Examining the Impact of Mobile Interactivity on Customer Engagement in the Context of Mobile Shopping

Ali Abdallah Alalwan
Amman College of Banking and Financial Sciences,
Al-Balqa' Applied University, Amman, Jordan
Email: Alwan_jo@bau.edu.jo

Raed Algharabat
College of Business and Economics, Department of Management and
Marketing, Qatar University, Doha, Qatar
Email: ralgharabat@qu.edu.qa

Abdullah M. Baabdullah
Department of Management Information Systems, Faculty of
Economics and Administration, King Abdulaziz University, Jeddah,
Saudi Arabia
Email: baabdullah@kau.edu.sa

Nripendra P. Rana
School of Management, Swansea University, Fabian Way, Swansea
SA1 8EN, UK
Email: n.p.rana@swansea.ac.uk

Zainah Qasem
The School of Business, Department of Marketing, The University of
Jordan, Amman, Jordan
Email: z.qasem@ju.edu.jo

Yogesh K. Dwivedi
Emerging Market Research Center (EMaRC), School of Management,
Swansea University, Swansea, UK
Email: y.k.dwivedi@swansea.ac.uk

Abstract

Purpose – This study aims to examine the impact of mobile interactivity dimensions (active control, personalization, ubiquitous connectivity, connectedness, responsiveness, and synchronicity) on customer engagement.

Design/methodology/approach – A quantitative field survey study was conducted to collect the required data from actual users of mobile shopping in three countries: Jordan, the United Kingdom (UK) and Saudi Arabia.

Findings – The results are based on structural equation modelling and support the impact of five dimensions of mobile interactivity: active control, personalization, ubiquitous connectivity, responsiveness, and synchronicity.

Research limitations/implications – This study only considered the shopping activities conducted by mobile channels, while other channels (e.g. online channels, traditional channels, and social media shopping channels) are not considered. Furthermore, the current model does not consider the impact of personal factors (e.g. technology readiness, self-efficacy, user experience). The results of the current study present a foundation that can guide marketers and practitioners in the area of mobile shopping.

Originality/value – This study enriches the current understanding of the impact of mobile interactivity on mobile shopping, as well as how mobile interactivity can enhance the level of customer engagement.

Keywords: mobile shopping; mobile interactivity; customer engagement.

Paper type: Research paper

1. Introduction

With the number of smartphone users worldwide expected to exceed five billion by the end of 2019 (Statista, 2018), people are engaging more with smart channels to conduct many different activities, such as shopping, social media, entertainment, health, learning, traveling, and food ordering (Dwivedi et al., 2016; Liébana-Cabanillas et al., 2017; Marriot et al., 2017; Rathore et al., 2016; Slade et al., 2015; Tseng and Wei, 2020; Zheng et al., 2019). The growth of smartphone usage represents a new and promising trend for different business sectors across the world, especially those operating in the retail sector (Kapoor & Vij, 2018; Lal & Dwivedi, 2008). According to eMarketer (2018), by the end of 2017, more than the half (58.9%) of global online sales ($2.304 trillion) was conducted using mobile shopping channels. Online sales undertaken using mobile shopping channels are estimated to reach US$3.5 trillion by the end of 2021 (eMarketer, 2018).

The remarkable growth of mobile shopping sales could also be related to the high level of interactivity of such channels. For instance, mobile shopping channels enjoy several benefits in terms of mobility, cost and time saving, novelty, real-time response, customization, and

increased connectedness. Such benefits have dramatically transformed the nature of the relationships and interactions between organizations and their customers (Lee, 2005). However, retailing organizations are always in the challenge of knowing the feasibility of adopting mobile shopping channels to reach their customers. Another challenge that could be recognized by these organizations is to discover the most important aspects of mobile interactivity which should be considered to enrich the customers' shopping experience. Accordingly, more efforts are requested to fully understand the main features of perceived interactivity of mobile shopping and how these features could shape the customers' interaction and experience. The aim of this study is to examine the impact of the interactive nature of mobile shopping channels on consumer behaviour and reactions. This research is especially necessary given the limited number of studies that have tested the role of mobile interactivity in the mobile shopping context.

It is also important to note that people are more engaged with their smartphones and spend considerable time using smartphone apps (Alalwan et al, 2016; Lal & Dwivedi, 2009; Shareef et al., 2012). According to a US report by Flurry Analytics (2016), about five hours per day are spent using smartphones by American adults, and 4.5 of those hours are taken up by using mobile apps. Consequently, business organizations are exploring how to use mobile shopping channels to attract their customers and to enable them to be more emotionally, cognitively, and behaviourally engaged with the business's brands and activities. In light of this, the current study addresses another question pertaining to the level of customer engagement with mobile shopping and how customer engagement can be predicted by the level of mobile interactivity in mobile shopping channels. The relationship between mobile interactivity and customer engagement has not been fully covered by prior studies, so this research constitutes a valuable contribution to the literature.

2. Literature Review

A careful reviewing of the relevant literature leads to a noticeable number of themes that have been considered and examined by mobile shopping studies. For example, the common focus of the vast majority of these studies has been on the customers' intention and adoption of mobile shopping (i.e. Groß, 2018; Marriott et al., 2017; Natarajan et al., 2018). A part of mobile shopping literature has also considered the main outcomes of using mobile shopping on the customers' satisfaction, loyalty, and entertainment (i.e. Pappas et al., 2014; Thakur, 2016). The impact of mobile shopping on customer engagement has also been the focus of attention by a number of mobile shopping studies (Thakur, 2016; 2018). As well as, customer buying

behaviour and patterns (e.g. size of order, order rate, and money spent) has derived an attention over the related body of mobile shopping literature (i.e. Kim et al., 2017).

The largest part of mobile shopping studies has focused on the customers' intention and adoption of mobile shopping. For instance, Groß (2018) focused on the main factors predicting the actual usage of mobile shopping in Germany. Groß's proposition was based on factors from the technology acceptance model (TAM), along with enjoyment, social influence, trust, and satisfaction. Factors from TAM and Rogers' (2003) model (Theory of Diffusion of Innovations) were proposed by Natarajan et al. (2018) to see how they could impact and behave differently according to differences in terms either of mobile phone type or of age categories.

The impact of mobile shopping on customers' satisfaction, attitudes, loyalty and entertainment has been considered by Pappas et al. (2014); and Thakur (2016). For instance, Pappas et al. (2014) demonstrated that the users are more likely to be pleased about their experience of using mobile shopping channels if they perceive these channels are more useful and productive.

Aspects related to perceived risk and trust were found by Marriott and Williams (2018) to predict the customer's intention to use mobile shopping. A comparative study of Chinese and American mobile shopping adopters was conducted by Lu et al. (2017), who found that there are significant differences between United States (US) and Chinese customers in terms of the impact of perceived privacy on the customer's intention to keep using mobile shopping, which could be attributed to cultural values relating to individualism and collectivism.

Kim et al. (2017) aimed to discover the impact of a customer's digital and mobile experience on the customer's mobile buying behaviour. They found that smartphone users familiar with online and mobile applications are more likely to engage with the purchasing process of mobile shopping. From a different perspective, Wang et al. (2015) argued that using mobile shopping could impact on customer buying patterns (e.g. size of order, order rate, and money spent). In line with uses and gratifications theory, Huang and Zhou (2018) discussed the role of customers' motivation to use mobile shopping in the adoption of web personalization research.

However, customer engagement has been rarely considered by mobile shopping studies. For example, Thakur (2016) investigated how mobile shopping channels could help organizations to have more engagement with their customers, which, in turn, would contribute to customer loyalty. The results from Thakur's (2016) study proved the significant impact of customer engagement with mobile shopping on the customer's continued intention to keep using such applications. Later, in 2018, Thakur (2018) empirically approved that customer engagement

with mobile shopping partially mediates the relationship between customers' satisfaction and intention to online review. In the same study, Thakur (2018) also approved a significant relationship between trust in online retailers and the level of customer engagement with mobile shopping.

