

TITLE

Developing a Mobile Application Customer Experience Model (MACE) - Implications for Retailers.

ABSTRACT

This paper examines the customer experience in relation to retailers' m-commerce mobile applications. The research aims to understand the variables capable of influencing the customer experience during use of retailers' m-commerce mobile applications, resulting in the development of a Mobile Application Customer Experience Model (MACE). Through the use of structural equation modelling on a sample of 1,024 consumers, the findings of the research highlight the importance of utilitarian factors in driving an effective customer experience. In contrast to the e-commerce environment with regard to flow theory, this research highlights that customers are conscious of the length of time spent completing an activity on an m-commerce mobile application, thus should customers perceive to spend longer than necessary using the application, it will result in a negative customer experience. Additionally, the findings illustrate that gender and smartphone screen-size play a moderating role on the customer experience. The findings provide key managerial implications for retailers on how to provide an excellent customer experience through mobile applications as a service delivery channel.

KEYWORDS

Customer Experience, Mobile Applications, Mobile Retailing, M-Commerce

INTRODUCTION

Mobile applications (apps) continue to emerge as a powerful and ubiquitous service delivery channel enabling retailers to offer consumers a variety of products and services on the go (Garg and Telang, 2013). The rapid advancement of mobile technology and the subsequent service innovation deriving from it is causing consumer behaviour to evolve in terms of how consumers interact and utilise service delivery channels that are accessible to consumers anytime, anywhere (Shankar et al., 2016). The number of smartphone users is expected to continuously grow with 5.5 billion people expected to be using smartphone devices by 2022 (WARC, 2017), while at the same time, consumers' willingness to use mobile commerce (m-commerce) is witnessing rapid growth beyond expectations (Chaffey, 2017). Due to the increase in the number of smartphone users and the willingness to adopt mobile commerce, marketers are increasingly using the mobile service delivery channel to meet the demands of such consumers (Shankar et al., 2016; Ono et al., 2012). Retailers, in particular, are allocating large percentages of their marketing budget to enhance the customer experience through mobile applications (WARC, 2015).

Traditional retailers (brick and mortar) have encountered numerous strategic challenges and opportunities over recent years (Blazquez, 2014). First was the introduction of e-commerce websites that challenged the existence of many retailers with numerous well-known brands exiting the market (Reynolds, 2000). However, over the years, retailers who have continued to compete have adapted their strategy to include an online presence through an e-commerce website (Martin et al, 2015). The Internet continues to be an essential factor in the evolution of the retail landscape. Numerous retailers have taken significant advantage of what the channel has to offer (Klaus and Nguyen, 2013) including the expanded reach, reduced costs, lower geographical barriers, as well as 24/7 availability (Christodoulides et al., 2012).

Following the adoption of the Internet, numerous retailers have further adapted to an Omni-channel retail strategy, Omni being the Latin for 'every', where retailers operate multiple service delivery channels including, in-store, website and on mobile app (Piotrowicz and Cuthbertson, 2014). The term 'mobile app' has become a popular abbreviation for mobile applications amongst industry professionals, academics and consumers over recent years. Mobile applications are associated with software that is downloaded to a smartphone's operating system from an online store platform such as the App Store or the Google Play Store (Garg and Telang, 2014; Purcell et al., 2010). From a marketing perspective, mobile

apps are defined as a software that is downloadable to a mobile device, which prominently displays a brand identity, often via the name of the app and the appearance of a brand logo or icon, throughout the customer experience while using the app (Bellman et al., 2011). The added benefit for retailers, unlike websites, is that mobile apps can utilise the hardware and features of the smartphone to deliver a tailored experience to users, i.e. scanning of bar codes through the use of the built in camera function or offering location specific content through the use of GPS. Thus, mobile apps are also seen as end-user software applications that are designed for a mobile phone operating system and extend the phone's capabilities by enabling users and app providers to perform specific tasks (Purcell et al, 2010).

However, due to the nature of mobile devices, consumers are now presented with a different interface and size of device to interact with. Thus, during an experience with mobile devices, interfaces have shifted from computer mice to touchscreens (Brasel and Gips, 2014).

Therefore, the interface change may subsequently alter the response of consumers using and viewing content with a different set of variables influencing the customer experience.

Retailers are adopting 'm-commerce' at an exhilarant rate and part of an Omni-channel strategy (Brynjolfsson et al., 2013). Mobile applications can be seen as an important part of m-commerce, yet we have little understanding on what influences the customer experience during use of m-commerce mobile applications. Previous research has focused on the scope of mobile marketing (Shankar and Balasubramanian, 2009), mobile service delivery (Kleijnen et al., 2007), the mobile interface (Venkatesh et al., 2012), mobile browsing (Adipat et al., 2011), how mobile applies to retailing (Shankar et al., 2010), the demand for mobile apps (Garg and Telang, 2013), mobile advertising (Andrews et al., 2015) and mobile shopping (Wang et al., 2015).

This paper aims to add to our theoretical understanding of mobile applications through exploring the variables capable of influencing the customer experience during use of retailers' m-commerce mobile apps. Mobile apps offer consumers an alternative channel for browsing and shopping and are unique in terms of the functions they can offer consumers and retailers (Wang et al, 2015), hence, understanding the variables that influence the customer's experience is of significant value. In particular, traditional retailers offer an interesting area of study due to their continued adaptation to new, digital, service delivery channels. As a result, two research objectives stem from our aim (1) to develop an understanding of the key variables influencing the customer experience with retailers' mobile applications and (2) to

develop a Mobile Application Customer Experience Model (MACE), providing a theoretical understanding of the customer experience with m-commerce mobile applications.

LITERATURE REVIEW

Customer Experience

The theoretical foundation of the customer experience is based on the concept that a customer's experience is the combination of all cues and touch-points a customer has with an organisation, which in turn creates an overall experience (McLean and Wilson, 2016; Homburg et al., 2015; Payne et al., 2008). Meyer and Schwager (2007, p.18) define the customer experience as, 'the internal and subjective response that customers have to any direct or indirect contact with a company'. However, more recently, Homburg et al (2015, p.8) follow on from Verhoef et al (2009) and suggest that 'the customer experience is the evolvment of a person's sensorial, affective, cognitive, relational and behavioural responses to a brand by living through a journey of touchpoints along pre-purchase, purchase and post-purchase and continually judging this journey against response thresholds of co-occurring experiences'. As a result, the customer experience can be seen as a holistic process and combination of both cognitive and affective, components leading to take away impressions (McLean and Osei-Frimpong, 2017; Verhoef et al, 2009; Edvardsson, 2005; Schembri, 2006). A key distinction between the customer experience and service quality is the acknowledgement of customer emotions within the experience (Edvardsson, 2005; Schembri, 2006). Customer emotions are often vividly recalled, yet difficult to describe, thus numerous researchers have applied psychology theories adopting the PAD model (Mehrabian and Russell, 1974), the PANAS theory (Watson et al, 1988) as well as the differential emotion theory (Izard, 1977) to assist in understanding and measuring the customer experience. Some research studies have focused on the measurement of the cognitive dimension of the customer experience (Lemke et al, 2010) through only assessing satisfaction with the experience, however it is important that researchers include customer emotions as part of the measurement of the customer experience (McLean and Wilson, 2016; Juttner et al, 2013; Verhoef, 2009; Edvardsson, 2005).

