



# Three dimensional product presentation quality antecedents and their consequences for online retailers: The moderating role of virtual product experience



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## ABSTRACT

This study investigates the impact of three-dimensional (3D) product presentation quality (3D-Q) on attitude toward presented product and attitude toward website, which in turn affect users' satisfaction. Therefore, this research developed a hypothetical online retailer website, which presents a variety of 3D laptops that allows users to control the content and form of the 3D flashes. We measured 3D-quality based on a multi-dimensional construct. In other words, we define and operationalize 3D-quality based on information quality, system quality, authenticity, and enjoyment (second-order). We employed a non-student sample (n=410) to collect the data. We find that 3D-quality determines perceptions of attitude toward presented product and attitude toward website, which in turn influence users' satisfaction. Furthermore, we find that virtual product experience moderates the relationships between attitude toward presented product, attitude toward website and users' satisfaction. Our study provides important implications for e-tailers.

## 1. Introduction

Increasingly, online retailing has been growing over the business field and representing a new platform for both customers and retailers to exchange different kinds of values (Hasan, 2016; Yoh et al., 2003). As stated by recent report from OC & C Strategy Consultants, PayPal and Google, in four highly developed countries namely the UK, US, Germany and China, online sales are more likely to enlarge to reach the level of £645 billion by 2018 in comparison with £325 billion in 2015 (Telegraph, 2015). According to report published in Statista (2016) for the global online retailing sales for the period between 2014 to 2020, online retailing sales were able to account about \$1.55 trillion in 2015 and this number is expected to reach \$3.4 trillion by the end of 2019.

Indeed, online retailing has revolutionised the way that customers interact with retailers (Algharabat and Shatnawi, 2014; Algharabat and Zamil, 2013; Park et al., 2016; Kim et al., 2011; Liao and Keng, 2013). As a competitive necessity, firms have extensively integrated online shopping and online retailing as an essential platform along with traditional brick and mortar stores (Algharabat and Shatnawi, 2014; Lee, 2012). Essentially, retailer firms are looking to have more opportunities to better match their customers' needs and wants, and

enhance customer's loyalty, and accordingly, contributing to their brands identity and profitability. Together, such platforms can contribute to the customers' daily life by facilitating access to products, services and information without time and place restrictions (Alalwan et al., 2017; Bilgihan, 2016; Hung et al., 2012; Kokkinou and Cranage, 2013; Lin and Lian, 2008; Zhu et al., 2013).

However, the successful implementation of online retailers largely depends on their ability to contribute to customers' attitudes and satisfaction toward both presented products and website as well (Luan et al., 2016; Chen et al., 2015). This needs to have further understanding about the main predictors of customer's attitudes and satisfaction. Theoretically, website quality represents one of the most fundamental aspects considered by customers to evaluate either the interface or consumers' entire online shopping experience (Algharabat and Shatnawi, 2014; Luan et al., 2016). Further, there is always a necessity to explore the role of experience especially virtual product experience on the customer perception toward all aspects related to online shopping (Algharabat, 2016, 2014a; Algharabat and Shatnawi, 2014; Overmars and Poels, 2015; Lee, 2012; Luan et al., 2016).

Within the context of online shopping, we noticed that previous literature (Algharabat and Shatnawi, 2014; Algharabat and Zamil,

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2013) has employed individual constructs to define and conceptualise 3D-quality (3D-Q) based on a uni-dimensional construct. Therefore, previous research did not get the chance to have a comprehensive definition and measure of 3D-Q. Previous research either described the characteristics of 3D-Q without attempting to link them together, or investigated the main antecedents of 3D-Q. Therefore, based on the prior classifications and the antecedents of 3D-quality (Algharabat and Shatnawi, 2014; Algharabat and Zamil, 2013), we define 3D-quality as *'overall users perceptions of the excellence and effectiveness of an e-tailer's product presentation through its virtual store and often enhances information, system, authenticity, and enjoyment'*. Moreover, this paper aims to answer the following research questions: (i) what are the main dimensions of 3D quality. (ii) How 3D-Q affects attitude toward product, attitudes toward website which in turn impact users' satisfaction. (iii) To what extent virtual product experience moderates such relationships.

Importantly, there is a quite few studies that have examined the related issues of online shopping and retailing in Jordan (Algharabat, 2016, 2014a; Algharabat and Shatnawi, 2014). Indeed, Jordan is one of the highly evolved countries in terms of technology and Internet subscribing; for instance, the number of Internet subscribers has reached 5.7 million users in mid-2015 with penetration rate 73.6% (Petra News, 2016). Further and according to IO. Hsoub (2016), the size of the Jordanian online relating sector was 0.21 billion. As well as, 1.6 million Jordanian customers who have used online shopping to purchase different kinds of products and services as reported by the same report of IO, Hsoub (2016). This means that online retailing in Jordan is a promising sector deserves further research and examination. Such studies of online retailing could provide more clues about the most important aspects that considered by customers in Jordan as a developing country especially in the fact that most prior studies of the related issues of online retailing have conducted within developed countries. Therefore, researchers were motivated to conduct their empirical study in Jordan.

