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VIRTUAL REALITY AND ARTIFICIAL INTELLIGENCE: CO-CREATION PROCESS BETWEEN CONSUMERS AND FIRMS IN AN AREA OF SMART CITIES

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Abstract The aim of this study is twofold: provide an overview of the virtual reality and artificial intelligence conceptualization and applications and propose a framework of consumer -firm experience process in the context of smart cities. The framework will give a novel perspective on the topic and provide theoretical and contributions.

Keywords: Virtual reality, artificial intelligence, customer experience, co-creation, integrated marketing communications.

1. Introduction

Virtual Reality (VR) and Artificial Intelligence (AI) have benefited from a constant presence in the front stage of the top technological breakthroughs due to their potential contribution in the Marketing field. This growing interest to understand the potential of VR and AI and as a new way to attract customers and enrich their experiences led to this study. Using the Integrated Marketing Communications concept, the final goal is to discuss the extent to which experiences using Virtual Reality and Artificial Intelligence may impact a customer experience in three different points of the customer journey: pre-purchase (brand associations), purchase (intention) and post- purchase stage (brand loyalty).

Firms are forcing to transform the communication process due to the proliferation of new communication tools has forced firms to choose the most appropriate combination of communication platforms to deliver a stronger message consistency and also to allocate the marketing budget over these efficiently. For such, it is necessary to adopt a “360-degree view” of consumers to get a complete and potentially full understanding of their behaviour in all touchpoints with a brand (Kotler & Keller, 2012).

Virtual Reality is a technology capable of placing the user inside to a simulated environment. The interaction with 3D graphics, instead of viewing a screen in front of them, is the most immediately-recognisable component of VR. With the huge

advancements in this technology, VR has recently become more associated to an immersive VR experience which includes the use of a Head-Mounted-Display (HMD) to immerse the user into a complete 3D artificial world.

In 1986, Geoffrey Hinton discovered the technique behind the current excitement of AI – the deep learning – being considered “the father of deep learning” (Somers, 2017). However, due to the inefficient computer power at that time, the enthusiasm with AI was asleep temporarily and only in the last decade with the advances of technology, companies like Alphabet, Amazon, Microsoft, IBM, Facebook, Apple and three giants companies from China – Tencent, Baidu and Alibaba – have reborn the field (The Future Today Institute, 2018). Some authors say the current generation is assisting to the 4th industrial revolution, others, named it *the era of computing* (The Future Today Institute, 2018). In fact, AI comes to rethink and to revolutionise the businesses processes in four domains (Microsoft & EY, 2018).

Another related technology is augmented reality (AR), as an interactive experience of real-world environment, where the real world is enhanced by computer-generated perceptual information. Experiences with the support of VR, AR and AI have provided some of the most successful experiential marketing campaigns, leading to growing adoption of these technologies in brands’ marketing strategies. However, the opinions found about the potential of VR, AR and AI in this field differ. A problem which many business leaders are interested in is to figure out if both technologies are just a trend or can be considered as a sustainable marketing tool like social media already is. Also, most of those who agree that we are on the verge of immerse change, are struggling how VR, AR and AI contents fit into their future campaigns (Dell Technologies, 2018). An important topic within the marketing field is the concept of Optimizing Media Strategy.

The aim of this study is twofold: provide an overview of the virtual reality and artificial intelligence conceptualization and applications and propose a framework of consumer - firm experience process in the context of smart cities. This paper presents and suggest that these technologies represent valuable opportunities in Marketing and that the type of experiences addressed in are more prone to instil action (purchase stage) than to build brand associations (pre-purchase stage) or brand loyalty (post-purchase stage).

2.Theoretical Framework

The literature review was done based on defined key words and the databases used were Web of Science (core collection) and Scopus. Moreover, the articles analysed were all in English and were within the following categories: Business, Management, Marketing, Communication, Hospitality, Leisure, Sport, Tourism, and Psychology (web of Science categories). The articles were included in top journals of the above-mentioned categories.

The evolution of the Internet, as well as continuous technological progress, have had significant impacts on consumer behaviour and marketing strategies. These two fields had suffered and continue to undergo profound and irreversible changes. A major aspect that influenced these shifts in consumer’s personality and buying patterns was the evolution of technology. In fact, it is believed that the main determinant that changed everything when it comes to consumer behaviour was the arrival of social media platforms (Lin *et al.*, 2011).

