

**To Study the Impact of Virtual Reality (VR) on Online
Accommodation Booking Platforms (OABP) in order to
Improve the Overall Customer Experience**

Research dissertation presented in partial fulfilment of the requirements
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MSc in International Business Management

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August 28th, 2020

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To Study the Impact of Virtual Reality (VR) on Online Accommodation Booking Platforms (OABP) in Order to Improve the Overall Customer Experience

submitted for the degree of: **MSc in International Business Management** is the result of my own work and that where reference is made to the work of others, due acknowledgment is given.

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Abstract

To study the Impact of Virtual Reality (VR) on Online Accommodation Booking Platforms (OABP) in order to Improve the Overall Customer Experience

Chia An Yu

Nowadays, the reservation of accommodation such as hotels and B&Bs can be made via online booking platform. The online accommodation booking platform (OABP) is gaining popularity since it provides functionality and convenience to the customer. Virtual reality (VR) is an emerging technology in the tourism and hospitality industries, but there is a lack of research into this era such as the effects of VR as a room display tool on OABP.

This dissertation investigated the motivation of customers to use 3D VR room tour on OABP and explored the process that VR improves the customer online booking experience and gain the customer confidence in the OABP. Lastly, compare the efficiency between VR and the normal online booking experience of the customer. The current research adopted the extended Stimulus-Organism-Response (S-O-R) conceptual framework of the decision-making process to evaluate the VR system implements on OABP.

In order to offer a better understanding of the research objectives, this research employed the semi-structured interview and qualitative approach to collect the in-depth opinion of the participants. The interview consisted of eleven participants and separated into two groups in the different perspective section which are OABP customers (guests) and professionals (host/hotelier)

The result of this research discussed the issue of inaccurate accommodation room view and the anxiety derived from the unknown accommodation as the reasons for customers to use 3D VR room tour. Therefore, the affective response and cognitive response of customers stimulated by the authentic experience of VR reinforced their trust and confidence to the website then improved their visit intention and purchase decision of the accommodations.

However, due to a lack of study regarding using VR on the booking website, and also 3D VR room tour not as a frequent room display tool on OABP, there was still some limitation of sample size in analysing the similarities and differences between the participants.

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1 Introduction

1.1 Research Topic

The adoption of Internet technology to overall business has given rise to its extensive application in the tourism industry (Foris *et al.*, 2019). Because of the growth tourism, hotels and hosts utilise various internet distribution channels to help them garner more bookings including so called online travel agents, or third-party websites, as a result, the Online Accommodation Booking Platform (OABP) is growing in popularity (Toh *et al.*, 2011).

OABP provides multi-functional booking system with enticing content which attract customers to book the accommodation through them. Especially, many slow tourists who prefer to travel for a prolonged period of time at a slow pace to have a deep, relaxed, and authentic experience like to make the room reservation through a third-party website by themselves instead of through a travel agency. However, customers may have a trust problem to book rooms through third-party websites since the pictures and the information provided of the accommodations are not completely consistent with the actual property. According to Zhang *et al.* (2018), the experience of online platform has a significant effect on the emotional experience of the destination. Furthermore, Kim *et al.* (2020) argued that authenticity-related variables such as knowledge, authenticity perception, and information search behaviour have vital connections with the intention of slow tourists in customers' decision-making process. Therefore, the authenticity of the room view may affect the experience and trust of the customer towards the destination (accommodation) on OABP.

Virtual Reality (VR), using the three-dimensional (3D) world through audio, visual and animated elements so that users can literally experience the real environment from a traveller's perspective (Kim, *et al.*, 2020). Furthermore, along with the growth of technology, VR is widely used in many aspects such as marketing, education, games, training, tourism and so on. In spite the fact that

some online booking system provide panoramic view, still the sight of the accommodation is static and not indicated for availability search (Rahim *et al.*, 2015). Therefore, this study intends to conduct further research about the series of responses regarding the purchase decision making process affected by 3D VR authentic experience of the room tour on the OABP. The researcher will adopt an extended Stimulus Organism Response (S-O-R) conceptual framework of the decision-making process to analyse the customer's point of view (The concept will be further explained in the chapter 2.5 and 2.6). In a nutshell, given the consistent growth in the popularity of OABP, websites may improve the function to motivate customers to book via the company website, so the study investigates this phenomenon from the perspective of using 3D VR room tour on an OABP to improve the overall customer experience.

1.2 Background and Issue

The current research aims to determine whether the customer experience can be improved directly by using VR to have a room tour on an OABP and if it affects their visit intention and their purchase decision indirectly. In order to achieve the aim of the research, the following are the research objectives.

Research Objectives:

RO1: To determine what motivates customers to use 3D VR room tour as a room viewing tool on OABP

RO2: To identify how can VR improve the customer online booking experience and gain the customer confidence in the OABP.

RO3: To compare the efficiency between VR and the normal online booking experience of the customer.

Research Questions:

RQ1: What motivates customers to use 3D VR room tour as a room viewing tool on OABP?