Satisfaction, trust, re-visit intention, re-purchase intention and loyalty have all been outlined as outcomes of a positive customer experience (Shobeiri et al., 2015; Verhoef et al., 2009). Regardless of the service delivery channel, i.e. in-store, online website or mobile application,

customers always have an experience; this experience may be good, bad or indifferent and occurs whenever a customer buys a product or encounters service from a retailer (Berry et al., 2002). The focus on the online customer experience has emerged due to the transition from static websites to dynamic and interactive e-commerce sites (Klaus, 2013). Similarly, mobile applications provide a further dynamic channel to browse and purchase products, yet little is known on what influences the customers experience with such software (Pousttchi et al., 2015). A number of variables are capable of influencing the cognitive and affective components of a customer's experience in the offline and online environment. In order to provide the study with further theoretical understanding, the following section will provide an overview on the variables outlined as influencing the customer experience during use of the online web environment.

Variables influencing the Customer Experience

A comprehensive review of the literature spanning over the last fifteen years finds numerous key variables that are capable of influencing the customer experience in the online web environment namely, ease of use, customisation/personalisation, convenience/usefulness, web aesthetics, enjoyment, telepresence, time distortion and flow (see: Zeithaml et al., 2000, Yoo and Douthu, 2001; Loiacono et al., 2002;; Yang et al., 2003; Gounaris et al., 2005; Lee and Lin, 2005; Parasuraman et al., 2005; Kim et al., 2006; Loiacono et al., 2007; Song and Zinkhin 2008; Hoffman and Novak, 2009; Lee and Jeong, 2010; Lee and Cranage 2011; Rose et al., 2012; Mcgrath and McCormick, 2012; Klaus, 2013, Faiola et al., 2013; Martin et al., 2015; McLean and Wilson 2016). More recently, Bilgihan et al. (2015), Hsiao et al. (2016), Wang et al. (2015), Kang et al. (2015) and Kim et al. (2014) suggest that both utilitarian and hedonic variables influence consumer behaviour during use of mobile applications. A review of such variables from both Information Science and Marketing literature may help us gain an understanding into the potential variables capable of influencing the customer experience with retailers' m-commerce mobile applications.

Utilitarian Factors of Technology

Deriving from the Technology Acceptance Model (TAM) (Davis, 1989), Rose et al (2012) outline ease of use as an important variable capable of influencing customer emotions within the online retail environment. Based on the Theory of Reasoned Action, the TAM continues to be an important foundation in understanding customers' use of technology (Yang, 2013). Ease of use refers to the ease in which a customer can learn to use a system and understand

the basic functions, while avoiding error during their activity (Davis, 1989). Further to this, the ease of use of a technological system is based on how the system allows the customer to perform tasks, increase productivity, performance and efficiency (Chau and Lai, 2003). The TAM outlines the perceived usefulness of the technology influencing consumer use of a technological system (Davis, 1989). The usefulness of the technology relates to the technology's convenience and compatibility for the task (DeLone and McLean, 2003), which in turn, Bhattacharjee et al. (2001) assert that the usefulness of the technology is influential on satisfaction and continued use of the technology.

Moreover, in further enhancing the ease of use of a technological function, Bilgihan et al. (2016) suggest that customisation is a utilitarian variable capable of influencing the customer experience. The development of technology in service delivery has seen an increase in the use of technology to provide customised services (Truel and Connelly, 2013). Customisation refers to the personalisation or individualising of services and content to a customer's own preferences and interests (Lee and Cranage, 2013), as well as a retailer's ability to personalise the delivery of the right content, to the right person at the right time (Tam and Ho, 2005). Thus, customisation can influence feelings of control and the ability to be an active part in creating the customer's unique experience (Cheng et al, 2010). Retailers' offering of a customised experience can aid in reducing a level of uncertainty that exists during Internet shopping and can further improve efficacy and make the technology easy for the customer to use (Magrath and McCormick, 2012). Therefore, offering customers the ability to filter content, favourite content and be provided content relevant to them, can result in positive customer emotions (Rose et al., 2012). However, research highlights that customisation is not as critical on the customer experience as ease of use within the online web environment (Martin et al., 2015). In spite of this, the distinctive nature of smartphone apps that allow customers to store data in a unique manner (Hsiao et al., 2016) and the ability of retailers to utilise such data for location awareness, context sensing and product personalisation (Alnawas and Aburub, 2016), may increase the importance of customisation as a utilitarian variable capable of influencing the customer experience.

In line with the ability to use mobile apps to provide customers with a customised experience, previous research has highlighted that customers can access mobile applications anytime, anywhere (Shankar et al., 2016; Andrews et al., 2015) leading to a convenient way to shop. Customers often use mobile applications 'on the go' (Wang et al., 2015), thus convenience, even within a hedonic context, may become an important variable within m-commerce in

comparison to what research has shown within e-commerce (Rose et al., 2012). Previous research acknowledges overlapping features of convenience, compatibility, ease of use, effort expectancy, personalisation and customisation drawing upon the technology acceptance model and the information system success model (Kim and Baek, 2017; Yun et al., 2013; Alnawas and Aburb, 2016; Ozturk et al., 2016). Kim and Baek (2017) further suggest that customisation within a mobile application underpins a more convenient way to shop reducing a customer's effort, which is described as conceptually related to perceived ease of use. Further to this, Magrath and McCormick (2012) conceptualise that ease of use, customisation and convenience are all interlinked, however, such a hypothesis has not been empirically tested. Thus, we hypothesise:

H1: A relationship exists between the variables of ease of use, convenience and customisation to combine together as a higher order utilitarian factor.

Flow Theory and Timeliness

Novak et al. (2000) introduced the concept of flow within the online environment in relation to the customer experience. The key premise of the concept of flow is based on a cognitive state where an individual is completely absorbed in an activity to the extent that they are fully immersed and engaged in the task while experiencing time distortion and a loss of self-consciousness (Csikszentmihalyi, 1997). Flow within the online environment has been defined as 'a cognitive state experienced during online navigation' (Novak et al., 2000, p.24). Therefore, flow can be considered as a motivational variable influencing the customer's experience (Hoffman and Novak, 2009). However, recent literature has revealed much debate around the concept of flow (Trevinal and Stenger, 2014; Mollen and Wilson, 2011) with regard to antecedents and consequences of flow. As well as enjoyment, telepresence and time distortion have been highlighted as both antecedents and consequences of flow (Hoffman and Novak, 2009).