The most important aspect related to mobile shopping channels, that is, the role of mobile interactivity features, has not been fully covered and there is still a need to see the impact of such important features on the customers' experience in terms of customer engagement and loyalty. This gap is really worth being considered and validated as mobile interactivity features have been commonly reported to play a crucial role in shaping the customer's experience over the mobile technology area but not for mobile shopping particularly (Lee, 2005; Yang & Lee, 2017; Yang et al., 2018). Further, only two studies have addressed the concept of customer engagement and both were by Thakur (2016; 2018) who considered five main dimensions of customer engagement: social-facilitation, self-connect, intrinsic enjoyment, time-filler, utilitarian and monetary evaluation experiences. However, Thakur did not cover the behavioural component as well as considered the impact of mobile interactivity dimensions.

3. Conceptual Model

In the current conceptual model, mobile interactivity is considered a focal component that predicts customer engagement, which, in turn, contributes to customer loyalty (see Figure 1).
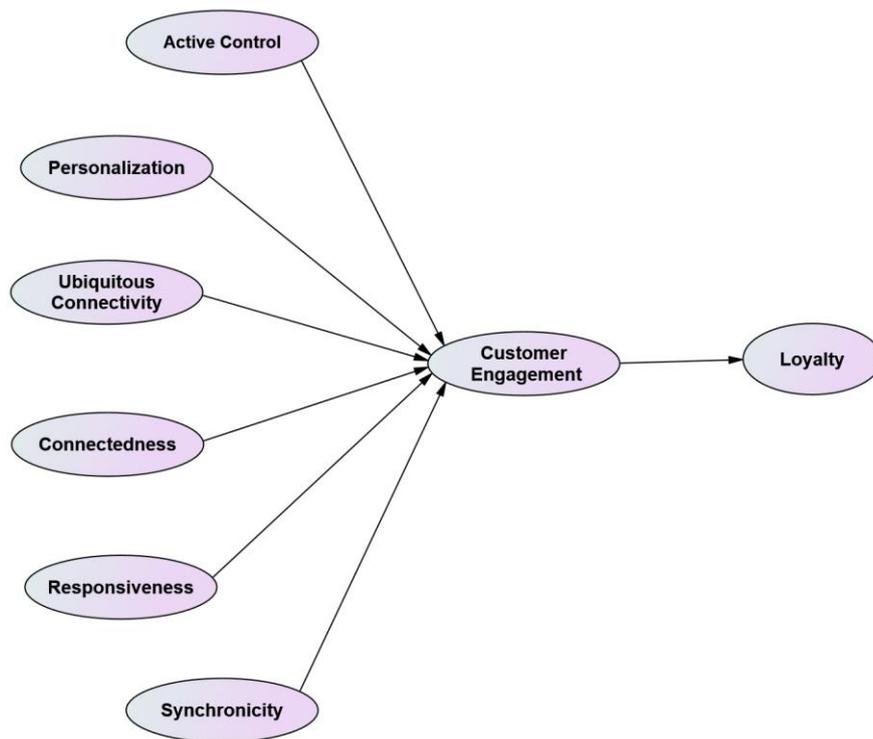
Figure 1. Conceptual Model (Adapted from Dessart et al., 2015; Lee, 2005; Yang et al., 2018)

3.1 Interactivity

Analysis of the relevant literature reveals that there is no standard definition of the concept of interactivity. Some scholars have conceptualized interactivity as a unidimensional construct (e.g. Jiang et al., 2010; Wu, 2005; Zhao & Lu, 2012), whereas others have examined interactivity as a multidimensional construct (e.g. Lee, 2005; Liu, 2003; Wu, 2005).

For instance, interactivity was theorized in terms of responsiveness by Zhao and Lu (2012), who concentrated on the individual's perception of how other users quickly and consistently receive and reply to his or her messages. On the other hand, Lee (2005) considered interactivity as a multidimensional construct comprising six features: user control, responsiveness, personalization, connectedness, contextual offer, and ubiquitous connectivity. Synchronicity, active control, and two-way communication were formulated by Liu (2003) as integral features of website interactivity.

As this study intends to validate the role of mobile interactivity from the customers' perspective as well as given the nature of mobile technology, six mobile interactivity dimensions were considered in the current model: active control (e.g. Lee, 2005; Wu, 2000); ubiquitous connectivity (e.g. Lee, 2005; Yang & Lee 2017); connectedness (e.g. Lee, 2005);

responsiveness (e.g. Lee, 2005; Yang & Lee, 2017; Zhao & Lu, 2012); personalization (e.g. Dholakia et al., 2000; Lee, 2005; Wu, 2000); and synchronicity (e.g. Liu, 2003).

3.1.1 Active Control

Active control was defined by Liu (2003, p. 208) as "a user's ability to voluntarily participate in and instrumentally influence a communication". Active control was also argued by Wu (2005) to involve navigation empowered by online technical features (e.g. hyperlink and visual layout) that allow users to fully recognize and control where they are going over the website. Thus, active control pertains to the extent to which a user is able to cognitively control the interactive contact either with other users or with online organizations (Tan et al., 2018).

The impact of active control on customers' perception and behaviour has been demonstrated by different researchers (e.g. Lee, 2005; Kim et al., 2011; Tan et al., 2018). For instance, according to Kim et al. (2011), trust in electronic shopping is largely predicted by the customers' feeling that they fully control their online shopping experience. Lee (2005) also supported the role of active control in shaping customers' trust and attitudes towards mobile commerce. Recently, Tan et al. (2018) provided further evidence to support the validity of active control as an important dimension of perceived interactivity in the area of online advertising.

Accordingly, it can be proposed that as long as a customer has a sense that they effectively control their shopping experience using a mobile shopping channel, they will be more cognitively, emotionally, and actively engaged with the mobile shopping organization. Therefore, the following hypothesis proposes that:

H1: Active control will positively influence customer engagement with mobile shopping.

3.1.2 Personalization

One of the most innovative aspects that makes mobile shopping applications more attractive is the ability of such systems to tailor and personalize the platform features (design, information, interface, services, products, recommendations, etc.) in line with the customers' preferences and style (Dholakia et al., 2000; Lee, 2005).

Instead of a mass marketing approach which could be less effective in the current digital economy, personalization could be a more practical and significant way of contributing both to customers' shopping experience (Alalwan, 2018). In other words, a high level of customers' expectations and needs matching could be attained by a high level of personalization on the

targeted online platforms (Arora et al. 2008; Lal & Dwivedi, 2010; Shareef et al., 2017). For instance, Alalwan (2018) found that the level of customization existing in social media advertising predicts not only the customer's purchase intention but also the customer's perception that such ads are really useful as well as entertaining.

Accordingly, it can be suggested that customers are more likely to engage with mobile shopping if they perceive such systems and the attached marketing activities (design, information, interface, services, products, recommendations, etc.) to be more personalized and relevant to their needs, preferences, expectations, and value system. Therefore, the following hypothesis proposes that:

H2: Personalization will positively influence customer engagement with mobile shopping.

3.1.3 Ubiquitous Connectivity

Ubiquitous connectivity can be defined as the mobile user's ability to approach any type of content, products, and services using the mobile internet wherever the user needs to (Lee, 2005). This interactive feature provides customers with more flexibility to do their shopping from anywhere (e.g. home or work) they can connect to the internet (Lee, 2005; Yang & Lee, 2017). This, in turn, helps customers to save time and effort, which, in turn, contributes to the utilitarian and hedonic aspects perceived in using mobile shopping.

Thus, ubiquitous connectivity was found by Mallat et al. (2008) to be the most important characteristic in mobile technology for shaping the customers' perception and intention to use mobile ticketing technology. There is more flexibility with respect to time and location and it is highly requested by customers in order for them to be cognitively and emotionally engaged with organizational and brand activities. Mobile shopping channels, on the other hand, give customers more flexibility and convenience to engage at a time and place of their choosing. Accordingly, the following hypothesis proposes that:

H3: Ubiquitous connectivity will positively influence customer engagement with mobile shopping.

3.1.4 Connectedness

Connectedness was conceptualized by Lee (2005) as the ability of interactive platforms to empower their users to be socially involved and interconnected with each other. In light of technological revaluation in terms of web 2.0 and highly interactive applications, online communities have been the focus of attention from the perspectives of customers and

marketers. Indeed, connectedness empowers both to find out other customers whose interests, values, and experiences are relevant and common to their own (Zhao and Lu, 2012). In fact, customers' perception and feeling that they are closely attached and connected with others using the same platforms will shape their satisfaction regarding their need for social interaction (Zhao and Lu, 2012). In addition, customers always look at the feedback and information provided by other customers as more credible and useful for making their own purchasing decisions (Alalwan et al., 2017).