RQ2: How can VR improve the customer online booking experience and gain the customer confidence in the OABP?

RQ3: Which is more efficient between the VR and the normal online booking experience to the customer?

There are various online accommodation booking platforms with similar functions to each other, such as Airbnb, Booking.com, Agoda, Hotels.com and so on. They have well-designed website with pictures, descriptions, and functional filters. However, for some part of the pictures seem not consistent with the real rooms and this is the problem that booking platform cannot prevent from. In order to make their accommodation look more attractive, hoteliers and hosts tend to upload a picture of prettier corner in the house instead of crude corner, which may lower the preferences of customer to book their room. This has resulted in a number of customers who found the room that did not suit their expectation after arriving at the accommodation and felt the price was not worth the room and the experience. Therefore, in order to reduce the gap between online pictures and the reality of the room, the VR marketing framework may bring the impacts as below:

- If customers can look into the room's location and decoration through 3D VR view prior to the trip, they may not waste so much time to search the accommodation due to the quality concerns.
- Once customers start the 3D VR room tour, they could anticipate the destination and prepare themselves.
- On the other hand, hoteliers and hosts could display their rooms' style and decoration without an extra explanation. The visual perception may be able to deliver a better impression.

However, there are still some issues for OABP to conduct this concept:

- Sometimes hoteliers and hosts may not be willing to provide the relevant information for OABP to set up the system.

- Perhaps there are still some process difficulties and shortcomings to run the system on OABP (Rahim *et al.*, 2015)

1.3 Justification for Research Objective

As travelling styles change, travel is accordingly more about experience, and fulfilment than about locations and things; furthermore, the tourism product is normally recognized as experientially-demanding (Hyun *et al.*, 2009). Nowadays, the internet has become the mainstream for tourists to search travel information for their self-plan trip (Zhang *et al.*, 2018). Therefore, they expect a wholesome experience which is the same as illustration they have seen online upon arriving at the destination (Zhang *et al.*, 2018). For example, a stylish and cosy room attracts a lot of customers. To market the destination, online platforms would express the beauty of the destination to customers so that they would feel desirous to visit it. Also, the evaluation research in the field of travel and tourism focuses on the website features performance including reachability, content and navigation and the overall interconnection of marketing, technological, inner, and customer point of view (Kaplanidou and Vogt, 2006). Therefore, the first objective is to determine What motivates customers to use 3D VR room tour as a room viewing tool on OABP.

In order to avoid reserving an unsuitable accommodation, customers would seek for various ways such as an introduction online, brochure, word-of-mouth, rating and comment system, or the previous staying experience. Among these choices, word-of-mouth, rating and comment system, and the previous staying experience are the most reliable and trustworthy way as they are the direct experience obtained from past customers (Hyun *et al.*, 2009). It infers that the customers seek the feedback that can describe the destination vividly. Rahim *et al.* (2015) indicates that VR technology focuses on the interaction between user and system when comparing it to the conventional visual research. 3D VR technology has displayed its capacity and potentiality as a helpful marketing tool (Kim, *et al.*, 2020). Therefore, the images shown in 3D VR can be at least closest to the direct experience before the trip takes place. In addition, one of

the popular OABP Airbnb (2017) states that “Virtual reality offers us a chance to reform where inspiration is drawn from and brings the travelling plans to the next degree”. In 2017, Airbnb produced an article with using VR before a trip and Augmented Reality (AR) during it to improve customers’ travelling experience. For VR part, they tend to adopt 3D VR to display the room which allows customers to walk into the room and feel the atmosphere. Thus, the second objective is to identify how can VR improve the customer online booking experience and gain the customer confidence in the OABP. Also, the research has to compare the efficiency between VR and the normal online booking experience of the customer.

The research assumes that implementing VR function may help customer immerse themselves in the real surroundings to pursue their intention to book the room. Therefore, it intends to explore what factors improve the customer experience directly or indirectly and encourage potential customers to strengthen the visit intention and purchase decision.

1.4 The Relevant Business Disciplines and Academic Areas

The most relevant business discipline is tourism, hospitality, and Marketing. The academic areas are related to tourism, hospitality, web technology, and customer behaviour. VR and OABP are two new trends in recent years, so the aim of this research is to find out the effects that VR technology brings to OABP and the customer decision making process.

1.5 Chapter Conclusion

This chapter introduced the concept of the research topic including the research objectives, research questions, background, justification of objectives, and also the relevant business disciplines and academic areas. The research objective is the core of this study, so the rest of the chapters should be developed in line with the objectives. Next, the literature review of different

academic perspective and the conceptual framework will be further discussed in the following section.

2 Literature Review

2.1 Chapter Introduction

This section will cover the necessary elements to have a solid basis for understanding the customer decision-making process affected by using 3D VR room tour on OABP. The online accommodation booking platform and virtual reality are both discussed separately in many academic pieces of literature and also from different aspects, but a limited amount of literature combines both topics and discusses a series of VR effects on OABP towards improving customer experience. Additionally, it details the conceptual framework that guides the decision-making process. This chapter aims to provide a comprehensive discussion of the knowledge obtained from reviewing the relevant academic literature.