Lee and Crange (2011) outline that telepresence is the feeling of being present within a virtual environment that is more dominant than the real life environment that the individual lives in. Hoffman and Novak (2009) outline that those individuals experiencing telepresence forget about their surroundings when searching online, thus while an individual's body may be in a physical environment, their mind is in a 'virtual space' in which the individual can find more real than the real life world. Thus, Faiola et al. (2013) suggest that in turn

consumers become completely immersed and engaged in the shopping activity they are completing and experience a distorted sense of time and positive emotions. Within this virtual environment, consumers lose the connection with real time, while it slowly fades away into the background of consciousness (Martin et al., 2015).

Similar to telepresence, time distortion is highlighted as a key part of flow (Hoffman and Novak, 2009). Time distortion, refers to the point in which consumers are so involved in the task that time elapses quickly without knowledge (Fan et al., 2013). Hoffman and Novak (2009) highlight that the time distortion experienced by consumers, where time passes unconsciously to the consumer, results in positive customer emotions and subsequently a positive customer experience.

Despite this, the usefulness of flow and the variables of time distortion and telepresence have been called into question (McLean and Wilson, 2016; Klaus, 2013). McLean and Wilson (2016) and Klaus (2013) outline that the customer experience is context specific. Thus, due to the nature of the smartphone device and the use of mobile apps often used 'on the go' in a utilitarian manner (Wang et al, 2015), consumers may in-fact be conscious of time spent on an activity and thus, the ability to complete shopping activities in a timely manner may lead to an effective customer experience within this context. Resource allocation theory (Kahneman, 1973; Zakay and Hornik 1991) highlights that individuals are occupied with the passage of time and often make time estimations during their activity. Therefore, while customers use apps on the go and often for convenience (Wang et al., 2015), the time spent using the app could be conscious to the individual. Therefore, in contrast to the traditional e-commerce environment (Rose et al., 2012) customers may be time conscious during use of m-commerce mobile applications. Thus we hypothesise:

H2: The utilitarian factor made up of ease of use, customisation and convenience will influence customers' perception of being able to complete tasks in a timely manner.

H3: should customers be unable to complete tasks in a timely manner then they will have a negative customer experience with negative emotions.

Enjoyment

Moreover, the level of enjoyment a customer experiences has been illustrated in later versions of technology acceptance theories (Venkatesh and Bala, 2008; Venkatesh et al, 2012) as well as being outlined as leading to satisfaction with the experience (Hsiao et al, 2016). Enjoyment

is referred to as the activity of using a specific system that is enjoyable in its own right, aside from any performance consequences resulting from system use (Venkatesh, 2000). Previous research within the online web environment highlights that those customers who do not experience enjoyment during their online shopping activity will seek to complete the activity at an alternative provider (Faiola et al., 2013; Lee et al., 2011). More recently, Hsiao et al. (2016) suggest that customers will not be satisfied while using mobile applications without the hedonic element of enjoyment. Thus, during the online shopping encounter, previous research suggests that customers will not achieve the optimal experience should they not experience enjoyment in their activity (Hoffman and Novak, 2009). Mcgrath and McCormick (2012) suggest that ease of use, customisation and convenience may lead to high levels of customer enjoyment. Thus we hypothesise:

H4: the utilitarian factors drive a customer's level of enjoyment during use of a retailer's mobile application.

H5: The level of enjoyment a customer has during use of a retailer's mobile application will influence a customer's level of satisfaction with the experience and a customer's emotions.

Moreover, while we hypothesise that enjoyment and timeliness may mediate the relationship between the utilitarian factor made up of customisation, convenience, ease of use, and the customer experience, in line with work on the Technology Acceptance Model (Davis, 1989) and the Expectancy Confirmation Theory with Information Technology (ECT-IT) (Bhattacharjee, 2001), we suggest a relationship between the utilitarian factor and the customer experience exists. Thus we hypothesise:

H6: There is a direct relationship between the utilitarian factor and the customer experience.

Lastly, in line with previous studies by Shobeiri et al. (2015) and Verhoef et al. (2009), research within the e-commerce environment highlights that an effective customer experience can result in increased re-visit intention, thus in a mobile app context we hypothesise:

H7: The overall customer experience will have an effect on how frequent customers use retailers' mobile applications.

METHODOLOGY

In order to answer the research objectives and examine the hypothesised relationships, a web-based questionnaire was conducted with consumers in the UK. To achieve a suitable sample,

we employed a market research agency to recruit participants. After data cleansing, a total of 1,024 usable questionnaires were obtained from the original 1,410, which is an adequate sample size for structural equation modelling (SEM) with analysis of moment structures (AMOS) (Byrne, 2013). In order, to ensure valid responses we used the trap questions technique (e.g. The trap question was: Answer the following question ‘agree’), reversed question wording and time filters to reduce ‘speedy’ respondents (Smith, 2013).

Four traditional retailers’ mobile applications with presence in the UK were selected in this study, namely H&M, Next, John Lewis and Marks & Spencer. From the 1,024 responses, data was equally distributed across all four mobile apps; further details can be found in Appendix 1. Thus, due to the use of four different retailers’ mobile apps, the research is able to produce generalisable results. In order to conduct analysis on the data set, the data were pooled from all four retail apps following Configural invariance tests.

Moreover, to gain an understanding on what influences the customer experience during the use of retailers’ mobile applications, respondents must have used the smartphone app for a minimum of 6 months, thus the respondents are in an adequate position to rate their experience with the app. Additionally, respondents are relatively frequent users of their corresponding app (further details available in Appendix 1). Therefore, due to the extensive period of time respondents have used the app, the research is able to offer practical implications for retailers on how to provide an excellent customer experience.

In order to ensure an appropriate sample for the study, common method bias tests were conducted, which is explained in the preliminary analysis. The results of such tests highlight no bias within the sample. In addition, demographic details of respondents were collected; the sample achieved a relatively even split between males (47%) and females (53%). In terms of age group, the study achieved a broad representation, 18-24 (10%), 25-34 (34%), 35-44 (27%), 45-54 (18%) and 55-65 (11%). Education level of the sample found 13% had graduated from high-school, 47% graduated from further education (College) and 40% had graduated from higher education (University). In terms of occupation status, the majority of the sample is working full time, 73%, with 17% working part time, 7% unemployed with 3% retired. In terms of smartphone device 44% of respondents currently use an Apple iPhone, 51% use an Android device and 5% use a Windows device. Appendix 1 provides more details on the sample.