Accordingly, it could be argued that customers are more likely to engage with mobile shopping if they feel that there is an opportunity to build their own community and to actively and socially interact with each other. Thus, the following hypothesis proposes that:

H4: Connectedness will positively influence customer engagement with mobile shopping.

3.1.5 Responsiveness

Another related and complementary component with connectedness is the level of responsiveness captured over the interactive platform. According to Zhao and Lu (2012) and Lee (2005), responsiveness is related to the user's perception of how often other users and marketers respond to his or her messages and questions. Johnson et al. (2006) also discussed the importance for the customer's need for information over the interactive web of other users and marketers providing suitable, pertinent, and comparable answers and responses. Users usually look to attract other users' attention regarding what they post and share. Therefore, with a high level of responsiveness, customers will feel that they are emotionally and socially connected to each other over the interactive platform (Zhao and Lu, 2012). In their empirical study, Yang and Lee (2017) provided further evidence to demonstrate the role of responsiveness in accelerating the customer's feeling of playfulness and enjoyment when using mobile commerce.

Accordingly, it could be argued that customers are more likely to engage with mobile shopping if they perceive a high level of responsiveness and feel that mobile shopping is able to provide them with updated, relevant, and comparable responses to their information needs. Thus, the following hypothesis proposes that:

H5: Responsiveness will positively influence customer engagement with mobile shopping.

3.1.6 Synchronicity

The responsiveness features will not be enough to provide users with a full value and positive shopping experience without a high level of real-time and speedy responses to the customers' questions and information requests (Liu, 2003). Synchronicity was addressed by Johnson et al. (2006, p. 41) as "the extent to which a response to a communication event is perceived to be immediate, or without delay." Indeed, the time it takes to receive and answer any question or enquiry from the customer will largely shape the quality of the communication process, and, accordingly, will impact the customers' satisfaction. Liu (2003), therefore, formulated synchronicity as a dimension of perceived interactivity and provided statistical evidence supporting the validity of this construct. Yang and Lee (2017) also statistically confirmed the impact of synchronicity on the level of enjoyment perceived in using mobile commerce.

Accordingly, the extent to which customers receive instant or fast feedback to their enquiries and questions will motivate these customers to be emotionally, cognitively, socially engaged with mobile shopping. Thus, the following hypothesis proposes that:

H6: Synchronicity will positively influence customer engagement with mobile shopping.

3.2 Customer Engagement

The concept of customer engagement has been operationalized to clarify and address how customers can actively interact with organizations, brands, and media tools (e.g. Harrigan et al., 2017). This interest can be related to the importance of customer engagement on the financial (sales revenue) and non-financial marketing performance (loyalty; e.g. Algharabat et al., 2019; Thakur, 2016); and brand equity (e.g. Algharabat et al., 2019).

It is also important to consider the level of interactivity of smartphone applications (e.g. mobile shopping), which represent new platforms that help organizations to attract and engage their customers in more effective ways (Thakur, 2016). In the digital marketing literature, various studies have extensively discussed the related issues of customer engagement (e.g., Dessart et al., 2015; Kumar et al., 2018; Mollen & Wilson, 2010).

However, there is no agreed and unified definition of the concept of engagement (e.g., Algharabat, 2018; Harrigan et al., 2017). For example, the customer engagement concept was operationalized by Patterson et al. (2006) as the extent to which customers are behaviourally, perceptually, and emotionally present in an interactive relationship with organizations. One of the most comprehensive definitions of online engagement was provided by Mollen and Wilson (2010, p. 923): *Online engagement is a cognitive and affective commitment to an active*

relationship with the brand as personified by the website or other computer-mediated entities designed to communicate brand value.

The current study considers the multidimensional proposition of the customer engagement due to the interactive nature of mobile shopping that allows customers and organizations to have bidirectional contact (Lee, 2005). Mobile shopping also enriches the experience of customers to be value co-creators by providing their feedback in online reviews, ratings and rankings. Furthermore, to be actively engaged, a high level of constant exchanges and interactions are also required from customers. Therefore, the customer is required to invest emotionally, behavioural, cognitively, and socially in such an engagement process (Hollebeek, 2011; Mollen & Wilson, 2010).

Using mobile shopping generates different kinds of hedonic, functional, social, and financial benefits (Natarajan et al., 2018). This, in turn, provides further reasons that motivate customers to engage more with such innovative channels (Irani et al., 2012; Sajjad et al., 2011). Therefore, and in line with propositions suggested by several scholars (e.g. Dessart et al., 2015; Hollebeek, 2011; Mollen & Wilson, 2010; Patterson et al., 2006), three main dimensions – the cognitive, emotional, and behavioural – were considered in the current study to examine the concept of customer engagement with mobile shopping. These three dimensions of customer engagement have been commonly mentioned and confirmed in prior literature on marketing (e.g. Dessart et al., 2015; Hollebeek, 2011; Mollen & Wilson, 2010). These three dimensions will be treated as second-order factors for customer engagement, which is itself considered as the first-order factor. Each of these dimensions is further discussed in the following subsections.

3.2.1 Cognitive Engagement

Dessart et al. (2015, p. 35) defined the cognitive dimension of engagement as "a set of enduring and active mental states that a consumer experiences with respect to the focal object of his/her engagement." Cognitive engagement has been separated into two main sub-dimensions: attention and absorption. Attention relates to the individual ability to be cognitively present, willing to contemplate, and conscious regarding the targeted object of engagement (Dessart et al., 2015). Absorption concerns the extent to which an individual is mentally focused on and preoccupied with the targeted object (e.g., the brand, organization, system, product, or service) (Ahn & Back, 2018; Dessart et al., 2015; Mollen & Wilson, 2010).

3.2.2 Emotional Engagement

Dessart et al. (2015, p. 35) discussed the concept of emotional engagement under the name of affective engagement, which is conceptualized as "the summative and enduring levels of emotions experienced by a consumer with respect to his/her engagement focus." According to Dessart et al. (2015), enthusiasm and enjoyment are the main sub-dimensions of the emotional component of engagement. Indeed, enthusiasm and enjoyment complement each other. Enthusiasm pertains to the extent to which an individual is intrinsically motivated and willing to pay attention to the object targeted in the engagement process (Dessart et al., 2015). The second complementary object is enjoyment, which relates to the hedonic outcomes (e.g., joy, playfulness, pleasure) resulting from the engagement process with the targeted object (Baabdullah, 2018; Dessart et al., 2015; Patterson et al., 2006).

3.2.3 Behavioural Engagement

Behavioural engagement is a strong and critical component in the engagement process and reflects the extent to which a customer actively participates and engages with brands, firms, products and services (Dessart et al., 2015). Behavioural engagement has been addressed under different terms, such as vigour (Dwivedi, 2015), activation (Hollebeek et al., 2014), and interaction (Patterson et al., 2006). However, all of these terms revolve around the idea of how much time, energy, and effort the customer can or does spend and invest in his or her interaction with a particular brand or organization (Dwivedi, 2015; Hollebeek et al., 2014). Indeed, behavioural engagement cannot simply be abbreviated as the buying process. Rather, it is related to the customer's ability to share and support the particular brands (Dessart et al., 2015). Accordingly, and in relation to social media, Dessart et al. (2015) articulated behavioural engagement as comprising three main activities: sharing, learning, and endorsing.

Customer engagement is not a goal in itself; rather, it is a means of helping organizations and brands to enhance their marketing performance in terms of customer empowerment and loyalty (Harrigan et al., 2017; Hollebeek, 2011). Further, customer loyalty has been commonly considered as a multidimensional construct comprising two main aspects: attitudinal loyalty and behavioural loyalty (Thakur, 2016). Therefore, three main components of customer engagement – the cognitive, emotional, and behavioural – could considerably serve both the attitudinal and behavioural aspects of customer loyalty (Thakur, 2016). This proposition has recently been supported by Harrigan et al. (2017) who successfully validated the predictive power of customer engagement on loyalty in the social media area. More specifically, Thakur

(2016) demonstrated a strong relationship between customer engagement and customer loyalty. Likewise, France et al. (2016) provided further evidence that supports the role of customer brand engagement in predicting customer loyalty.

Accordingly, a direct impact of customer engagement on customer loyalty can be proposed. Thus, the following hypothesis proposes that:

H7: Customer engagement will positively influence customer loyalty towards mobile shopping.