2.2 The Background of Online Accommodation Booking Platform

Tourism is one of the popular and prevailing industries in the world. According to the Eurostat study (2017), the booking rate of online transport and holiday accommodation has grown from 51.5% in 2017 to 53.5% in 2018 for the average of European residents aged between 16 and 74 (Foris *et al.*, 2019). Furthermore, online sales worldwide of accommodations and other travel services continue to grow rapidly (Research and Markets, 2019). Hence, the hospitality industry has to discover the different ways to sell their rooms as well as to gain more exposure and visibility in order to be competitive among so many competitors. According to Lee *et al.* (2013), much of hotel web activity shifted to OABP, and this rising demand from customers using OABP is not surprising, because it offers convenience. Therefore, although hotels like to sell rooms through their own website, and the cost of using these third-party websites might be considerable, the hotel industry relies greatly on functional, efficient, and convenient OABP to sell rooms (Toh *et al.*, 2011).

Because of the development of the internet and the mobile industry, search engines have become one of the most useful method for planning the trips (Foris *et al.*, 2019). More than 50% travellers from different countries are utilising general search engines for their destination option and intend to discuss travelling experiences with others (Smaliukiene *et al.*, 2014). Digital platforms play a key role in maintaining online communities and it is a basis that offers a primary function to a professional system and serves as a foundation which could develop complementary products, technologies, or services (Spagnoletti *et al.*, 2015). Nowadays, an accommodation reservation can be made through online booking system, so it allows customers to search and book any room from any location immediately via search engine (Rahim, 2015). According to Foris *et al.* (2019) the internet has already changed the customer behaviour of tourism products. Thus, due to the convenience of OABP, more and more people may prefer to have self-plan trip by which they could plan and book by themselves. The accommodation booking process has changed from traditional booking process such as via travel agency or hotel phone call to online booking system gradually as travelling style has kept changing recent years. OABP has become a popular tool for customers to book accommodation online, because it provides series of functional interfaces and filters with which can help customer to discover the most relevant destination, ideal accommodation, and transportation instantly with simple clicks.

Along with the development of OABP these years, the hoteliers and hosts range from renowned and big hotels to the personal and small accommodation providers because it brings the convenience for them to promote and sell the rooms (Toh *et al.*, 2011). According to the human behaviour research, emotion is a leading factor which influences human behaviour, so attitude theory emphasizes it in the research generally (Zhang *et al.*, 2018). Therefore, hoteliers and hosts tend to adopt an emotional marketing strategy to promote their accommodations such as beautiful pictures and touching words in order to keep competitive, but sometimes the reality of the picture may disappoint the customers on account of the difference at the destination. In addition, the internet provides plenty of information about the city, weather, surroundings,

and other factors that are normally practical for easing the fear of the unknown, but some people who have high degree of anxiety, the texture information cannot satisfy them, so they want to be more familiar with the location and feel the safe (Lee and Oh, 2007). Thus, the experience of online platform indirectly impacts travellers' engagement intention of the destination, via the effect of destination emotion (Zhang *et al.*, 2018). To understand travellers motivates, one should know that customer expectations have shifted and keep shifting, becoming more informed, connected, and active (Smaliukiene *et al.*, 2014) As aforementioned, the web technology has changed tourism and hospitality industry soundly, so it has empowered hotels to offer VR tours that display a full image of the hotel, and these VR tours give anxious travellers some comfort by making them familiar with the unknown (Lee and Oh, 2007). As the result, the research aims to investigate that if the 3D VR room tour can improve the OABP customer booking experience and the series of effects and procedure will be addressed in following sections

2.3 Virtual Reality (VR) Marketing and Effects

The advanced technology of Virtual Reality started 40 years ago, originally as an illustrated idea of laboratory and gradually as functional, empirical, and affordable systems for the past 20 years (Slater, 2009). eTourism is developing so rapidly that the tourism field is continually redefining itself and requires constant reorientation in management and marketing along the way (Egger and Buhalis, 2008, p. 1). Nowadays, VR has been used widely in various field. According to Guttentag (2010), emerging VR has been applied in six main tourism-related areas which are heritage preservation, accessibility, education, entertainment, planning and management, and marketing. Moreover, when the first research was analysed on VR tourism in 1995, researchers were interested in the advantages which VR provides in marketing techniques (Kim *et al.*, 2020). As an era of e-commerce environment, it is a crucial attention for market research to analyse the impact of online environments on consumer behaviour (Wodehouse and Abba, 2016).

The concept of VR marketing seems positive, but there were also some negative concerns. An influential evidence showed in the psychological literature that interrupting into an area surrounding a human's body usually leads to uncomfortable respond (Wilcox *et al.*, 2003). For example, some people have some symptoms when they immerse in a 3D environment, they experience nausea, dizziness, and headaches. This unexpected reaction to interpersonal space intrusion might have weakened the willingness of customers to use this function. However, even though the primitive negative effects enabled VR mostly falling out of the wider public awareness, more recently, technology has started to catch up with fiction, so moderate VR has become a reality for the entertainment application and potentially for the application of more future business (Tredinnick, 2018).