Structural equation modelling (SEM) was used using AMOS graphics 23. The benefit of structural equation modelling is that the hypothesised model can be tested simultaneously in an analysis of the whole model of variables. Thus, the statistical technique allows the research to produce a Mobile Application Customer Experience Model (MACE).

The questionnaire scales were adapted from established scales within the literature. 35 items on a 7 point Likert scale ranging from (1) Strongly Disagree to (7) Strongly Agree were used to measure customisation, convenience, timeliness, ease of use, enjoyment, customer emotions and satisfaction with the experience. Table 1.0 outlines the scales and the items used in this research.

******Insert Table 1.0 Measurement Scales Here******

RESULTS

Preliminary analysis

A number of analyses were conducted before estimating the model using structural equation modelling. First of all, composite reliability tests were calculated as seen in table 1.0. Each of the composite variables were above the critical value of .7 (Fornell and Larcker, 1981) and therefore can be considered reliable.

Secondly, Harman's (1967) one-factor test was conducted to assess the method variance in the data. Due to the fact that an online questionnaire was conducted and this data were self-reported for each variable, common method bias could occur (Podsakoff et al, 2003). Harman's (1967) one factor test suggests that if common method bias exists, one single factor will explain more than 50% of the variance within a principal component factor analysis performing no rotation. Through constraining the factor analysis to one factor, the single factor fell below this benchmark. Therefore, the test found that no single factor explained more that 50% of the variance, as a result common method bias is unlikely to occur in this study.

Thirdly, a series of MANOVA tests were conducted to identify if any differences existed with regard to gender, occupation status, frequency of use with each app and smartphone screen-size across each of the variables in the study. The results found that there was no

significant difference with regard to occupation status, Wilks' Lambda .945 $f(42, 4745)$ $p = .06$ or frequency of use between each app Wilks' Lambda .973 $f(24, 2040)$ $p = .352$. However, a significant difference was found with regard to gender, Wilks' Lambda .979 $f(6, 1017)$ $p = .002$. In addition, a significant difference was found between large screen size 4.7 inch and above (e.g. iPhone 7 – iPhone 7+) and small screen size 4.6 inch and below (e.g. iPhone 5 – Samsung Galaxy A5), Wilks' Lambda .979 $f(6, 1017)$ $p = .001$. Thus, both gender and screen size will be further discussed in the structural model. Additionally, as we used a mix between department store retailers (Debenhams, Next, Marks and Spencer) and an apparel retailer (H&M), in order to assess potential differences in customer behaviour between each *type* of app (Department Store or Apparel), we conducted an ANOVA in relation to customer behaviour in the form of purchase frequency through each app. While the results detail a significant difference between the four apps in relation to purchase frequency [$f(3, 1023) = 3.99$, $p = .008$], further post-hoc comparisons using the Tukey HSD test indicated that there was no significant difference in customer behaviour between the department store retailers and the apparel retailer in relation to purchase frequency.

Structural Equation Modelling

Structural Equation Modelling (SEM) with an analysis of moment structures is one of the most common and robust statistical techniques that can be used in order to undertake analysis on structural theory with a confirmatory approach (Tabachnick and Fidell, 2007). This study used AMOS graphics 23 in order to conduct the analysis. SEM involves two important parts (1) the casual process that is under examination is represented by a set of structural equations and (2) the relationships can be modelled pictorially to illustrate a clear representation of the theory being studied.

The first step however in structural equation modelling is to test the CFA measurement model. The CFA measurement model highlights the causal relationships between each of the observed variables and their underlying latent variables. Thus, the CFA measurement model was specified and estimated, the fit statistics of the model were considered 'good fit' (see Lie and Wu (2007) for fit statistics critical values), CFI = .978, NFI = .970, GFI = .945, RMSEA = .052 and SRMR = .035. In line with the fit statistics, all loadings were adequate and significant at $p < .001$.

In addition, convergent and discriminant validity were supported due to the following, (1) all loadings were significant ($p < .001$), (2) the composite reliability for each construct exceeded the recommended level of .7, and (3) the average variance extracted (AVE) for each construct fulfilled the recommended benchmark of .50, and also meets the requirement of above the maximum shared variance (MSV) (Hair et al., 2010). Furthermore, the discriminant validity is assessed, by calculating the square root of the AVE for each construct, where it should exceed the inter-correlation for each construct (Hulland, 1999; Hair et al., 2010), as seen table 2.0

******Insert Table 2.0 Average Variance Extracted Here******

In addition to the CFA model, the pooled data was tested for Configural invariance following Byrne's (2016) procedure. The purpose of Configural invariance is to assess the assumption that the fixed factor loadings are the same across groups and should be established in order for pooled data analysis to be meaningful (Vandenberg and Lance, 2000; Horn and McArdle, 1992). In this regard, a CFA was conducted for each app where the *goodness of fit* values were assessed to evaluate the fit of the model for each app. The results revealed that each of the CFA measurement models achieved *goodness of fit* (John Lewis: $\chi^2 = 1.968$; RMSEA = .061; CFI = .969; M&S: $\chi^2 = 2.145$; RMSEA = .066; CFI = .970; Next: $\chi^2 = 1.817$; RMSEA = .056; CFI = .973; H&M = $\chi^2 = 2.085$; RMSEA = .069; CFI = .954), which also signifies that the factor structure of each of the groups are similar (Byrne, 2016). Thus, we can conclude the data fits well across each group. Furthermore, the measurement and structural invariance assessment was performed to evaluate model equivalence across groups at the measurement and structural level. This test was conducted by assigning constraints to the groups and then calculating the difference in the CFI value from the Configural model and the constrained model, the results illustrated a CFI difference of $< .01$, affirming equivalence across each mobile application (Cheung and Rensvold, 2002). In addition, the comparison of the Configural and constrained model showed an insignificant p value $> .05$ further affirming no differences between each mobile application and the appropriateness of the pooled data.

Therefore, due to the CFA measurement model providing *goodness of fit*, the study can proceed to the second step by specifying and estimating the hypothesised structural model. The structural model in comparison to the measurement model examines the causal relationships of the theoretical constructs between exogenous and endogenous variables or

among endogenous variables. The fit statistics of the structural model showed *goodness of fit* ($\chi^2_{(159)} = 589.64$ $p < .05$ $\chi^2/df = 3.7$, CFI = .977, GFI = .943, NFI = .969, SRMR = .047, RMSEA = .051) and supports each of the hypothesised relationships. The standardised path coefficient regression weights, standard error and statistical significance are outlined in table 3.0 and figure 1.0.