4. Methodology

4.1 Research Design

The current study model was built based on a solid theoretical foundation, and therefore, the nature of the current study is more to be theory testing rather than theory building. Thus, the positivist research paradigm was selected as an appropriate research approach to the nature of the current study (Choudrie and Dwivedi, 2005; Orlikowski & Baroudi, 1991). Likewise, in the light of the need to collect a large amount of statistical evidences to test the research hypotheses, a quantitative field survey study was conducted to collect the required data from actual users of mobile shopping in three countries: Jordan, the UK, and Saudi Arabia (Dwivedi et al., 2006). Over five months from December 2018 to April 2019, the researchers distributed questionnaires to a convenience sample size of 500 international and local university students from the three countries. All the students had experience of using mobile shopping.

In fact, there was number of restrictions that hindered the applicability of probability sampling techniques especially over the Jordanian and Saudi context. As such, it was really difficult to have an accredited and inclusive list of all customers (students) who have used mobile shopping in Jordan and Saudi Arabia (Dwivedi et al., 2006). Accordingly, the convenience sampling technique was found to be more applicable to capture the current study data from the targeted participants over the three countries (i.e. Jordan, Saudi Arabia and the UK). In this regard, it is important to report that a set of procedures were taken into account to avoid all concerns related to sampling bias that could mitigate the validity and generalisability of the yielded results. For example, a large sample size (500 participants) was approached over three countries to capture more generalisability. Furthermore, it took into account the differences and variances in the respondents' characteristics (age, gender, income level, and educational level) during the data collection process.

According to what has been recommended by Armstrong and Overton (1977), a non-response bias test was undertaken for the current study sample. The main findings in this regard showed that there is no significance among participants ($p > 0.05$) for sub-constructs of perceived interactivity, customer engagement and loyalty. As the nature of the current study is cross-sectional where independent and dependent factors were addressed by participants, Harman's single factor was tested to ensure that the data did not have any common method bias concerns (see subsection 5.3.2, common method bias test).

The reasons behind section of three countries could be returned to the fact that Jordan and Saudi Arabia are a promising market in the field of mobile commerce and shopping (AMEinfo, 2019). The UK was also considered in the current study to capture the point of view of customers over a highly developed culture rather than just considering users of mobile shopping over the developing countries. Another reason behind the selection of these countries is the fact that the residences of the members of the research team of this paper fall within these countries, and thus, the process of gathering information is more smooth and easy.

4.2 Measurement scale

Six dimensions of mobile interactivity were considered in the current study. The items used to measure these dimensions were extracted from the prior literature as follows: items of active control were derived from Tan et al. (2018), Liu (2003), Lee (2005) and Wu (2005); items of personalization were derived from Lee (2005) and Kim and Ko (2012); items of ubiquitous connectivity were derived from Lee (2005); items of connectedness were derived from Lee (2005); items of responsiveness were derived from Johnson et al. (2006) and Lee (2005); and items of synchronicity were extracted from Lee (2005), and Liu (2003) and Yang and Lee (2017). Three main dimensions – the cognitive, emotional, and behavioural – were considered to test customer engagement. Items for testing these three dimensions were extracted from Ahn and Back (2018) and Harrigan et al. (2017). For loyalty, the scale used by Lee and Chung (2009) and Baabdullah et al. (2019) was adopted in the current study questionnaire to test customer loyalty towards mobile shopping.

4.3 Pilot study

The questionnaire was validated by a number of experts in the area of digital marketing and information systems prior to conducting the main survey (Dwivedi et al., 2006). All experts have approved the quality and validity of the main scale items used in the current study questionnaire. Further, a pilot study with 35 Master's students was conducted to check the

reliability of the scale items. The results of Cronbach's alpha largely supported the reliability of all the constructs, as the minimum Cronbach's alpha value was .75, which is higher than the cut-off point of 0.70 as suggested by Nunnally (1978).

5. Results

5.1 Descriptive Statistics of Respondents' Demographic Characteristics

The total number of questionnaires allocated was 500, of which 323 were fully completed and returned by participants. Of the respondents, 60.4% were male while 39.6% were female. Most respondents were within the age group of 21–29; those aged over 60 represented only 1.9% of the sample. In relation to educational level, 46.7% of respondents had a bachelor's degree and were studying for a postgraduate qualification. Finally, 57.3% of respondents had mobile shopping experience ranging from 1 to 2 years; the second largest group (18.5%) were those with experience ranging from 2 to 3 years.

5.2 Mean and Standard Deviation Measurement Items

As Table 1 shows, all scale items were positively valued by the study participants. For example, mobile connectedness was positively rated by the vast majority of respondents, as the least mean value was for CON5 (Mean: 5.0031). Participants also positively rated the level of responsiveness existing in the mobile shopping; in this regard, RSP3 accounted for the smallest mean value of 5.1641. The largest mean for personalization items was for PRS5 with a value of 4.9412 and. The scale items of active control were all positively ranked by participants; the lowest mean value (5.1765) was recorded for ACV4. The respondents also positively valued the level of synchronicity items, which all captured mean values of not less than 5.1253 (i.e., SYN1). Remarkably, all the items of ubiquitous connectivity had mean values larger than 5.3096 (i.e., UBC4). Items for the three dimensions of customer engagement were adequately valued by respondents. For example, emotional engagement items captured values not less than 5.0248 (i.e., EMO3); behavioural engagement items captured values not less than 5.3932 (i.e., BEH5); cognitive engagement items captured values not less than 5.1920 (i.e., COG1). Lastly, four items of loyalty had values not less than 5.0805 (i.e., LOY1).

Table 1: Mean and Standard Deviation of the Scale Items

Construct	Item	Mean	Standard Deviation (SD)
Connectedness	CON1	5.1981	1.35743
	CON2	5.1858	1.16210
	CON3	5.1765	1.09338
	CON4	5.2260	1.12909

	CON5	5.0031	1.14615
Personalization	PRS1	4.8762	1.07923
	PRS2	4.8824	1.07993
	PRS3	4.8947	1.05504
	PRS4	4.8607	1.07589
	PRS5	4.9412	1.10037
	PRS6	4.8390	1.09435
Responsiveness	RSP1	5.2043	1.12083
	RSP2	5.2322	1.19729
	RSP3	5.1641	1.14521
	RSP4	5.2322	1.19729
	RSP5	5.1981	1.13843
Active Control	ACV1	5.2570	1.06566
	ACV2	5.2229	1.09764
	ACV3	5.2477	1.10643
	ACV4	5.1765	1.13791
	ACV5	5.2415	1.11896
	ACV6	5.2539	1.08517
	ACV7	5.2136	1.18251
Synchronicity	SYN1	5.1253	.86226
	SYN2	5.5427	.90314
	SYN3	5.2123	.76935
	SYN4	5.2067	.88300
	SYN5	5.2158	.91670
	SYN6	5.2605	.75447
Ubiquitous Connectivity	UBC1	5.3096	1.02005
	UBC2	5.3313	1.13054
	UBC3	5.3684	1.02023
	UBC4	5.3189	1.10075
	UBC5	5.3622	1.03453
	UBC6	5.3313	1.10554
Emotional Engagement	EMO1	5.1486	1.07609
	EMO2	5.0344	1.10026
	EMO3	5.0248	1.10308
	EMO4	5.2229	1.15821
	EMO5	5.1517	1.10556
Behavioural Engagement	BEH1	5.5170	1.18303
	BEH2	5.4180	1.14014
	BEH3	5.4520	1.17954
	BEH4	5.4025	1.21031
	BEH5	5.3932	1.09922
Cognitive Engagement	COG1	5.1920	1.10349
	COG2	5.2229	1.11449
	COG3	5.2322	1.04493
	COG4	5.2136	1.15863
	COG5	5.2570	1.15516
Loyalty	LOY1	5.0805	1.07759
	LOY2	5.1517	1.18684
	LOY3	5.2043	1.04334
	LOY4	5.1424	1.15754

5.3 Structural Equation Modelling (SEM)

Ten constructs and 54 scale items were subjected to SEM analyses. A two-stage SEM approach was adopted for the analysis. The reasons behind selecting SEM to analyse the current study data is related to the ability of such statistical approach to assure more validity and reliability

of the yielded results. Accurately, by using SEM, researchers are more able to test aspects related to each latent factor alone such as the unidimensionality, goodness of fit reliability and validity of each construct individually (Hair et al., 2010). As it will be presented in the forthcoming subsections, Confirmatory Factor Analysis (CFA) will be firstly targeted to assure the issues pertaining to model goodness of fit to the observed data as well as composite reliability, average variance extracted, convergent validity, and discriminant validity. Secondly, the conceptual model will be validated by considering the results of path coefficient alongside the structural model goodness of fit (Hair et al., 2010).