According to Martinez-Navarro, VR and AR are anticipated to have economic effect of amount to \$29.5 billion U.S. in 2020 (Martínez-Navarro *et al.*, 2019). Therefore, some industries intend to adopt VR and AR to their product or service area gradually. As a business tool, VR has been used in the tourism industry to communicate with tourists through offering destination information (i.e.: Tourism Ireland), business management (i.e.: Crowne Plaza and Starwood Hotels), and online store retailers such as IKEA, eBay, and Alibaba (Huang *et al.*, 2013; Sue, 2017). For Cultural heritage sites, value cocreation via utilizing VR technology strengthens tourists' experience, building beneficial word of mouth and revisit intention (Jung and tom Dieck, 2017). Additionally, in the hospitality industry, although most large hotels offer a website that explicates the details of their services, describes their building structures, introduces the surrounding area, and so on, people with high anxiety might not be satisfied with it, because still 2D pictures of some hotel rooms do not utterly represent the entire hotel, as the result, they applicate a VR tour to provide a complete hotel view (Lee and Oh, 2007). According to Airbnb (2017), they are also continuing to test the VR function and hope to bring the new experience to the customers when viewing and making a room reservation through their platform.

VR is a gripping technology which points to mimic the real world by a computer-created environment to attract people's sense to engage with it (Rahim, 2015). It creates a new feeling for people to experience that what is happening virtually is happening in real (Slater, 2009). Hence, VR tour provides potential travellers a chance to experience adventures, special activities, spaces, and attractions from their comfortable homes before making the decision to visit the destination (Jung and tom Dieck, 2017). According to Wodehouse and Abba (2016), the main function of VR is to deliver a realistic 3D experience to generate a method to reduce the risk of purchasing online. Therefore, it may increase the customer confidence to choose the product or service online. However, when it comes to the application of the newest technologies, considering perceived value from consumers' viewpoint to ensure the rate of high acceptance and using intention is important (Kristensson *et al.*, 2008). Thus, it is vital to explore the value cocreation and the experience that VR will bring to the customers.

2.4 The Importance of Customer Satisfaction and Value Cocreation

A firm's service quality impacts the customer's experience and their satisfaction. The central goal of the service firms is to achieve the customer satisfaction (Kaur and Mahajan, 2011). Besides, it is usually discovered as the heart of firms' marketing activities (Leninkumar, 2017). Therefore, the customer satisfaction is an important element for creating a long-term relationship with customers which ensures that they will stick around, and it is usually tight with trust. –According to Leninkumar (2017), the trust built between the customers and the service firms can strengthen customer loyalty for a corporation. Trust also directly or indirectly impacts the customer determination to use or purchase from an online platform (Zhang *et al.*, 2018). Therefore, in order to have a trustworthy online purchasing environment, the online review is a common way for customer to assess an accommodation or platform in so many ways. The rapid development of technology and the internet network has enabled customers by assisting them share experiences, views, and information as fast as never before (Smaliukiene *et al.*, 2014). Also, a research has indicated that almost 80% of customers will read accommodation reviews

before the trip takes place, and 53% will not move on to book an accommodation in the absence of online reviews (Mehraliyev *et al.*, 2020). It shows that people need enough information to reinforce their sense of safety and trust prior to the trip. According to Kim *et al.* (2020), authentic experience is an important role in anticipating slow tourists' behavioural intention and positive online reviews. Lee and Oh (2007) indicated that VR tour makes the unknown become the known so that it reduces the anxiety of people. This reveals that VR performs its ability to form the authenticity. Guttentag (2010) also argued that tourists' authenticity awareness of VR tourism is one element in their agreement of VR tourism as a substitute for actual experience. Thus, in service industries, authentic experience is a key element in favourable conditions for competition (Gilmore and Pine 2007). Subsequently, if the OABP creates a trustworthy booking environment with an authentic experience for customer prior to the trip which can increase the customer loyalty to its organization.

Tourism is based on the nature of experience, when compared to other tangible products and services (Zhang *et al.*, 2018). Customer engagement is considered as a micro-foundation for value cocreation so the customers' connections with destinations via their online platforms may indirectly influence their intentions to proceed the engagement behaviours (Storbacka *et al.*, 2016); Zhang *et al.*, 2018). Therefore, the experience is the key element to achieve the customer engagement and through it, customers enjoy the booking process which reflects the value cocreation towards the destination. In addition, a research of online travel businesses and value cocreation revealed that the customer is a cocreator of value (Deale and Crawford, 2018). The perceived value of customer has a vital influence on deriving loyalty towards the organization (Polo Peña *et al.*, 2014). With value cocreation, the customers know what they want clearly and might make the purchasing decision directly.