Social media changed not only the way consumers communicate with each other but also the way they communicate with brands and a positive word of mouth is considered as an indicator of intention to continue the relationship with the destination; it is also a convincing source for potential visitors (Yoon & Uysal, 2005).

2.1 Word-of-Mouth as loyalty

The essence of word-of-mouth marketing is to reach out to a broad set of potential customers and attract considerable attention via social interactions (Li *et al.*, 2011). Individuals share comments and a cascade of information starts. Through word-of-mouth diffusion, information can spread more quickly and easily among social networks (Li *et al.*, 2011). Unlike direct and mass marketing, which only recognize the intrinsic value of a customer, word-of-mouth marketing additionally exploits the network effect of a customer by taking the network factors into consideration to measure the real customer value (Li *et al.*, 2011). People are highly influenced by information received from others (Roelens *et al.*, 2016; Godes & Mayzlin, 2004). In a social network, marketing through word-of-mouth is extremely powerful as people are likely to be affected by the decisions of their friends and colleagues (Li *et al.*, 2011; Kempe *et al.*, 2003). The differential point of word-of-mouth is that, when information is shared, it has more influence on the consumer behaviour. Word-of-mouth (WOM) is the most influential source of information to a customer (Roelens *et al.*, 2016; Keller, 2007).

Empirical research confirmed that consumers rely heavily on the advice of others in their personal network when making purchase decisions (Roelens *et al.*, 2016; Iyengar *et al.*, 2013; Sadovykh *et al.*, 2015; Vebraken *et al.* 2014; Schmitt *et al.*, 2011; Hill *et al.*, 2006) and that positive WOM has a positive effect on business outcomes, i.e. sales (Roelens *et al.*, 2016; Bao & Chang, 2014; Rui *et al.*, 2013). Word-of-mouth is not a marketing gimmick; it brings return to companies. Appropriate marketing campaigns based on social networks could generate a significant increase in the sales amount and reduction in the promotion cost (Li *et al.*, 2011).

When applied to the digital, word-of-mouth should be named as eWOM. Electronic word-of-mouth (eWOM) can be defined as any positive or negative statement made by potential, actual or former customers about a product or company that is made available to a multitude of people and institutions via the Internet (Hennig-Thurau *et al.*, 2003), and has been well recognized as an effective marketing strategy to promote product sales (Chevalier & Mayzlin, 2006). Cheung *et al.* (2009) investigated the influencers of eWOM information credibility and found source credibility to be positively correlated with perceived eWOM information credibility. Credibility is essential, consumers trust in credible sources of information. Previous studies have been conducted to discover what are the factors influencing perceived credibility. The findings of previous studies are that individuals are inclined to use perceived source expertise and knowledge to judge the credibility of the message when the information is unfamiliar to them (Xiao *et al.*, 2018; Eastin, 2001), the normative determinants, such as recommendation consistency and rating, significantly affect perceived information credibility in the context of electronic word of mouth (eWOM) communication (Xiao *et al.*, 2018; Cheung *et al.*, 2009) and the quality of the message also influences individuals' perception of the information (Xiao *et al.*, 2018).

2.2 Customer Experience

Align with Batra and Keller (2016) theory, with the proliferation of multiple communication tools and the rise of multiple touch points, more and more firms are feeling the urgency to move away from traditional marketing toward creating memorable experiences for their customers. Instead, consumer experiences are what drives consumption, and these are getting firms' attention as a strategy to attract customers and to gain competitive advantage.

Pine and Gilmore (1999, p.3) claim that "...companies stage an experience whenever they engage customers, connecting with them in a personal, memorable way". Actually, the "experience economy" developed by Pine and Gilmore has been widely used in academia. According to the authors, "while prior economic offerings- commodities, goods and services- are external to the buyer, experiences are inherently personal, existing only in the mind of an individual who has been engaged on an emotional, physical, intellectual or even spiritual level" (Pine & Gilmore, 1998, p. 99).