*****Insert Table 3.0 Path Regression Coefficients Here*****

*****Insert Figure 1.0 Structural Model Here*****

Following on from the MANOVA tests conducted in the preliminary analysis, after estimating the structural model as seen in figure 1.0, multi-group moderation was calculated in AMOS graphics to explore the moderating role of gender and screen size. The results outlined that with regard to gender, females' customer experience is significantly influenced by utilitarian factors whereas males' customer experience is significantly influenced by the hedonic enjoyment factor. With regard to screen-size, those customers with a smaller screen-size highlight more importance towards utilitarian factors of ease of use, convenience and customisation directly influencing the customer experience ($p = .007$), whereas those with a large screen-size do not outline utilitarian factors as having a significant direct effect on the customer experience ($p = .188$). However, further multi-group analysis within AMOS graphics shows that when using a smaller screen mobile device, utilitarian factors remain insignificant in directly influencing males' experience $p = .120$. However, the utilitarian factors do have a significant effect on males' level of enjoyment when using a small screen-size mobile device $p = .000$, thus the hedonic element of enjoyment continues to play a significant role for males and acts as a mediator between the utilitarian factors and the experience when using a small screen-sized device. In contrast, utilitarian factors do not influence males using a large screen-sized device. No significant differences were found between females and screen size, the utilitarian factors continued to drive the experience, regardless of screen-size. Table 4.0 outlines the regression weights and statistical significance between each path with regard to gender and screen-size.

*****Insert Table 4.0 Moderating Effect of Gender and Screen Size Here*****

In order to further assess the differences between males and females use of retailers' m-commerce mobile applications, we conducted further multi-group analysis in AMOS graphics with males and females on their purpose of use from the categories of: (1) shopping to make a purchase, (2) searching/browsing and (3) keeping up to date with news. The results found that there was no significant difference between males and females with regard to the variables influencing the experience in the purpose of using retailers' mobile applications. In addition, multi-group analysis was carried out with both large and small screen-size smartphone users on the purpose of using a retailer's mobile application with the same set of categories and found a significant difference on the customer experience. The results illustrated that those customers with a large screen-size smartphone find enjoyment important across all three categories (Enjoyment \rightarrow Experience with large screen smartphone: (1) $\beta = .47, p < .001$ (2) $\beta = .41, p < .001$ (3) $\beta = .39, p < .001$; Enjoyment \rightarrow Experience with small screen smartphone (1) $\beta = .21, p = .186$ (2) $\beta = .17, p = .161$ (3) $\beta = .20, p = .097$), however the utilitarian factor and timeliness is more important than enjoyment for small screen-size smartphone users across all three categories (Timeliness \rightarrow Experience with small screen smartphone: (1) $\beta = -.31, p < .001$ (2) $\beta = -.42, p < .001$ (3) $\beta = -.29, p = .016$; Timeliness \rightarrow Experience with large screen smartphone (1) $\beta = -.25, p = .055$ (2) $\beta = -.27, p = .048$ (3) $\beta = -.18, p = .084$; Utilitarian Factor \rightarrow Experience with small screen smartphone: (1) $\beta = .67, p < .001$ (2) $\beta = .69, p < .001$ (3) $\beta = .47, p = .031$; Utilitarian Factor \rightarrow Experience with large screen smartphone (1) $\beta = .43, p = .009$ (2) $\beta = .49, p < .001$ (3) $\beta = .31, p = .048$)

Overall, the results provide interesting findings and support each of the research hypotheses. In support of H1, the findings outline a relationship between the variables of ease of use, convenience and customisation creating a utilitarian variable. Previous research (Magrath and McCormick; Kim and Baek, 2017; Yun et al, 2013; Alnawas and Aburb, 2016; Ozturk et al, 2016) drawing upon the Technology Acceptance Model (TAM) (Davis, 1989) and the information system success model (DeLone and McLean, 2003) outlined the overlapping features of ease of use, convenience and customisation, this research affirms previous conceptualisations within the mobile context.

Moreover, in support of H2 and H3 the results indicate a relationship between the utilitarian variable and timeliness as well as timeliness and the customer experience. Thus, in line with McLean and Wilson (2016), Klaus (2013) and Wang et al. (2015) we find that a mobile app that is easy to use, convenient and provides customisation will reduce the perception of

spending time on the app, which in turn influences a positive customer experience. Therefore, we affirm based on previous conceptualisations (Wang et al., 2015) that the ability to complete shopping tasks in a timely manner on a mobile application results in a positive customer experience.

In support of H4 and H5 the results indicate that the utilitarian factor of ease of use, convenience and customisation influences a customer's level of enjoyment during use of a retailer's mobile application. Such enjoyment subsequently influences a customer's satisfaction with their experience. The importance of enjoyment is illustrated in later versions of the technology acceptance model building upon the utilitarian factors of technology (Vankatesh and Bala, 2008; Vankatesh et al., 2012), as well as being outlined as leading to satisfaction with the experience in the e-commerce environment (Hsiao et al., 2016). This research further supports such a relationship with retailers' m-commerce mobile applications.

Furthermore, in support of H6, we find that there is a direct relationship between the utilitarian factors and the customer experience. Our findings are in line with the theoretical foundations of the Expectancy Confirmation Model with Information Technology (ECM-IT) (Bhattacharjee, 2001) in which utilitarian factors influence a customer's satisfaction with a technological system. Lastly, in support of H7 and in line with previous work within the e-commerce environment on re-visit intention (Shobeiri et al., 2015; Verhoef et al., 2009) the results of this research outline that a positive customer experience increases how frequent customers use a retailer's mobile application. However, despite the support of the research hypotheses, further analysis finds that gender and smartphone screen-size play a moderating role on the variables that influence the experience with mobile applications. The following section will provide a discussion on these results.

DISCUSSION

Due to advances in digital technology, retailers continually face new challenges, and thus in order to compete and meet the growing expectations of consumers; retailers need to adapt their strategy (Donthu and Eroglu, 2014). Consumers have ever evolving expectations during their service encounters with retailers, therefore due to the emergence of new channels of service delivery, namely mobile applications, it is imperative that we have an understanding on what influences the customer experience during the use of a retailer's mobile application.

Over recent years, more and more consumers are shopping through mobile applications, yet we have little understanding on what influences the customer experience during use, this research takes the initial steps and provides a Mobile Application Customer Experience Model (MACE) as shown in figure 2.

Previous research (Wang et al., 2015; Shankar et al., 2016; Andrews et al., 2015) highlighted that mobile applications are often used ‘on the go’ and therefore provide a unique experience in comparison to e-commerce websites and in-store shopping and thus can be influenced by their own set of unique variables. Wang et al. (2015) highlighted the utilitarian nature of m-commerce applications, yet purchase within such a channel remains lower than both in store and online (e-commerce websites). Therefore, establishing the variables that can influence a customer’s experience during use of such a channel is important for all retailers to understand.