In the past, the value creation used to be a single direction that merely organizations created and provided customer value (Clark *et al.*, 2014).

However, the organization is unable to generate value but is only able to provide value propositions and cooperatively generate value with the beneficiary (Polo Peña *et al.*, 2014). It means no matter tangible or intangible product and service provided is a code inserted in the value creating process and value cocreation is always a cooperative and interactive process happening in the relationships of multiple exchange. For instance, to Walt Disney theme park where experiences are created under employees' and tourists' involvement, from the business model of IKEA through which customers pick-up, transport and assemble products, the effective utilization of VR tourism in destinations of cultural heritage provides cocreation value in tourists' pre-, onsite, and post-visit experiences (Jung and tom Dieck, 2017). Hence, the cocreation of value comes from the faith that consumers should be a key role in the innovation process of new products and services to ensure that value is attached from their viewpoint (Zine *et al.*, 2014). This shows that passive web users and consumers are now cooperating, commenting, generating content and online experience has switched from consuming and searching to exchanging, creating, and connecting (Paris *et al.*, 2015). Additionally, Zhang *et al.* (2018) stated that the experience of online platform is the result of value cocreation encounters between tourists and online platforms, so the value tourists seek is not hotel rooms themselves but the experiences that service and physical environments bring to them. Therefore, in this study, the elements of affection (enjoyment, emotion involvement) and cognition (usefulness, trust, and engagement) stimulated by VR authentic experience create the cocreation value towards the destination (accommodation). The collaborative and interactive value cocreation happens in the process of stimulus-organism-response (S-O-R) derived from 3D VR room tour.

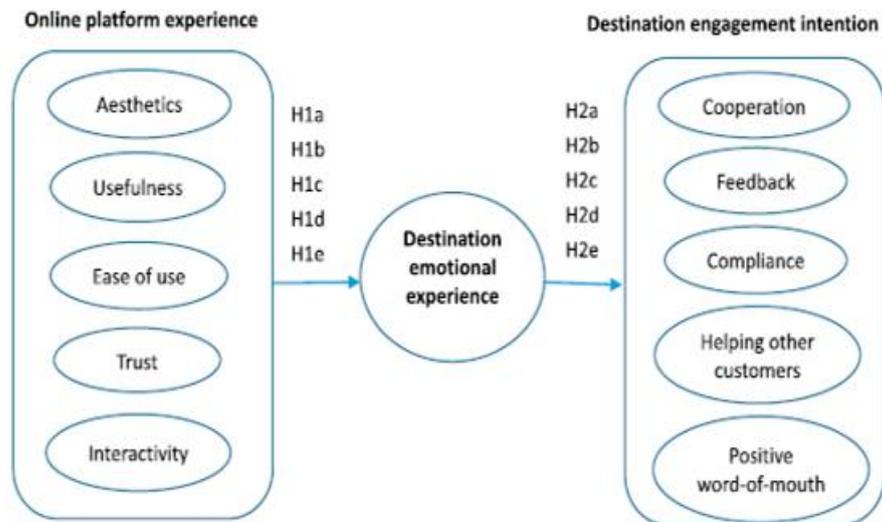


Figure 1: The conceptual model for experience value cocreation on destination online platforms (Source: Zhang et al., 2018)

2.5 How Does Using Virtual Reality in Online Accommodation Booking Platform Enrich the Customer Experience?

The VR content in this study aims to attract potential customers to book and visit the accommodation presented in the VR as well as reduce the anxiety derived from the accuracy of accommodation room view when searching so many unknown accommodations on OABP's. The two factors of attachment to VR authentic experience in this research are affection (enjoyment and emotional involvement), and cognition (usefulness, trust and engagement). According to Kim *et al.* (2020), the authentic experience has a positive effect on both affective and cognitive response to VR tourism experience. Affective response is defined as emotions and feelings, which acts a role in purchase decision, particularly when there are not enough cognitive elements to differentiate between different products, subsequently, affection may supplement cognitive elements (Cohen *et al.*, 2014; Kim and Perdue, 2013) Therefore, an experience of positive emotion can impact decision making or selection (Kim and Perdue, 2013). Furthermore, the attachment to VR impacts the intention to visit the place displayed in VR because it has a positively effect on affective response of enjoyment and emotional involvement (Kim *et al.*, 2020). Cognitive response can be described as people's beliefs about an organization and their beliefs

about the organization's people and products, so the positive cognitions can create more positive beliefs associated with an organization, its workers and its services (Bitner, 1992). Kim and Perdue (2013) also mentioned that cognitive elements are physical dimensions or non-physical qualities which satisfy functional benefits and utilitarian needs or value. For example, Kim *et al.* (2017) assessed the advantages and benefits of mobile travel social media as cognitive elements. Chang *et al.* (2014) used practicality, level of matching people needs, convenience, and waiting for services as cognitive responses in travel circumstance to evaluate utilitarian value. Thus, this research adopts usefulness, trust, and engagement as the cognitive elements to the tourism and hospitality related VR experience. Furthermore, in the situation of utilising technologies in tourism, the authentic experiences of tourists with technologies positively influence the behavioural intention (Kim *et al.*, 2017)