Pine II and Gilmore (1998) conceptualised experience as the progression of economic value. "*An experience occurs when a company intentionally uses services as the stage, and goods as props, to engage individual customers in a way that creates a memorable event.*" (Pine and Gilmore, 1998, p. 2). That is, an experience is a differentiated offer with a premium but worth pricing which is personal and memorable. According to them, companies only achieve the stage experience when they are charging customers for it, instead of charging them for goods or services.

Other researchers have defended a broader view of customer experience. Schmitt (1999) termed it as Experiential marketing. The first and most important assumption of experiential marketing is that a customer is a rational and mainly an emotional human being who values functional attributes but also pleasurable experiences. As opposed to traditional marketing, experiential marketers consider that consumers seek pleasurable experiences. Therefore, marketers, to be successful, need to be able to deliver a desirable customer experience using technology, brands, and integrated communication (Schmitt, 1999). According to the author, consumption is perceived as a holistic experience and there are rational and emotional drivers in consumption. According to the Strategic Experiential Modules (SMEs) from Schmitt (1999) a consumption experience can exploit five different reactions: a sensory experience through sound, touch, taste, sight and smell (SENSE); an affective experience that appeals to customers' emotions (FEEL); a cognitive experience that enhances intrigue and provocation with the creation of a problem solving (e.g. "Does it make sense?") (THINK); a rational approach to changes in lifestyle and behaviours (e.g. Nike with "Just Do It") (ACT); and finally, a social-identity experience that relates the person to a reference group or culture (e.g. the brand Harley-Davidson) (RELATE) (Schmitt, 1999).

Within the tourism and hospitality industry, the importance of customer experience has also been highlighted by several scholars. Moreover, the experiential concept has been widely examined in tourism and hospitality studies as experience is one of the core benefits of service offers, due to its specific characteristics (Manthiou, Kang, Sumarjan, & Tang, 2016).

2.3 Customer Journey

Lately, Lemon and Verhoef (2016) developed a theory where a multidimensional and dynamic process defines a customer experience. In a far-reaching perspective, customer experience combines “*the customer’s cognitive, emotional, social, and spiritual responses to all interactions with a firm*” (Lemon & Verhoef, 2016, p. 70).

Marketers name that dynamic process as the “Customer Decision-Making Process”. Nowadays, the classic “purchase funnel” or the AIDA model by Elias St. Elmo Lewis (1898) (**A**wareness, **I**nterest, **D**esire, and **A**ction) are outdated. The consumer “path to purchase” is any more a hierarchical process, but a non-linear and circular one in which consumers before to select a brand, modify their first choices as often as they want until to find the product/service which satisfies them more. Researchers from *Mckinsey and Company* so-called it as a “Consumer Decision Journey Circle” (Lemon & Verhoef, 2016). Actually, Batra and Keller (2016) in their framework developed a Dynamic, Expanded Consumer Decision Journey with 12 potential steps: (1) Needs/Wants; (2) Is Aware; (3) Considers; (4) Searches; (5) Likes/Trusts; (6) See Value/Is Willing to Pay; (7) Commits/Plans; (8) Consumes; (9) Is Satisfied; (10) Is loyal/Repeat Buyer; (11) Is Engaged/Interacts; (12) Actively Advocates. The first stage is pre-purchase which consists of the full experience before purchase. It contains the (1) feel of a need, (2, 3, 4) the willingness to know more about it/search for more information and finally (5, 6) to consider fulfilling that need with a purchase. Then, the second stage is the purchase itself where (7, 8) customer gets in contact with the brand through behaviours like choice, ordering and payment. In this stage, the marketing mix elements have been considered relevant to influence purchase intention. Last but not least, the post-purchase stage that encompasses the possible behaviours that follow the usage or consumption (9, 10, 11, and 12): (dis)satisfaction, repurchase, worth-of-mouth, (dis)engagement or loyalty (Lemon and Verhoef, 2016).