## 2. Literature on three dimensional product presentation quality

### 2.1. Website quality

Previous research (e.g., Ahn et al., 2003; Ho et al., 2012; Wolfinbarger and Gilly, 2003) posit that e-shopping quality refers to the overall consumer perceptions of the excellence and effectiveness of an e-tailer's product and/or service offering through its virtual store. Therefore, both the quality of website features and interface performance influence consumer's perception of Internet shopping.

Previous research assesses website quality based on interface or consumers' entire online shopping experience. For example, Loiacono, Watson, and Goodhue (2002) introduced the WebQual™ and identified twelve dimensions to measure website quality (informational fit-to-task, interactivity, trust, response time, ease of understanding, intuitive operations, visual appeal, innovativeness, flow/emotional appeal, consistent image, online completeness, and better than alternative channels). Kim and Stoel (2004) employed six dimensions to measure website quality (web appearance, entertainment, informational fit-to-task, transaction capability, response time, and trust). Yoo and Donthu (2001) introduced the SITEQUAL and measured website quality by conceptualizing four dimensions (ease of use, aesthetic design, processing speed, and security of personal and financial information). Zeithaml, Parasuraman, and Malhotra (2000) introduced the eSQ scale to measure website quality. The authors' scale consists of eleven

dimensions (reliability, responsiveness, access, flexibility, ease of navigation, efficiency, assurance/trust, security/ privacy, price knowledge, site aesthetics, and customization/personalization). In line with Parasuraman, and Malhotra (2000), Parasuraman, Zeithaml, and Malhotra (2004) introduced the E-S-QUAL to measure online retail quality based on four dimensions (efficiency, fulfilment, system availability, and privacy).

Wolfinbarger and Gilly (2003) developed eTailQ, which measured consumers' perceptions of e-tail service quality. To develop the scale, the authors included eight factors (fulfilment/reliability, customer service, personalization, experiential/atmospheric, ease of use, informativeness, selection, and security/privacy) of website interface and marketing attributes. Wolfinbarger and Gilly's (2003) factors reduced into four dimensions: website design, security/privacy fulfilment/reliability, and customer service. Thus, it can be noticed that previous scales on website quality focused on the environment and interface (WebQual, SiteQual, eSQ), while the eTailQ scale focused on online retail service quality.

### 2.2. 3D Product presentation quality

Previous research on information system (IS) success model (DeLone and McLean, 1992, 2003) emphasises the importance of factors, which often affects IS success (system quality, information quality, service quality, attitudinal outcomes and performance-related outcomes). However, within the context of online retailing, few attempts focused on measuring the quality of three-dimensional (3D) product presentation.

Previous research (Jiang and Benbasat, 2005; Li et al., 2001, 2002, 2003; Suh and Lee, 2005) on customer's online product experiences uses virtual reality (VR) techniques such as such 3D product presentation which enables consumers to visual inspection products which are simulated online with enlargement, zoom in or out on the product, rotate the product, and inspect the products functions. Li et al. (2001) defined virtual product experience (VPE) which is accompanied by 3D product presentation as the psychological and emotional states which consumers have once interact with products in a 3D environment. Therefore, according to Li et al., (2001, 2002, 2003) high quality of 3D product presentation often enhances consumers' ability to feel, touch, and try products on electronic websites. Thus, the main goals of the 3D product presentation are to help consumers to understand more about the product functionality, product performance and it allows consumers to evaluate the superiority of the product features. Furthermore, 3D product presentation often enhances consumers' attitudes, knowledge and purchase intentions (Hoch and Deighton, 1989; Jiang and Benbasat, 2005; Li et al., 2001, 2002, 2003; Suh and Lee, 2005).

Li et al. (2001), in a qualitative study, identified five critical characteristics of 3D product presentation (active process, presence, involvement, enjoyment, and affordances). The authors posit that the higher the characteristics of 3D product presentation, the better the virtual experience derived from navigating a 3D product. Even though the authors identified (tele)presence as one factor which impact the quality of 3D experience, the authors were not able to institute any causal linkages with the protocol methodology. Therefore, Li et al. (2002) measured 3D VPE using the notion of presence. The authors posit that high levels of media characteristics considered the main enabler of the quality provided by the 3D product experience. Many researchers used the notion of telepresence to conceptualize consumers' experiences in online environments. For example, Coyle and Thorsen (2001) assert that high interactivity and vividness levels increase perceived telepresence of websites. Using an online advertising context, Klein (2003) posit that previous research (Coyle and

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