The usage of internet to plan the trip among the traveller continues to rise (Foris *et al.*, 2019). Nowadays, booking an accommodation like hotel, personal house and resorts can be proceeded through online booking platforms (Rahim, 2015). Selecting a hotel is a foundational decision-making process, the casual factors of which have been studied abundantly in related literature such as price, location, ratings and so on (Masiero and Nicolau, 2016). Along with the time progress, the technology has empowered internet platform to offer customers more and more detailed information and services. A well-functional and designed platform can satisfy customers' needs but the less instinctive platform can disappoint them (Foris *et al.*, 2019). Apparently, the customer experience of using OABP is a crucial element to affect customer decision-making to book from this website. Moreover, Zhang *et al.* (2018)'s modelling shows that the experience of online platform impacts the experience of destination emotion significantly. The emotional experience is established through the interaction of cognitive, affective and sensory choice in the hotel circumstance, through a complete comprehension of the interplay of these attributes types to examine the consumer choice behaviour is important (Kim and Perdue, 2013). Kaplanidou and Vogt (2006) also states that driving visuals and functional travel information were important predictors of website usefulness which is a

significant element to affect the intention to travel to the destination. Therefore, even the platform provides the different angles of the rooms or panoramic views, it still has limited the user's visualisation immersing into the environment to choose the most attractive accommodation, as the result, the visual dimension is important in the experience of authenticity (Rahim, 2015; Kim *et al.*, 2020). The customers consider physical and sensor participation are significant elements of experiencing a proper level of authenticity in the virtual tourism because perceptions of authenticity are activated by experiences (Kim *et al.*, 2020). VR is a tool which can connect the imagination with the reality closely and its simplest implementation are 180 and 360 videos, which set you in the central of the scene and enable you to look around (Tredinnick, 2018) It is interesting that such a view is capable of illustrating the dimensions of a room and even how to navigate throughout the property itself. It means the 3D immersive image of the destination which can help people to image what the true environment is and affects the people's intention indirectly.

The stimulus-organism-response (S-O-R) model has been discussed generally in academic articles. Mehrabian and Russell (1974 cited in Prashar *et al.*, 2017) proposed SOR model but focused only on affective responses. Bitner (1992) first combined cognition and physiology in the SOR model, extending its application to servicescapes. According to Jacoby (2002), SOR model was proposed with cognitive and affective constructs that include whole previous engaged experiences involving long-term memory. Mummalaneni (2005) found that SOR model is suitable for understanding the relationships among consumer's purchasing behaviours, website features, and emotional responses when applying it to the online retailing environment. Later, Kim and Lennon (2013) presented an extended SOR model and argued that in website environment, the level of perceived risk of purchasing at the online retailer will influence the level of consumers' negative emotion toward the online retailer. According to Prashar *et al.* (2017), the SOR model has been utilized to understand buyers' internal motivations for online shopping environment and how the vital impacts of these motivations affect customer satisfaction. Until recently, Kim *et al.* (2020) adopted extended SOR model to address the

relationship among authentic experience, affective and cognitive responses, attachment, and visit intention with VR tourism. These examples of previous literatures imply that S-O-R is suitable for explaining a comprehensive decision-making process of booking accommodation online via 3D VR room tour in this research. The detailed conceptual framework will be discussed in the next chapter.

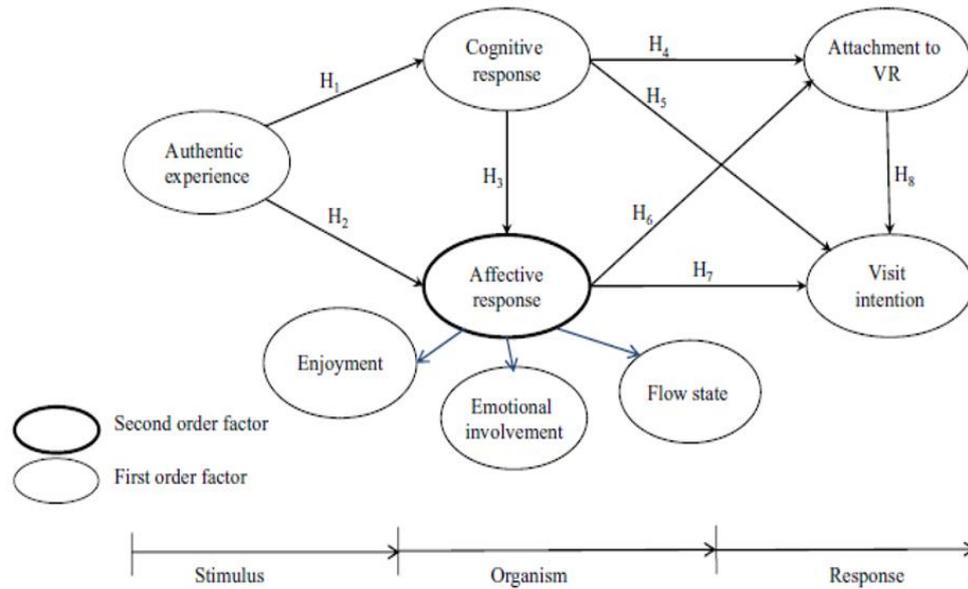


Figure 2: The extended stimulus-organism-response model of virtual reality on customer behaviour (Source: Kim et al., 2020)