5.3.1 Confirmatory Factor Analysis of Customer Engagement

Following other studies that have addressed customer engagement as a multidimensional construct (e.g. Dessart et al., 2015; Harrigan et al., 2017), customer engagement was validated as a second-order factor, while its cognitive, emotional, and behavioural dimensions were validated as the first-order factors. Further explanations will be provided in the following subsections (see Figure 2). For three sub-dimensions, unremoved scale items had standardized regression weight values of not less than 0.50 (Hair et al., 2010).
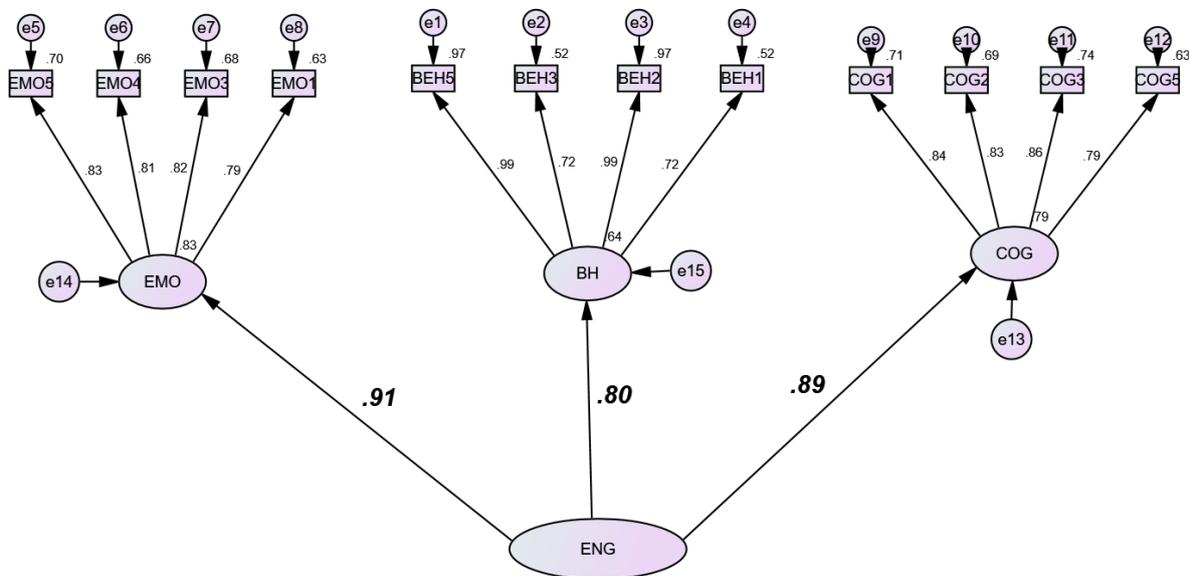
Figure 2. Confirmatory Factor Analysis of Customer Engagement

The main fit indices of the revised version of the CFA of ENG were within their acceptable levels, as follows: goodness-of-fit index (GFI)=0.94; adjusted goodness-of-fit index (AGFI)=0.901; comparative fit index (CFI)=0.98; normed chi-square (CMIN/DF)=2.014; normed-fit index (NFI)=0.931; and root mean square error of approximation (RMSEA)=0.031 (Hair et al., 2010). With regard to construct validity and reliability, Table 2 shows that three

sub-constructs of customer engagement had a composite reliability (CR) value of not less than 0.70 (Fornell and Larcker, 1981). The average variance extracted (AVE) value for three sub-constructs were also within their suggested value of not less than 0.50 (Fornell & Larcker, 1981; Hair et al., 2010). Furthermore, all constructs met the condition related to discriminant validity, as the values of intercorrelation between customer engagement dimensions were less than the values of squared roots of AVE for each construct (see Table 2). Finally, as Figure 2 shows, the first-order factors (BH, EMO, and COG) were largely and significantly loaded on their second-order factor (ENG).

Table 2. Construct Reliability and Validity of the Customer Engagement Dimensions

	CR	AVE	BH	COG	EMO
BH	0.920	0.745	**0.863**		
COG	0.899	0.690	0.710	**0.831**	
EMO	0.888	0.665	0.730	0.807	**0.816**

5.3.2 Confirmatory Factor Analysis of the Whole Model Constructs

As seen in Table 3, a number of indices (i.e., GFI; AGFI; NFI; and RAMSEA) from the first version of the measurement model were not within their acceptable level, so the model was revised by dropping the most problematic items (Hair et al., 2010). The revised version of the measurement model was then tested again and all fit indices were found within their recommended values as follows: GFI=0.915; AGFI=0.865; CFI=0.951; CMIN/DF=2.541; NFI=0.925; and RMSEA=0.051.

Table 3. Fit Indices

Fit Indices	Recommended Value	Measurement Model (first version)	Measurement Model (second version)
CMIN/DF	≤3.000	3.941	2.541
GFI	≥ 0.90	0.864	0.915
AGFI	≥ 0.80	0.764	0.865
NFI	≥ 0.90	0.887	0.925
CFI	≥ 0.90	0.924	0.951
RMSEA	≤ 0.08	0.075	0.051

As shown in Table 4, all constructs were found to have a CR value higher than the recommended value of 0.70 (Fornell & Larcker, 1981). For example, the lowest CR value was for connectedness (0.859). Like the CR results, connectedness had the smallest Cronbach's alpha value of 0.852 (Nunnally, 1978). The highest AVE value was for ubiquitous connectivity (0.836), followed by personalization (0.827); the lowest AVE was for connectedness (0.605) (Fornell & Larcker, 1981; Hair et al., 2010).

Table 4. Constructs' Validity and Reliability

	CR	Cronbach's alpha	AVE
ACV	0.899	0.897	0.689
LOY	0.918	0.916	0.736
ENG	0.901	0.899	0.753
UBC	0.952	0.947	0.836
PRS	0.949	0.942	0.827
RSP	0.898	0.897	0.687
SYN	0.864	0.862	0.620
CON	0.859	0.852	0.605

Table 5. Discriminant Validity

	ACV	LOY	ENG	UBC	PRS	RSP	SYN	CONC
ACV	**0.830**							
LOY	0.706	**0.858**						
ENG	0.801	0.824	**0.868**					
UBC	0.581	0.597	0.794	**0.914**				
PRS	0.571	0.717	0.722	0.565	**0.910**			
RSP	0.795	0.660	0.814	0.560	0.541	**0.829**		
SYN	0.702	0.674	0.761	0.613	0.594	0.721	**0.787**	
CON	0.552	0.504	0.597	0.415	0.460	0.623	0.681	**0.778**

The results presented in Table 5 highly support the discriminant validity extracted for all constructs. Furthermore, Table 6 shows that unremoved items were found to have a regression weight (factor loading) value not less than the threshold value of 0.50 (Hair et al., 2010).

Table 6. Regression Weights

		Estimate
EMO	ENG	.895
COG	ENG	.897
BH	ENG	.808
BEH1	BH	.721
BEH2	BH	.987
BEH3	BH	.720
BEH5	BH	.985
EMO1	EMO	.796
EMO3	EMO	.820
EMO4	EMO	.815
EMO5	EMO	.831
COG1	COG	.837
COG2	COG	.834
COG3	COG	.854
COG5	COG	.795
LOY1	LOY	.852
LOY2	LOY	.905
LOY3	LOY	.852
LOY4	LOY	.820
UBC1	UBC	.661
UBC2	UBC	.998
UBC4	UBC	.965
UBC6	UBC	.990
PRS1	PRS	.999
PRS2	PRS	.980

PRS3	PRS	.985
PRS4	PRS	.617
RSP1	RSP	.818
RSP2	RSP	.842
RSP3	RSP	.815
RSP5	RSP	.841
SYN1	SYN	.658
SYN2	SYN	.695
SYN3	SYN	.790
SYN4	SYN	.969
ACV3	ACV	.810
ACV4	ACV	.871
ACV6	ACV	.826
ACV7	ACV	.812
CON1	CON	.690
CON2	CON	.844
CON3	CON	.799
CON5	CON	.771

Common method bias

Harman's single factor was tested to ensure that the data did not have any common method bias concerns. Forty items of the ten latent constructs (CON; ACV; SYN; RSP; PRS; UBC; LOY; COG; EMO; and BH) were loaded into exploratory factor analysis (Harman, 1976; Podsakoff et al., 2003). About 47.12% of variance was reordered by the first factor, which is not higher than the recommended value of 50% according to Podsakoff et al. (2003). Further, the findings extracted in this regard indicated that there was no single factor appearing. Overall, the data did not present any problem in terms of the common method bias.