The findings of the research highlighted the importance of the utilitarian factors of technology involving ease of use, convenience and the ability to customise the experience. Ease of use refers to the ability to easily move through the app and complete tasks in a trouble-free manner. Convenience refers to the ability to efficiently complete tasks, in a way that suits the customer’s situation. Customisation refers to the ability to filter content, favourite content and have an experience that is unique to the customer. These utilitarian factors of technology drive the customer’s perception of their experience. Importantly, it is these utilitarian factors (ease of use, convenience and customisation) that drive a customer’s level of enjoyment during use of a retailer’s mobile application. Customers who are unable to complete tasks with ease, customise their experience and use the app in a convenient manner will not experience high levels of enjoyment in the shopping activity. The level of enjoyment that customers’ experience during use of the app plays a mediating role between the utilitarian factors and the customer’s overall experience. Thus, should customers not have positive perceptions of the utilitarian factors then they are unlikely to experience enjoyment in the activity which will result in customers becoming dissatisfied and experience negative emotions of frustration, uncertainty, anxiety and disappointment.

While the level of enjoyment a customer experiences during the use of an m-commerce mobile application plays a mediating role between the utilitarian factors and the overall customer experience, the findings also highlight a direct effect between the utilitarian factors and the customer experience. This finding further highlights the important role of the

utilitarian factors, which can be understood based on Wang et al. (2015), Shankar et al. (2016) and Andrews et al. (2015) research outlining that mobile applications are often used 'on the go', anytime and anywhere, with mobile shopping considered a convenient way to shop. Previous research (Hoffman and Novak, 2009; Martin et al., 2015) within the e-commerce environment highlight enjoyment and flow as key drivers of an effective customer experience during a hedonic shopping experience. Thus, in contrast we find that m-commerce mobile applications may be used in a more utilitarian manner, with the customer's experience driven by utilitarian factors.

Several authors including Hoffman and Novak (2009) outlined flow and cognitive absorption theory (Agarwal and Karahanna, 2000) as leading to the optimal customer experience. However, Klaus (2013) and McLean and Wilson (2016) outlined that the customer experience is context specific, and thus flow theory may not be relevant in all searching and buying contexts. The findings of this research illustrate that in contrast to previous research within the e-commerce environment involving flow theory where customers become unconscious of time passing, customers are conscious of the length of time spent using m-commerce mobile applications. Consequently, being able to complete tasks in a timely manner becomes an important part of a customer's experience. The results indicate, should customers be unable to complete their shopping activity in a timely manner it will result in them becoming dissatisfied, experiencing further emotions of frustration, uncertainty and disappointment. However, the utilitarian factors of ease of use, convenience and customisation can reduce the length of time customers perceive to spend on an m-commerce mobile application. Thus, again the utilitarian factors prove to be an important driver of a positive customer experience. These results are in line with resource allocation theory, which asserts that customers are aware of time passing while completing a task and make time estimations throughout their activity. Therefore, the absence of stimulus such as customisation tools allowing customers to filter content, which can reduce the frequency of customers conducting time estimations, may result in customers perceiving to spend longer than necessary on the app and in turn result in a negative customer experience.

However, as shown in figure 2 and from the results illustrated in table 4.0, two moderating variables influence the customer experience during use of m-commerce mobile applications, namely gender and screen size. With regard to gender, some interesting results have emerged. Females appear to be driven by utilitarian factors, influencing the level of enjoyment, the appropriate length of time to spend using the app and directly on the customer experience.

The results indicate that the level of enjoyment females gain from using the app does not have a significant effect on their experience, rather utilitarian factors are of significant importance. In contrast however, the results outline that males use retailers' mobile applications for enjoyment. The level of enjoyment males' gain from their service encounter has an effect on their experience, yet utilitarian factors do not have an effect on the level of enjoyment, the time spent on the app or the overall experience. Thus, we can conclude from this that females use retailers' m-commerce mobile applications in a utilitarian manner in order to complete particular activities, whereas males use such channels for hedonic value and to experience a level of enjoyment.

In addition, figure 2 outlines the moderating effect of a smartphone's screen-size. As previously mentioned we categorised screen-size as a large screen-size = 4.7 inch and above (e.g. iPhone 7 – iPhone 7+) and small screen-size = 4.6 inch and below (e.g. iPhone 5). The results indicate that those with a small screen-size put emphasis on utilitarian factors of ease of use, convenience and customisation as significantly influencing the customer experience directly, whereas the results find that the experience for those with a larger screen size is not as significantly influenced by utilitarian factors. Interestingly, the results further illustrate that those with a small screen-size use retailers' mobile applications more for browsing than those with large screen-sizes. In contrast, those with large screen-size devices use the retailer's m-commerce mobile application for shopping (making purchases) more than customers with smaller screen-sizes. Additionally, the results pertain that enjoyment becomes the most important variable influencing the experience for large screen-size users when the app is used for (1) shopping, (2) browsing and (3) keeping up to date with news. Yet, on the other hand, for small screen-size users the utilitarian factor and timeliness is the most important variable influencing the experience across all three aforementioned categories. The results also indicate that despite males' experience not being influenced by utilitarian factors, should males' access retailers' mobile applications with a small screen-size device, utilitarian factors have an effect on males' level of enjoyment. Thus, as shown in figure 2, gender and screen size play an important moderating role between the variables influencing the customer experience.

******Insert Figure 2 M-commerce Mobile Applications Customer Experience Model (MACE) Here******

Previous research highlights numerous outcomes from an effective customer experience, including re-visit intention, loyalty, and trust. The results further indicate, should customers have an effective experience they will use the app more frequently. Thus, providing an effective customer experience will result in customers actively using the app, rather than retaining the app on their smartphone device and not using it or simply deleting the app.

Prior research indicated that consumer behaviour has changed due to the emergence of new mobile channels for service delivery (Alnawas and Aburub, 2016). However, a lack of research within the area had left many questions unanswered. The findings indicate the unique set of variables capable of influencing the customer experience with retailers' m-commerce applications. As mobile applications are often used 'on the go', utilitarian factors appear to drive the variables influencing the customer experience and directly on the customer's level of satisfaction with the experience and the customer's emotions, while gender and screen size play a moderating role. Subsequently, managerial implications arise from this research; the following section discusses these implications in detail.