2.6 Conceptual Framework

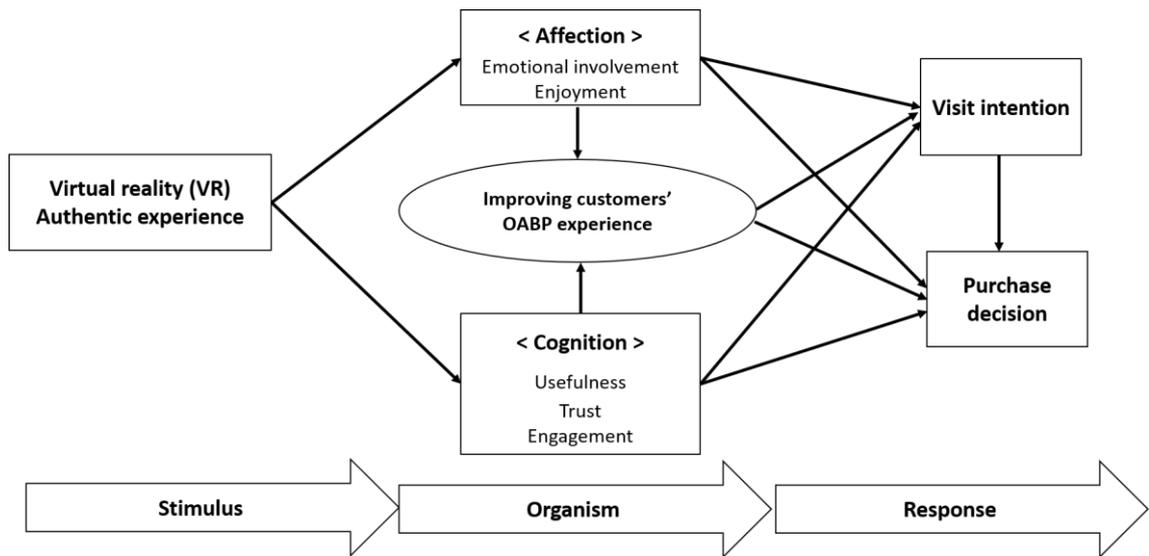


Figure 3: The extended S-O-R conceptual framework of decision-making process.

The extended S-O-R conceptual framework is adapted and combined by value cocreation concept (Zhang *et al.*, 2018) and the extended stimulus-organism-response (S-O-R) model (Kim *et al.*, 2020) to generate the purchase decision making process on OABP through VR system. The decision-making process of customers is influenced by a complex and collaborative interaction of external and internal factors. It has resulted in many models to try to better understand this procedure, leading in turn to various approaches of modelling and measuring potential customers' perception and behaviours (Lockyer, 2005). The relationship of each variable of the conceptual framework will be explained as follows.

Stimulus-Organism-Response model

Mehrabian and Russell (1974 cited in Prashar *et al.*, 2017) conceived S-O-R model that explicates the impact of surroundings (stimuli), which affect consumers (organisms) and lead to approach or avoidance behaviours (responses). The S-O-R theory emphasizes the emotion-eliciting or emotional qualities of environments that are viewed as aesthetic incitements (Wohlwill, 1976). Koo and Ju (2010) indicated that as regards the connection between atmosphere and emotion, there is a positive impact of atmospherics on

emotional responses. Also, Wohlwill (1976) argued that enjoyment and inspiration, stimulated by the website atmospherics, are confidently connected with customer satisfaction, purchase intention, and approach behaviour. Furthermore, Jani and Han (2015) indicated that the S-O-R model is greatly effective in interpreting that stimuli (ex: hotel atmosphere) affects response (ex: hotel loyalty) through process (ex: emotions). Therefore, in this research, VR authentic experience (stimulus) affects customers' visit intention and purchase decision (responses) through customers' affection and cognition (organism).

Value cocreation

Cossío-Silva *et al.* (2016) stated that value is a shared function of the actions of the supplier and the customer, which results from co-creation. Furthermore, value is built and experienced via use in the particular context (value-in-use or value-in-context), so customers are not recipients of value but rather are active value cocreators and determinators (Vargo and Lusch, 2016). Under this perspective, the improved experience of OABP through affection and cognition is the result of value co-creation between the customer and OABP. Hence, the value that the customer pursues, is not the accommodation room and the facilities themselves, but the experience brought by service environments of OABP. Specifically, experience is a main focus of research in tourism and the experience of tourists is viewed as a personal mental status felt by tourists during service experience and it should be concentrated on the active role of tourists in cocreating their own experiences, especially via technology (Zhang *et al.*, 2018).

