust	<---	Satisfaction	.966*	.078	11.603	.000	Supported

Note: β = standardised beta coefficients; S.E. = standard error; C.R. = critical ratio; *$p< 0.05$

Hypothesis 5 and 6 explicate the associations between users' satisfaction with the vendor in m-commerce with two antecedents of vendor quality: responsiveness and brand image. This study asserts that users' satisfaction with the vendor in m-commerce includes two dimensions of vendor quality: responsiveness and brand image. Table 5 depicts that users' satisfaction with the vendors using m-commerce is significantly influenced by vendor quality dimensions such as responsiveness and brand image ($\beta_5 = 0.329$, $\beta_6 = 0.376$, $p<0.05$), respectively. Evidently, this study asserts that users' satisfaction with the vendor in m-commerce ($\beta_7 = 0.966$) significantly influences trust in the vendor in m-commerce, supporting H_7. Accordingly, 93.3% of the variance in trust in the vendor of m-commerce has been explained, indicating that the explanatory power of the model may be considered satisfactory and that the model fits the data and is appropriate to test the hypothesis.

CONCLUSION

This research examines the factors that influence customer satisfaction and trust in the vendor or the service/application of m-commerce. The study confirms that satisfaction with the vendor or the service/application in m-commerce was not significantly influenced by two antecedents of vendor's website quality: interactivity and customisation, and also two antecedents of mobile technology quality: usefulness and ease-of-use. Vendors on the mobile Internet can provide a more satisfying experience for customers by emphasizing other m-quality factors than these four factors as it does not contributed to the formation of satisfaction in the vendor or the service/application of m-commerce. The findings also reveal that users' trust in the vendor or the service/application of m-commerce is affected by their satisfaction with the vendor or the service/application of m-commerce. Align with past studies, satisfaction is an important determinant of customer trust (Chae, Kim, Kim & Ryu, 2002; Li & Yeh, 2009; Yeh & Li, 2009). Surprisingly, vendor quality dimensions such as responsiveness and brand image does influence customer relationships with the vendor in m-commerce. These were affected by vendor benevolence (brand image) and service honesty (responsiveness). Reminiscent of previous findings (Lee, 2005; Corritore *et al.,* 2003; Yeh & Li, 2009) the results indicated that responsiveness did directly lead to satisfaction. This may be because m-commerce customers were more concerned with vendor service honesty (responsiveness) (Ratnasingham & Kumar, 2000). As in the studies by Berry (2000), Liang &Wei (2004) and Parasuraman et al. (1985), web site and vendor quality influenced customer satisfaction. Customers should be satisfied with the vendor services in m-commerce in order to gain trust and remain loyal to them. Moreover, this study has validated the determinants of satisfaction and trust, leading the way for a detailed exploration of how to improve users' satisfaction and trust in the vendor in m-commerce.

Despite the useful findings of this study, this empirical study has several limitations that need to be acknowledged. Several factors were examined in this study. Future studies should attempt to draw profiles based on characteristics other than these factors. It must also be mentioned that the data were collected from a 200 student sample of convenience at a higher learning institution in the Federal Territory of Labuan, Malaysia. It is recognized that this convenience sample, given its demographic limitations, would place restrictions on the generalization of the results of this study to other geographic areas or to the general population. Hence, future research should expand or increase the involvement of respondents by using probability sampling techniques such as stratified random sampling. The larger the geographic area included in this type of research, the more representative the result will be.

APPENDIX 1: MEASUREMENT OF INSTRUMENTS

Interactivity
I1 I can use this mobile Internet site anywhere and anytime I need to.
I2 This mobile Internet site enables me to order products or services anywhere and anytime.
I3 This mobile Internet site offers timely and location-specific packets of information
     (e.g. restaurant coupons for lunch) to me.

Customization
C1 I feel that personal needs have been met when using 3G services or making 3G transactions.
C2 3G service provides me with information and products according to my preferences.
C3 I feel that 3G services providers have the same norms and values as I have.

Usefulness
U1 3G service enables me to have the access to useful service.
U2 3G service enables me to use 3G service effectively.

Ease-of-Use
E1 Learning to use 3G service is easy for me.
E2 It is easy for me to become skilful at using 3G service.
E3 Overall, I believe that 3G service is easy to operate.

Responsiveness
R1 It is easy to get in contact with 3G service providers.
R2 3G service providers are interesting in feedback.
R3 3G service providers quickly reply to requests.

Brand Image
BI1 I feel that company A branded product fulfils its practical function.
BI2 I feel that company A branded product possesses a positive symbolic meaning.
BI3 I feel that company A branded product is associated with pleasant experiences.

Satisfaction
S1 The web site provided in 3G service is successful.
S2 The web site provided in 3G service has met my expectations.

Trust
T1 Based on my experience with 3G service, I know it cares about customers.
T2 Based on my experience with 3G service, I know it is predictable.
T3 Based on my experience with 3G service, I know it knows its market.

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