5.3.3 Structural Model Analyses

The second stage of the SEM analysis was conducted to inspect the goodness of fit and predictive validity of the current conceptual model. First, all fit indices matched their threshold values (CMIN/DF=2.741; GFI=0.908; AGFI=0.831; NFI=0.909; CFI=0.949; and RMSEA=0.061). As shown in Figure 3, five dimensions of mobile interactivity – UBC, SYN, PRS, RSP, and ACV – were able to predict about 0.76 of variance in customer engagement. Likewise, about 0.47 of variance was found for customer loyalty.
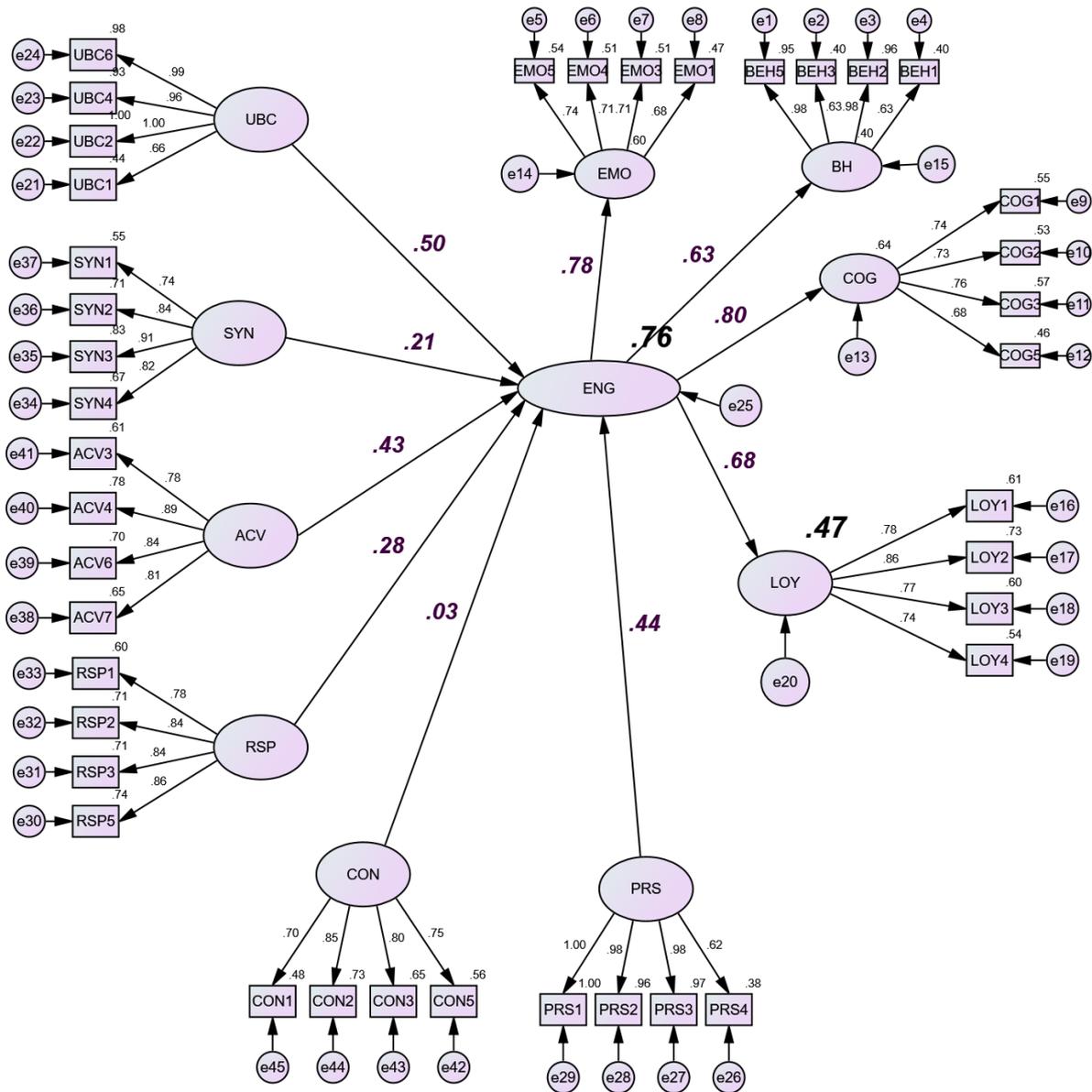
Figure 3. Validation of Structural Model

As demonstrated in Table 7, e-satisfaction was significantly predicted by the role of ACV (γ=0.431, p<0.000); PRS (γ=0.441 p<0.000); UBC (γ=0.504, p<0.000); RSP (γ=0.279, p<0.000); and SYN (γ=0.212, p<0.023). However, the path coefficient indicated that there was no significant impact for connectedness on customer engagement (γ=0.034, p<0.594). Finally, the path coefficient results highly supported the impact of customer engagement on customer loyalty (γ=0.683, p<0.000). Accordingly, hypotheses H1, H2, H3, H5, H6, and H7 are strongly supported.

Table 7. Path Coefficient Results

#	Hypothesized path			Estimate	SE	CR	P
H1	ENG	<---	ACV	.431	.041	5.763	***
H2	ENG	<---	PRS	.441	.053	6.550	***
H3	ENG	<---	UBC	.504	.053	7.341	***
H4	ENG	<---	CON	.034	.039	.532	.594
H5	ENG	<---	RSP	.279	.042	3.541	***
H6	ENG	<---	SYN	.212	.068	2.273	.023
H7	LOY	<---	ENG	.683	.066	13.853	***

The structural model was also conducted for each country sample individually (see Table 8). Active control was able to account for the largest impact on the customer engagement in the case of the UK sample (γ=0.575, p<0.000) and the Saudi Arabia sample (γ=.454, p<0.000). In the case of the Jordanian sample, the ACV accounted for the lowest but still a significant impact on the level of customer engagement (γ=0.374, p<0.000). UBC was also noticed to be a significant factor predicting customer engagement over three countries, yet, the largest impact was recorded in the case of Saudi Arabia (γ=.640, p<0.000) and the UK (γ=.554, p<0.000) followed by Jordan (γ=.338, p<0.000). The results of SYN were found to be significantly consistent over the three countries; the highest coefficient value was noticed between SYN and ENG for the Saudi Arabia participants (γ=.426, p<0.003) while the lowest value registered in the case of Jordanian respondents (γ=.333, p<0.007). The role of PRS was found to be fluctuating over the three countries; while PRS had a significant coefficient value with ENG for participants from Saudi Arabia (γ=.355, p<0.000) and the UK (γ=.426, p<0.000), the impact of PRS on ENG was non-significant for Jordanian participants (γ=.174, p<0.073). As for the role of RSP on the ENG, the path coefficient was able to account for a significant value for the Jordanian participants (γ=.229, p<0.007) and the UK participants (γ=.240, p<0.020), yet, this path was disapproved for Saudi Arabia participants (γ=.166, p<0.224).

For the three samples, the results of path coefficient analyses disapproved the significant role of CON on ENG. In detail, this path was noticed to have a negative but non-significant value in the case of Jordan (γ=-.178, p<0.088) and Saudi Arabia (γ=-.1133, p<0.232) while a positive but non-significant value in the case of the UK (γ=.074, p<0.992). A strong significant path coefficient between ENG and LOY was proven for participants of the three countries: the UK (γ=.798, p<0.000); Saudi Arabia (γ=.757, p<0.000); and Jordan (γ=.619, p<0.000).