2.4 Tourism experience co-creation and engagement

Information and Communication Technologies (ICTs) lead to a paradigm shift in the tourism industry, which Buhalis and Jun (2011) called as *e-tourism*, which changed the practices adopted by tourism service organizations and the functions of the stakeholders involved in the process. According to Živković, Gajić, & Brdar (2014, p. 758), “*from the ‘static web’ and unidirectional flow of communication until ‘the second phase’ of web 2.0 and bidirectional communication, new levels of relations have started up.*”. It was due to the appearance of Web 2.0, social networking and mobile internet that value co-creation started to gain more relevance and the customers stopped being a passive subject of the producers (Prahalad & Ramaswamy, 2003), turning into connected consumers searching for valuable and extraordinary experiences enriched by technology (Tsiotsou & Ratten, 2010). According to Kaplan & Haenlein (2010), it was the appearance of a subdivision of Web 2.0 applications, called *social media*, that led to the major repercussions of Web 2.0, i.e., the empowerment of the consumer and the enlargement of Word of Mouth, being the Web 2.0 “*not only a mass medium, but a platform that has a much broader role and function than any of the traditional mass media.*” (Fotis, 2015, p.38).

Actually, tourists are using the information and communication technologies (ICTs) to analyse, compare, evaluate, and choose the destination that better suits their expectations,

desires, and needs, thus gaining control over the process (or over part of it), responsibility for their choices and feeling more independent (Berrada, 2017). As a matter of fact, according to Tussyadiah & Fesenmaier (2007), ICTs have fundamentally altered the nature of tourism experiences, i.e., experience co-creation has become richer and been multiplied (Gretzel & Jamal, 2009).

Information systems bring a chance for organizations in the tourism industry to establish a closer and more meaningful collaboration with the consumers, which leads to the development of personal, uniquely designed, compelling, innovative and valuable experiences (Neuhofer, Buhalis, & Ladkin, 2012; Berrada, 2017). That being said, technology provides a platform of communication (Buhalis & Law, 2008) that leads to the co-creation of a more valuable and innovative experiences from not only an *economic-functional* but also a *cultural and ideological perspective* (Cova & Dalli, 2009) by spreading their circle of activity to the virtual space (Neuhofer, Buhalis, & Ladkin, 2012) and guaranteeing a superior level of information, enthusiasm, transparency, and centrality in the tourist in the co-creation process (Chathoth et al., 2016).

According to Watson *et al.* (2004), ICTs are a crucial tool when it comes to comprehending the three major stages of tourism experience in which value is consumed and the tourist connects with other actors, like friends, family, community, firms (Andrades & Dimanche, 2014), which are: planning (before the trip), tourism (during the trip), and memory (after the trip). During the first stage, the tourist, who is globally connected thanks to the tools provided by the Internet, gathers new information about the touristic destination (like what to visit, where to eat and sleep, and so on) by using the diversified web sources and the interactions with friends, family members or other tourists, before “purchasing” the tourist experience. It is also during this first stage that tourists interact with the reservation systems and other service providers through the Internet (Watson *et al.*, 2004). In the tourism stage tourists use their mobile devices to access information anywhere and in real time about the destination and the available services, thus expanding to the usage of ICT’s service while moving (Schmidt-Belz, Nick, Poslad & Zipf, 2003), in order to adjust activities and give recommendations. This means that mobile technologies lead to the enhancement, intensification, and co-creation of experiences in any place and at any time (Neuhofer, Buhalis, & Ladkin, 2012). Finally, in the memory phase the process turns to a C2C tourism experience co-creation, since tourists extend their trips in time and space by sharing their stories and experiences at the destinations in person or using ICTs, after reflecting on the experience they lived and thinking about the good memories (Watson *et al.*, 2004; Caldito, Dimanche, & Ilkevich, 2015). According to Buhalis, Neuhofer, & Ladkin (2012, p.550), the tourism experience becomes “*an almost real-time shared adventure that is co-constructed with the connected social network of tourism providers, friends, followers and other tourists online*”.

As stated by Carù & Cova (2003), over the past decades several experience definitions have been developed, from a sociological, psychological, or anthropological view. In fact, services are becoming more commoditized and staging experiences is the “*progression of economic value*” and the next competitive battle for Business to Business and Business to Consumer industries, i.e., the most advanced mean to generate value (Pine & Gilmore, 1998; Grönroos, 2008, p.4). Thus, Prahalad & Ramaswamy (2004) state that the satisfaction of the consumers comes from turning an *essentialist* notion of the product to a *relational* notion, in which the product is in an experiential network. This means that

innovation becomes more about experiences, rather than products, in a way that it is in the field of experiences that consumers can co-create customized outcomes, thus retaining their individuality and producing unique value (Prahalad & Ramaswamy, 2004). Morgan, Lugosi, & Ritchie (2010) also claimed that customers are no longer looking for simple products and services, which are currently more exchangeable and replicated, but rather for the experience attained by the consumption of products and services.