Managerial Implications

This study offers retailers numerous managerial implications. First of all, the research highlights the unique nature of the customer experience with mobile applications. The utilitarian factors of ease of use, customisation and convenience appear to drive the level of satisfaction with the experience and positive customer emotions. Accordingly, retailers should ensure that customers are able to complete tasks trouble-free, being able to easily move through the app. In addition, retailers ought to provide functionality that allows customers to customise their experience, unique to their activity, i.e. being able to filter content, favourite content, apply parameters to search and be presented with customised information, while utilising customer's data, such as age, gender and location. In line with this, it is important that retailers provide an app that is convenient and allows customers to carry out activities within their own schedule, with ease and in an efficient manner. Thus, retailers should seek regular feedback on the customer experience through continued usability testing on these variables as customer expectations may continue to evolve as a result of their experiences with other mobile applications.

Additionally, retailers should focus on the utilitarian factors outlined in order to increase the level of enjoyment customers have during their service encounter with the channel.

Increasing the level of enjoyment customers' experience will increase a customer's level of satisfaction with the experience and overall positive emotions.

Moreover, the results of this study outline the time-conscious nature of consumers during use of a retailer's m-commerce mobile application. Previous research within the e-commerce environment, outlined flow, the loss of self-consciousness, while experiencing time distortion as leading to the optimal experience. However, this research further highlights the context specific nature of the customer experience and outlines to retailers that customers are conscious of the length of time they are spending during use of the app. Previous research highlighted that customers often use mobile applications 'on the go', therefore, spending longer than perceived necessary will result in a negative customer experience with negative emotions of frustration, disappointment and uncertainty. Thus, retailers who focus on the utilitarian factors of ease of use, convenience and customisation will increase the customer's perception of spending an appropriate length of time using the app to complete tasks. Retailers should incorporate the assessment of the length of time it takes customers to complete tasks on their mobile applications within usability testing to ensure customers can carry out their activities in a timely manner.

In addition, retailers should note the important moderating role of gender. Females are influenced by the utilitarian factors outlined. The utilitarian factors drive females' level of enjoyment with the app, the appropriateness of the length of time spent using the app and the overall customer experience. In contrast, for males, utilitarian factors are not significant in influencing the customer experience, the appropriateness of the length of time spent using the app and the level of enjoyment with the app. Rather, males are influenced by the level of enjoyment experienced during the service encounter. Thus, retailers offering services to both males and females should take account of these factors when developing and providing services through such a channel. Therefore, retailers that deliver services specifically to particular genders (e.g. Topshop - Females; Topman - Males) should note the factors influencing the customer experience for both males and females. In turn, retailers' can take into account the utilitarian nature of females' use with m-commerce mobile applications and the hedonic nature of males' use with such devices and channels. In addition, retailers often provide male and female points of entry to their mobile application, thus, retailers ought to adapt the structure of the mobile application with regard to the variables that influence the experience for each gender.

Furthermore, it is interesting for retailers to consider the screen size of a customer's mobile device. Analytics packages outline the device that customers use to access a retailer's mobile application, thus identifying the most popular device can provide insight into the variables that influence the customer's experience during use. Thus, the experience of those customers with a small screen-size smartphone device is influenced by utilitarian factors, whereas the experience of those with a large screen-size device is more significantly influenced by the level of enjoyment a customer experiences. As a result, retailers ought to ensure that their mobile application renders appropriately on different types of mobile devices to provide an effective customer experience. In addition, the research illustrates to retailers that customers with smaller screen-size smartphones use the mobile app more for browsing compared to those with larger screens, while larger screen-size customers use the app to shop more than smaller screen-size customers. Such insight provides managers with an explanation for varying consumer behaviour with m-commerce applications and provides retailers with insightful information for developing consumer personas.

Lastly, managers are often unaware of the reasons as to why customers do not use their mobile app despite the app being retained on a customer's smartphone device. Retailers should note that paying attention to the variables that influence a positive customer experience will result in customers using the m-commerce app more frequently.

LIMITATIONS AND FUTURE DIRECTIONS

The findings and implications of this study are somewhat constrained by certain limitations, some of which provide opportunities for future research. This study investigated the variables influencing the customer experience during use of apparel and department store retailers' mobile applications, while it would seem reasonable that the findings would extend to different types of m-commerce applications, it would be useful to test the model with other types of m-commerce mobile applications to further validate the model.

While it was our intention to develop a comprehensive model explaining the customer experience with m-commerce mobile applications, we have taken the initial steps, thus the MACE model presented in this paper could be further developed in future research, with particular focus on contextual factors as outlined in Andrews et al (2015), such as the location of mobile app use. In addition, building upon Gu et al (2017) research, future research could

explore customers' perceptions of privacy in mobile applications and its influence on the customer experience

Additionally, the moderating role of screen size presents an interesting finding, while we provide two categories of screen size, future research could explore this variable further and offer insights into consumer behaviour on a wider range of screen-sizes.

Lastly, while interesting findings are reported, as this research was conducted solely within the UK, we encourage future research to extend this research by testing the MACE model in other geographical locations with different cultural settings to conduct cross-cultural comparison of our results.

CONCLUSION

This research has advanced our theoretical understanding of the customer experience with retailers' m-commerce mobile applications. With the continued advancement in technology and the need for retailers to continually adapt to evolving consumer demands and new channels of service delivery, this research provides retailers numerous managerial implications in relation to the customer experience with their mobile applications. The paper has taken the initial steps in developing a customer experience with m-commerce mobile applications model. The key variables influencing the customer experience have been established, with utilitarian variables driving the customer experience. In contrast to flow theory and its positive effect on the customer experience within the e-commerce environment, the findings of the research outline that customers are conscious of the length of time they spend using retailers' mobile applications. Additionally, the research finds that gender and smartphone screen-size have a moderating effect on the customer experience and thus, retailers are provided with implications based on such results.

APPENDIX 1

Respondent Characteristics	Frequency (n)	%
<i>Gender</i>		
Male	481	47
Female	543	53
<i>Age (in years)</i>		
18 – 24	102	10
25 – 34	348	34
35 – 44	277	27
45 – 54	184	18
55 – 65	113	11
<i>Education</i>		
High School	133	13
College Graduate (FE)	481	47
University Graduate (HE)	410	40
No Qualifications	0	0
<i>Occupation</i>		
Full Time	748	73
Part Time	174	17
Unemployed	73	7
Retired	29	3
<i>Responses per App</i>		
John Lewis	265	26
Marks and Spencer	265	26
Next	263	26
H&M	231	22
<i>Main Use of the App</i>		
Shopping to make a purchase	360	35
Browsing	595	58
Keeping up to date with news	69	7
<i>Frequency of Use</i>		
Daily	32	4
Weekly	263	26
Monthly	469	45
A few times per year	260	25
<i>Purchase Frequency through App</i>		
Daily	8	1
Weekly	82	8
Monthly	421	41
A few times per year	301	29
Less often	212	21
<i>Preferred form of shopping</i>		
Through Retailer's Application	311	30
Through Website	227	22
In store	486	48
<i>Smartphone Screen Size</i>		
Large Screen	625	61
Small Screen	399	39