Table 8: Path Coefficient Results for each country individually

#	Hypothesised path			Jordan				Saudi Arabia				UK			
				Estimate	SE	CR	P	Estimate	SE	CR	P	Estimate	SE	CR	P
H1	ENG	<---	ACV	.374	.051	3.94	***	.454	.079	3.34	***	.575	.054	4.46	***
H2	ENG	<---	PRS	.174	.095	1.795	.073	.355	.063	4.09	***	.426	.093	3.41	***
H3	ENG	<---	UBC	.383	.084	3.403	***	.640	.122	4.70	***	.554	.084	5.58	***
H4	ENG	<---	CON	-.178	.045	-1.70	.088	-.113	.052	-1.195	.232	.013	.074	-.098	.922
H5	ENG	<---	RSP	.229	.051	4.44	.007	.166	.075	1.21	.224	.240	.051	2.31	.020
H6	ENG	<---	SYN	.333	.089	2.15	.007	.426	.091	2.96	.003	.369	.091	2.14	.032
H7	LOY	<---	ENG	.619	.118	7.299	***	.757	.165	7.695	***	.798	.093	11.12	***

6. Discussion

As seen in Figure 3, 76% and 47% of variance were predicted for customer engagement and customer loyalty respectively. Ubiquitous connectivity was the most influential factor contributing to customer engagement. This means that customers are more likely to engage with mobile shopping due to the high level of mobility of this technology. Whereas other kinds of online channels request a specified place to do the shopping process, ubiquitous connectivity (mobility) is a distinctive feature that makes the mobile shopping experience more attractive. Furthermore, so as to be emotionally, cognitively, and actively engaged, customers need to be fully free to select a convenient time and place for shopping. This is easily facilitated by the ubiquitous connectivity of mobile shopping. Several studies (e.g. Lee, 2005; Mallat et al., 2008; Yang & Lee, 2017) have supported the impact of ubiquitous connectivity (mobility) on the customer's perception of and decision to use and interact with different mobile commerce applications.

As expected, personalization is one of the most important aspects of mobile interactivity for driving customers to engage with mobile shopping. This means that as long as mobile shopping applications give customers a sense that products, services, information, and interface are tailored and customized to the individual customer's own preferences and expectations, the customers will be more motivated to engage thoughtfully, emotionally, and actively with mobile shopping activities. Additionally, a high level of personalization in mobile shopping will give customers a feeling of uniqueness, which, in turn, enriches the hedonic and emotional aspect of customer engagement. These results parallel those of studies that have found the role of personalization to be significant (e.g., Alalwan, 2018; Lee, 2005).

The third important mobile interactivity dimension is active control, which significantly contributes to the level of customer engagement with mobile shopping. The results indicate that the level of customer engagement reaches the highest level among those customers who are able to clearly navigate and to have full control of their experience while using mobile shopping apps. In addition, they empower customers to control the information they want, as well as how and when to obtain it. In the prior literature, several studies have found that user control has a considerable impact on customer perception and experience (Lee, 2005; Tan et al., 2018).

Customers noticeably pay considerable attention to the level of responsiveness in mobile shopping. This is related to the ability of mobile shopping channels to provide users with

comprehensive, accurate, and relevant responses to their questions and inquiries. Therefore, a high level of responsiveness will stimulate the cognitive aspect of customer engagement as customers will pay careful attention to all the information and responses to their questions. Furthermore, the bidirectional communication in mobile shopping channels enhances the level of customer interaction, which represents more behavioural engagement on the customer side. Importantly, a high level of responsiveness perceived by users means that mobile shopping channels are able to match customers' expectations. Accordingly, customers are more likely to have a pleasurable experience (emotional engagement) by interacting with mobile shopping apps.

The time spent in addressing customers' questions and inquiries is also a focus of customers' attention. The participants in this study were found to highly value the ability of mobile shopping to process and address their questions and their requests for information quickly and instantaneously. Either the role of responsiveness or the role of synchronicity has been shown by different studies to address the impact of interactivity on customer reaction and perception (e.g., Dholakia et al., 2000; Lee, 2005; Yang & Lee, 2017; Zhao & Lu, 2012).

On the other hand, the empirical results did not demonstrate an association between connectedness and customer engagement. In other words, customers could actively engage with mobile shopping activities even with a low level of interaction and connection with other users in the mobile shopping community. This could be related to the particular nature of mobile shopping as a more self-service technology (Alalwan et al., 2017). Moreover, mobile shopping is still a new and unique technology in Jordan and Saudi Arabia, so customers are not fully aware of the technology; in addition, mobile shopping communities may be in the early stage of formation in these countries' mobile shopping platforms. Therefore, the customers may be more independent while engaging with mobile shopping activities.

In line with the conceptual model, the level of loyalty increased among those participants who are highly engaged with mobile shopping activities. This supports the important role of the three dimensions of customer engagement (i.e., the cognitive, emotional, and behavioural dimensions) in contributing to the attitudinal and behavioural aspects of customer loyalty. In their study examining the impact of customer engagement with social media platforms on customer loyalty, Harrigan et al. (2017) empirically demonstrated the association of customer engagement with customer loyalty. Likewise, both Thakur (2016) and France et al. (2016) provided further evidence supporting the role of customer brand engagement in predicting customer loyalty.

6.1 Theoretical Contribution

The review of literature on mobile shopping revealed that there is a scarcity of studies that have addressed the related issues of mobile interactivity as a multidimensional construct. Accordingly, this study has considerable theoretical value, since it has investigated and provided empirical evidence that supports the role of mobile interactivity dimensions (ACV, UBC, PRS, RSP, SYN, and CON) in the area of mobile shopping. In the light of importance of these aspects in shaping the customers' perception, reactions, and behaviour, this study was empirically able to enrich the current understanding regarding interactivity aspects over mobile shopping area.

Mobile interactivity is important for increasing customer engagement with mobile shopping channels as well as with the targeted brands. However, the relationship between mobile interactivity and customer engagement has not been well covered in the literature on mobile shopping. Therefore, another significant contribution of the current study is that it validates the important association between mobile interactivity and customer engagement.

The related issues of mobile shopping in general and mobile interactivity and customer engagement in particular have received little attention in Jordan, Saudi Arabia, and Arab countries in general. Thus, the current study addresses the related issues both from the international perspective and by considering customers from Jordan and Saudi Arabia as developing countries; the latter is especially important, since most prior studies have been conducted in relation to developed countries (see Section 2 above). This will hopefully provide a solid theoretical foundation both for researchers and for practitioners, as will be discussed in the next subsection.

6.2 Practical Implications

The results of the current study present a foundation that can guide marketers and practitioners in the area of mobile shopping. In particular, it is of value both to designers of mobile shopping platforms, since it can inform their decisions about what features to include in these platforms, and to those responsible for promoting and marketing mobile shopping, since the results indicate how they can enhance the level of customer engagement. For example, more attention should be given to the level of personalization in mobile shopping channels. In this regard, once customers download mobile shopping apps on their smartphones, they will be requested to provide their personal information and to register in order to log in. This will help organizations to accurately and more personally respond to customers' needs and questions.

Moreover, the innovative features of mobile shopping (e.g. cookies) will help organizations to track customer behaviour (e.g. how often customers do their shopping via mobile shopping; how much time customers spend on each visit to the mobile shopping platform; which product categories receive the most attention by customers). Accordingly, rich information is available, which can lead to a deeper understanding about each individual customer. This, in turn, helps all aspects of the marketing mix (i.e., product, price, promotion, and delivery channel) to be adapted and modified according to the customers' preferences and needs.

One of the most successful marketing practices is the predictive behaviour models adopted by Amazon.com. Users of mobile shopping should be empowered to personally modify the features related to the services required, payment methods, interface properties, and the type of information provided. This will not only accelerate the level of personalization but will also give customers control over their experience with mobile shopping. For example, users should be requested to create their personal account to use a mobile shopping platform as well as to select their preferred interface properties (e.g. colour, font size and style, and layout). A high level of personalization can also be achieved by enabling customers to select and identify product characteristics and features. Customers could choose how to communicate and which kind of information they would like to receive. By implementing features like these, a more personalized customer experience can be attained, which, in turn, will guarantee a high level of customer engagement.