Due to the changes in the market and customers' needs the tourism strategies keep evolving, nonetheless the main objective is always to assure customers' satisfaction with every element of the tourist experience and the consequent loyalty to the destination (Berrada, 2017). A study conducted by Buonincontri *et al.* (2017), on the main antecedents and consequences of the co-creation of tourism experiences, lead to the conclusion that this process can "*influence tourists' attitudes on spending more money for a more experiential and co-created visit of a destination*" (p.274), because of the level of satisfaction and happiness that comes with the co-created tourism experience. Besides, the satisfaction that comes from this innovative process also leads to a positive word-of-mouth and a positive destination's image (Buonincontri *et al.*, 2017).

Hence, the tourist experience co-creation is a crucial strategy for the tourism industry and tourism destinations and "*an innovative way to live differently the tourist experience*" (Berrada, 2017, p.18). In fact, if tourism firms intend to innovate, they need to integrate the customers in the process of value creation instead of focusing on their internal resources or their market position (Berrada, 2017). According to researchers like Eraqi (2011) and Rihova, Buhalis, Moital, & Gouthro (2014) tourism experience co-creation lets tourist do things instead of just looking at them, establish relationships and connections to other people, explore "multi-sensory" environments, and participate in experiences for self-development. In contemporary times, tourism experiences can be enhanced, generate a higher level of value and be more personalized not only by experience co-creation but also by using technology, which may also lead to the creation of new kinds of tourism experiences (Neuhofner, Buhalis, & Ladkin, 2012).

In the current proposal, researcher intends to demonstrate that the co-creation of value will be more effective if tourists become engaged with the whole experience. Indeed, the concept of engagement has been used in several fields like marketing and tourism, where the meaning start to emerge mainly, after 2005 (Brodie *et al.*, 2011).

Several definitions for customer engagement have been developed over time. For some, the concept was interpreted as being a psychological process which drives customer loyalty (Bowden, 2009). For instance, "...the psychological state that occurs by virtue of interactive, co-creative customer experiences with a focal agent/object (e.g., a brand) in focal service relationships" (Brodie *et al.*, 2011, p. 260). Others follow the concept of customer brand engagement, which was defined as "the level of an individual customer's motivational, brand-related and context-dependent state of mind characterized by specific levels of cognitive, emotional and behavioural activity in direct brand interactions" (Hollebeek, 2011, p. 790). Another group of researchers are guided by Kumar and his colleagues (e.g., Kumar, & Pansari, A., 2016; Gupta, Pansari, & Kumar, 2018) and consider engagement from both points of view: customers and firms. In this last situation a whole "new" theory is emerging, where engagement is embedded in relationship marketing field. The current research will follow this last approach.

2.5 Proposed Hypotheses

The conceptual framework (see Figure 1) is proposed with the support of the field of relationship marketing and the emerge theory of customer engagement (e.g., Kumar & Pansari, 2016; Gupya, Pansari, & Kumar, 2018). We claim that guest experience - evaluated through the four facets suggested by Pine and Gilmore (1998) and adapted to the hospitality context by Loureiro (2014)- will enhance customer engagement with the hotel experience. Once engaged, guest will tend to be more active in contributing to the co-creation process of developing new experiences or improving the existent ones (e.g., Morgan, Lugosi, & Ritchie, 2010; Brodie et al., 2013; Prahalad & Ramaswamy, 2003; Gupya, Pansari, & Kumar, 2018).

Co-creation process represents an active interaction that could happen between guests and organizations/firms (Prahalad & Ramaswamy, 2003), Thus, firms have a role in this process and here the researcher suggests that firm engagement will contribute to the co creation process (kumar & Pansari, 2016). As the outcome of the co-creation process, guest will become more loyal, that is, they will then to spread the word (attitudinal loyalty), mainly through online platforms, recommend to others to stay at the hotel and even be more willing to return (behavioural loyalty).