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Table 1.0 Measurement Scales

Variable	Scale Reference	Adapted Scale	Composite Reliability
Customisation	Adapted: Rose et al (2012)	<ul style="list-style-type: none"> • It feels like the app is talking personally to me as a customer • It is important to me that the app feels like my personal area when I use it • The requirement to log into the app makes me feel recognised as a customer 	.892
Convenience	Adapted: Taylor and Todd (1995)	<ul style="list-style-type: none"> • Shopping from the app is a convenient way to manage my time. • Shopping from the app makes my life easier. • Shopping from the app fits with my schedule. 	.921
Ease of use	Adapted: Davis (1989)	<ul style="list-style-type: none"> • Learning to use the app is easy for me • I find it easy to get the app to do what I want it to do • My interaction with the app is clear and understandable • I find the app to be flexible to interact with • It is easy for me to become skilful at using the app 	.948
Enjoyment	Adapted: Davis et al (1992)	<ul style="list-style-type: none"> • I find the app easy to use • I find using the app to be enjoyable • The actual process of using the app is pleasant 	.922
Timeliness	Adapted: McLean and Wilson (2016)	<ul style="list-style-type: none"> • I have fun using the app • I normally have to spend more time than I would have liked searching on the app • It normally takes longer than I expect to find items on the app • It normally takes too long searching for items on the app 	.928
Satisfaction with Experience	Adapted: Song and Zinkhan (2008)	<ul style="list-style-type: none"> • I am satisfied with the experience. • The experience is exactly what I needed. • This experience has worked out as well as I thought it would. 	.851
Positive Emotions	Adapted: Kuhlthau (2004) and applied a Likert Scale: Following the PANAS scale	<ul style="list-style-type: none"> • (R)Frustrated • Confident • Sure • (R)Confused • Optimistic • (R)Uncertain • (R)Disappointed • Relieved • (R)Doubtful • Satisfied 	

Table 2.0 Average Variance Extracted

	CR	AVE	MSV	CUST	EOU	TIM	CON	ENJ	CE
Customisation (CUST)	0.892	0.734	0.491	0.857					
Ease of Use (EOU)	0.948	0.751	0.531	0.453	0.867				
Timeliness (TIM)	0.928	0.813	0.112	-0.034	-0.263	0.902			
Convenience (CON)	0.921	0.794	0.699	0.648	0.571	-0.171	0.891		
Enjoyment (ENJ)	0.922	0.798	0.669	0.701	0.673	-0.149	0.729	0.893	
Customer Experience (CE)	0.851	0.740	0.699	0.662	0.729	-0.334	0.836	0.818	0.860

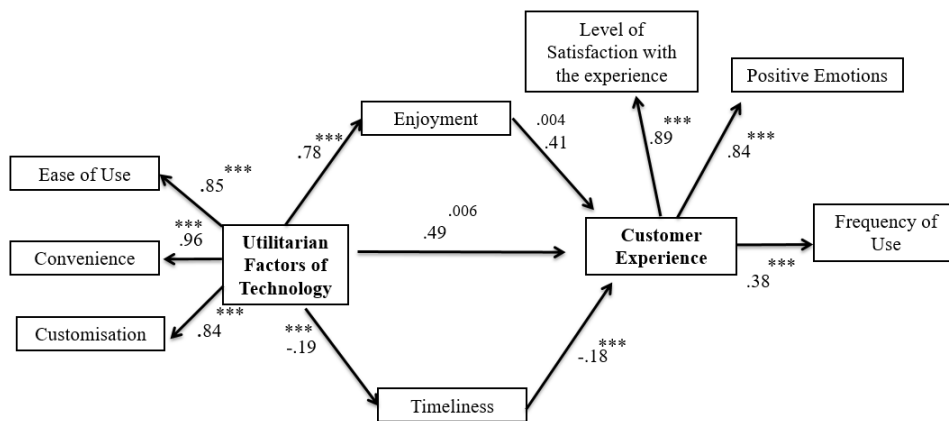
CR – Composite Reliability; AVE – Average Variance Extracted; MSV - Maximum Shared Variance

Table 3.0 Path Regression Coefficients

Hypotheses			Estimate	S.E	P
H1	Utilitarian Factors	→ Ease of use	.85	.062	***
H1	Utilitarian Factors	→ Convenience	.96	.065	***
H1	Utilitarian Factors	→ Customisation	.84	.077	***
H2	Utilitarian Factors	→ Timeliness	-.19	.080	***
H3	Timeliness	→ Customer Experience	-.18	.013	***
H4	Utilitarian Factors	→ Enjoyment	.78	.162	***
H5	Enjoyment	→ Customer Experience	.41	.096	.004
H6	Utilitarian Factors	→ Customer Experience	.49	.177	.006
	Customer Experience	→ Positive Emotions	.84	.029	***
	Customer Experience	→ Level of Satisfaction with Experience	.89	.038	***
H7	Customer Experience	→ Frequency of Use	.38	.075	***

(*** $p \leq .001$)

Figure 1.0 Structural Model



(*** p ≤ .001)

Table 4.0 Moderating Effects of Gender and Screen Size

	Female	Estimate	P	Male	Estimate	P
Utilitarian Factors → Enjoyment		.89	<.001	Utilitarian Factors → Enjoyment	.39	.713
Utilitarian Factors → Timeliness		-.33	<.001	Utilitarian Factors → Timeliness	-.04	.750
Utilitarian Factors → Customer Experience		.98	.033	Utilitarian Factors → Customer Experience	.11	.756
Enjoyment → Customer Experience		.073	.860	Enjoyment → Customer Experience	.80	<.001
Timeliness → Customer Experience		-.07	.041	Timeliness → Customer Experience	-.05	.194
	Large Screen-Size	Estimate	P	Small Screen-Size	Estimate	P
Utilitarian Factors → Enjoyment		.67	.017	Utilitarian Factors → Enjoyment	.85	<.001
Utilitarian Factors → Timeliness		-.097	.096	Utilitarian Factors → Timeliness	-.421	<.001
Enjoyment → Customer Experience		.549	<.001	Enjoyment → Customer Experience	.338	.030
Timeliness → Customer Experience		-.173	.002	Timeliness → Customer Experience	-.235	<.001
Utilitarian Factors → Customer Experience		.34	.188	Utilitarian Factors → Customer Experience	.52	.007

Figure 2 M-commerce Mobile Application Customer Experience Model (MACE)