Participants in the current study appreciated not only the level of responsiveness in mobile shopping but also how much they were able to capture real-time and rapid responses to their questions and inquiries. Various practices could be adopted to enhance both responsiveness and synchronicity. It is important that more interactive and constant communication channels have 24-hour availability to customers on every day of the week. Although mobile shopping is a more self-service channel, existing customer service call centres working around the clock are very important to solve any urgent problems that customers could face. Using online channels (e.g. swapping emails, live online dialogue, live video call, and live text chat) can help to efficiently and constantly address all customers' questions, requests, and inquiries. More importantly, customers' questions and inquiries should receive accurate and relevant responses. Thus, organizations should devote considerable effort to recruiting highly qualified staff, as well as to training and empowering their staff with communication and technical skills.

The current study demonstrates the importance of ubiquitous connectivity for mobile interactivity. Thus, more time and effort should be given by organizations to enhance this

dimension. Given the proliferation of mobile and internet services, mobile shopping apps should be easily downloaded to different digital platforms (e.g. mobile devices, smartphones, or personal digital assistants). In addition, users should be able to access mobile shopping either by using a mobile internet browser (e.g. Google Chrome, Internet Explorer, Firefox, and Safari). Organizations should also ensure that their mobile shopping channels are available to their customers at all times without any problems like disconnection or downtime. This would entail organizations continuously maintaining and improving the quality of their mobile platforms. It is also important to collaborate and coordinate with companies working in the field of mobile services to enhance the level of ubiquitous connectivity.

6.3 Limitations and Future Research Directions

This study makes several contributions; however, this study only considers the shopping activities conducted by mobile channels, while other channels (e.g., online channels, traditional channels, and social media shopping channels) are not considered. Accordingly, future studies could examine the main interactive features of these channels. Moreover, it would be useful to undertake a comparison study to see how interactivity aspects might act differently from one platform to another. Furthermore, the current model does not consider the impact of personal factors (e.g. technology readiness, self-efficacy, user experience). In this regard, future studies could address how factors like self-efficacy could moderate the role of active control in predicting customer engagement. In addition, the non-significant impact of connectedness could raise a concern about the validity of this factor in the area of mobile shopping. Thus, there is a need for further tests of this construct for different mobile applications and in different cultural contexts. In this respect, it could be useful to see how cultural factors like collectivism and individualism could hinder or contribute to the role of connectedness.

Finally, even though this study has considered customers from two developing counties: Jordan and Saudi Arabia, and one developed country: the UK, the current study does not fully examine the differences among these countries in depth. Thus, future studies could pay more attention to conduct a detailed comparative study to discover the differences among these countries. In this regard, a cross-cultural study could be useful to see how the cultural differences among these countries could moderate the impact of interactivity features on the customer engagement and customer loyalty toward mobile shopping.

7. Conclusion

The fundamental purpose of the current study was to examine the impact of mobile interactivity on the customer engagement with mobile shopping. A number of the most important aspects of mobile interactivity were considered in the current study model. These aspects are active control, personalization, ubiquitous connectivity, connectedness, responsiveness, and synchronicity. Customer engagement was also operationalized as a multidimensional construct comprising three main components: cognitive, emotional, and behavioural. A relationship between customer engagement and loyalty was proposed in the current study's model. The empirical part of this research was conducted in three countries (Jordan, the UK, and Saudi Arabia) using a convenience sample of actual users of mobile shopping. The statistical results based on the SEM analyses largely support the goodness of fit and predictive power of the conceptual model. Moreover, the model was able to predict about 76% and 47% of variance in customer engagement and loyalty respectively. With the exception of connectedness, the dimensions of mobile interactivity (i.e. active control, personalization, ubiquitous connectivity, responsiveness, and synchronicity) were found to have a significant impact on customer engagement, which also significantly predicts customer loyalty.

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Appendix

Constructs	Items		Source
Active Control	ACI	I was in control of my navigation through mobile shopping apps.	Tan et al. (2018); Liu (2003); Lee (2005); Wu (2005)
	AC2	While surfing the mobile shopping apps, my actions decided the kind of experiences I get in using mobile shopping apps.	
	AC3	I felt that I had a lot of control over my experience with mobile shopping apps.	
	AC4	While surfing the mobile shopping app, I had absolute control over what I can do on the mobile shopping apps.	
	AC5	I was in total control over the pace of my visit to mobile shopping apps.	
	AC6	I felt that I had a lot of control over my using mobile shopping apps.	
	AC7	While I was on the mobile shopping apps, I could choose freely what I wanted to see.	
Personalization	PRS1	Mobile shopping apps enable me to order products or services that are tailor-made for me.	Lee (2005); Kim and Ko (2012)
	PRS2	The advertisements and promotions that mobile shopping apps send to me are tailored to my situation.	
	PRS3	Mobile shopping apps make me feel that I am a unique customer.	
	PRS4	Personalized offers are given by mobile shopping apps.	
	PRS5	Personalized messages are sent by mobile shopping apps.	
	PRS6	Mobile shopping apps offers customized information search.	
Ubiquitous Connectivity	UBC1	I can access to mobile shopping apps anytime for the necessary information or service.	Lee (2005)
	UBC2	I can use mobile shopping apps "anywhere", "anytime" at the point of need.	
	UBC3	Mobile shopping apps enables me to order products or service anywhere at any time.	
	UBC4	I can access mobile shopping apps anywhere for the necessary information or service.	
	UBC5	I feel that I am always connected with mobile shopping apps.	
	UBC6	I can easily communicate with mobile shopping apps regardless of time and place.	
Connectedness	CON1	Customers share experiences about the product or service with other customers of the mobile shopping apps.	
	CON2	Customers of mobile shopping apps benefit from the community sponsored by the same mobile shopping apps.	
	CON3	Customers share a common bond with other members of the customer community sponsored by mobile shopping apps.	
	CON4	Being part of Mobile shopping apps community makes me feel more connected to the brand that I love.	
	CON5	Being part of Mobile shopping apps community makes me feel more connected to other consumers of the same brands that I love.	
Responsiveness	RSP1	The mobile shopping apps have the ability to respond to my specific questions relevantly.	Jiang et al. (2010); Johnson et al. (2006); Lee (2005)
	RSP2	Mobile shopping apps facilitates two-way communication between the customers and the firms.	
	RSP3	The information shown when I interacted with the mobile shopping apps meet my expectations.	
	RSP4	The information shown when I interacted with the site are appropriate.	
	RSP5	When I use mobile shopping apps, I can always count on getting a lot of responses to my questions and comments.	
Synchronicity	SYN1	The mobile shopping apps process my input very quickly.	Yang and Lee (2017); Lee (2005); Liu (2003)
	SYN2	Getting information from the mobile shopping apps is very fast.	
	SYN3	I can obtain the information I want without any delay.	

	SYN4	I feel I am getting instantaneous information.	
	SYN5	The mobile shopping apps seem to be very quick in responding to my requests.	
	SYN6	When I click on the links on mobile shopping apps, I feel I am getting instantaneous information.	
Cognitive Engagement	COG1	Using the mobile shopping apps gets me to think about it.	Ahn and Back (2018); Harrigan et al. (2017)
	COG2	I think about my using mobile shopping apps a lot when I'm using it.	
	COG3	I like to learn more about mobile shopping apps.	
	COG4	Using mobile shopping apps stimulates my interest to learn more about these apps.	
	COG5	I pay a lot of attention to anything about mobile shopping apps.	
Emotional Engagement	EMO1	I feel very positive when I use mobile shopping apps.	
	EMO2	Using mobile shopping apps makes me happy.	
	EMO3	I feel good when I use mobile shopping apps.	
	EMO4	I'm proud to use mobile shopping apps.	
	EMO5	I am enthusiastic about mobile shopping apps.	
Behavioural Engagement	BEH1	I spent a lot of time using mobile shopping apps compared with other apps.	
	BEH2	Whenever I'm using telecommunication services I usually use mobile shopping apps.	
	BEH3	I use mobile shopping apps the most.	
	BEH4	Mobile shopping apps is one of apps I usually use when I use smartphones.	
	BEH5	I often participate in activities of the mobile shopping apps (i.e. online rating, ranking, and reviewing brands).	
Loyalty	LOY1	I will recommend using mobile shopping to other people.	Lee and Chung (2009); Baabdullah et al. (2019)
	LOY2	I intend to continue using mobile shopping.	
	LOY3	I prefer using mobile shopping above other shopping channels.	
	LOY4	I will choose mobile shopping even if alternative shopping options are available.	