Finally, AR could play a role augmenting the lived experience and acting as moderator in the relationships between experience economy and customer engagement, as well as in the relationship between customer engagement and co-creation value. The proposed model will be demonstrated during the process of staying at the hotel. Indeed, when guest stay at the hotel, they not only experience all the environment inside the hotel facilities, but also will visit the surrounding environment where the hotel is located. Guests will try to explore, visit museums or other attractions (depending on the place) and even participate in tours. During this period, guests could use a mobile and the possibility to have access of AR. The mobile with AR can change the experience in comparison with other group of guests without AR. Therefore, the presence and absence of AR can modify the strength of the relationships between customer experience and customer engagement, as well as between customer engagement and co-creation value.

Taken all together, the following hypothesis are suggested:

H1: Customer experience (economy) is positively associated to customer engagement

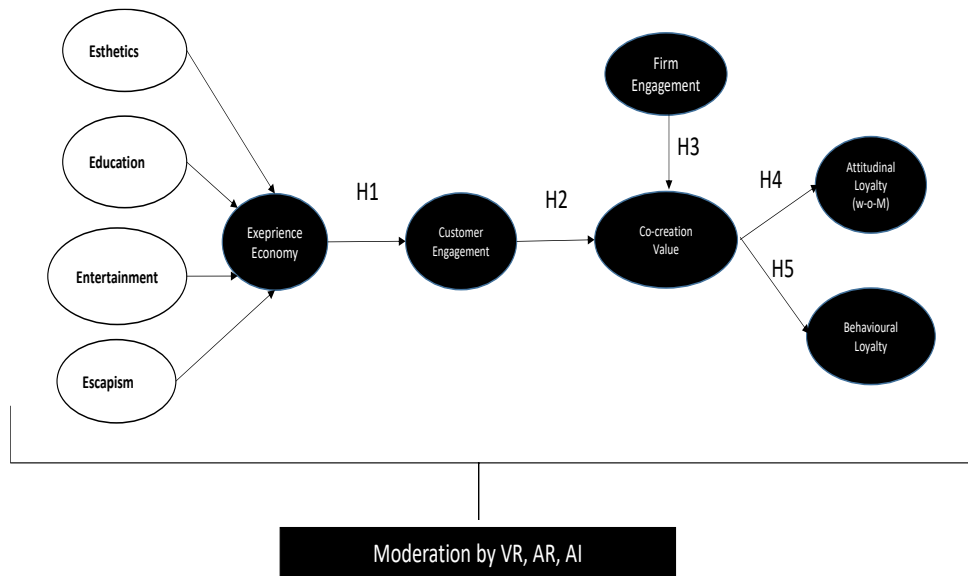
H2: Customer engagement is positively associated to co-creation value

H3: Firm (employee) engagement is positively associated to co-creation value

H4: Co-creation value is positively associated to attitudinal loyalty (w-o-m)

H5: Co-creation value is positively associated to behavioural loyalty

Figure 1. Proposed model



3. Research Outcomes

In what concerns the results expected, we hope to find out, on the web reviews, more information about the IMC, engagement and co-creation that can add value to the conceptual model proposed.

From an academic perspective, this research has as main objective to bring greater clarity to the concept of communication and consequently, customer engagement during all their purchasing decision process in a digital and a marketing communication context into the context of smart cities. The teaching of marketing communication must be adjusted to what Deighton & Kornfeld (2007) called “*digital interactive transformation in marketing*”. It is intended to cover a gap in the literature given since there is still a very limited number of articles, based on scientific research, focused on the bridge between marketing and new technologies, between tourism marketing and new technologies.

In business terms, ensure a better perspective of the actions to be developed in to ensure customer engagement and loyalty, naturally critical to organizations. Currently, it seems that managers have adopted a “learn by doing” attitude and, consequently, it seems that practical is in a more advanced stage than theory. In business terms, give a better perspective of the communication actions to be developed to assure the decision, naturally critical for organizations. This study addresses the dynamics involved this means as a communication tool, from the perspective of all stakeholders (media agencies, distribution channels, brands, consumers, and new media).

Finally, smart cities as a developed urban area that creates high quality of life by excelling in economy. Mobility, environment, people, living, business, and government are cities where technology is key. Therefore, more research is needed to understand the experiences in smart cities and the co-creation processes.

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