The platform's design quality has an important impact on the experience of online platform, use intention of platform, buying intention, destination choice and destination image (Chung *et al.*, 2015). For example, (Zhang *et al.*, 2018) employed five nature cognitive factors as platform experience including aesthetics, usefulness, ease of use, trust, and interactivity whereby influence users' emotional responses on the platforms. Whereas Jung *et al.* (2015), technological improvements including virtual reality have farther influenced the

way people experience their surroundings. Hence, the current research adopts VR to stimulate customers' affection and cognition as well as trigger their enjoyment and emotional involvement, and enhance the usefulness, trust, and engagement to the OABP, subsequently, motivate customer's visit intention to make the purchase decision. Therefore, the affective response (enjoyment, emotion involvement) and cognitive response (usefulness, trust, and engagement) stimulated by VR authentic experience create the cocreation value towards the destination (accommodation).

VR authentic experience

Authenticity is viewed as a new customer sensibility that includes perceptions of the level to which novel, real, original, extraordinary, and unique experiences, products, or services are real (Kim *et al.*, 2020). The management of the customer perception of authenticity would become the main new source of competitive advantage when consumers seek for what is real (Gilmore and Pine, 2007). The cognitive (usefulness, trust and engagement) and affective (enjoyment and emotional involvement) responses of visitors to VR tourism experiences as important mediators in anticipating attachment to the experiences of VR tourism and visit intention to the destination showed in VR (Kim *et al.*, 2015; Kim *et al.*, 2020).

The relationship between affective response and visit intention and purchase decision.

Emotional involvement is defined as the degree that a person is emotionally engaged in a behaviour (Holsapple and Wu, 2007, p. 87). For example, when a person is playing an online game, he/she will feel carried off by the game. The degree of emotional involvement provided by VR system is one element that impacts users' feeling of reality (Baños *et al.*, 2004). Therefore, a full emotional involvement of positive affective response increases the awareness that a VR experience is authentic, which sequentially results in the behavioural intention to visit the destination described in VR tourism (Guttentag, 2010). In the study,

using VR room tour to view the accommodation can enable users feel they are a part of the room and further imagine the genuine space of the destination.

Enjoyment defines the degree to which customers obtain entertainment from exploring hedonic information technology system (Heijden, 2004). Kim and Perdue (2013) indicated that when hospitality customers are searching for value and the right features, they also need something that engages their feeling and senses and/or something that offers excitement and enjoyment. Furthermore, the effect of enjoyment on affective response change proves VR tour as hedonic experience (Tussyadiah *et al.*, 2018). Therefore, enjoyment is also a key role in predicting VR customers' visit intention to the destination (Huang *et al.*, 2016). In this study, using VR room tour to view the accommodation enable customers feel funny, happy, and pleasurable.

The relationship between cognitive response and visit intention and purchase decision.

Usefulness is considered as the level that a person believes that using a specific system would improve his or her job performance (Abdullah *et al.* n.d.; Zhang *et al.* 2018). The Technology Acceptance Model (TAM) indicated that usefulness impacts on intention of behaviour (Abdullah *et al.*, n.d.). However, H. Kim, Chan, and Gupta (2007 cited in Zhang *et al.*, 2018) declared that TAM did not describe much of the adoption intention variation. They suggested a value-based adoption model (VAM) that usefulness had affected adoption intention indirectly through perceived value. Therefore, usefulness is one of important part of OABP experience structure.

Trust is viewed as a crucial element of success in the online environment (Zhang *et al.*, 2018). One of the most commonly mentioned reasons for consumers not shopping online is the lack of trust (Cho and Sagynov, 2015) Thus, the decision-making of consumer is affected by attitudes aroused from their beliefs of the

online information sources, such as the providers of security and/or trust of the online service (Park *et al.*, 2019).

Customer engagement has appeared in the marketing literature as a vital concept defined with a strong focus of behaviour (So *et al.*, 2016). Zhang *et al.* (2018) stated that consumer engagement as a required part of the value cocreation process, which contains both psychological and behavioural proportions. They also indicated the relationship between tourists and destinations is improved by tourist engagement with tourism destinations, via various channels or platforms. Thus, the research is mainly to provide authentic experience through VR to customer to consolidate the engagement between image and the room of destination.

2.7 Chapter Conclusion

First of all, the chapter briefed the trend of OABP and VR, and then discussed the review tool on OABP to browse the accommodation space. In addition, the study adopted the conceptual framework to examine the series reaction of the decision-making process of travellers. From different studies, it shows that 3D VR room tour is a potential marketing tool for the tourism and hospitality industry. However, when it comes to the effective factors and stimuli of the decision-making process, the researched literature is divided in different aspects. In the next chapter, the research methodology employed for this study along with the research design adopted and how it was carried out will be discussed.

3 Methodology and Research Design

3.1 Chapter Introduction

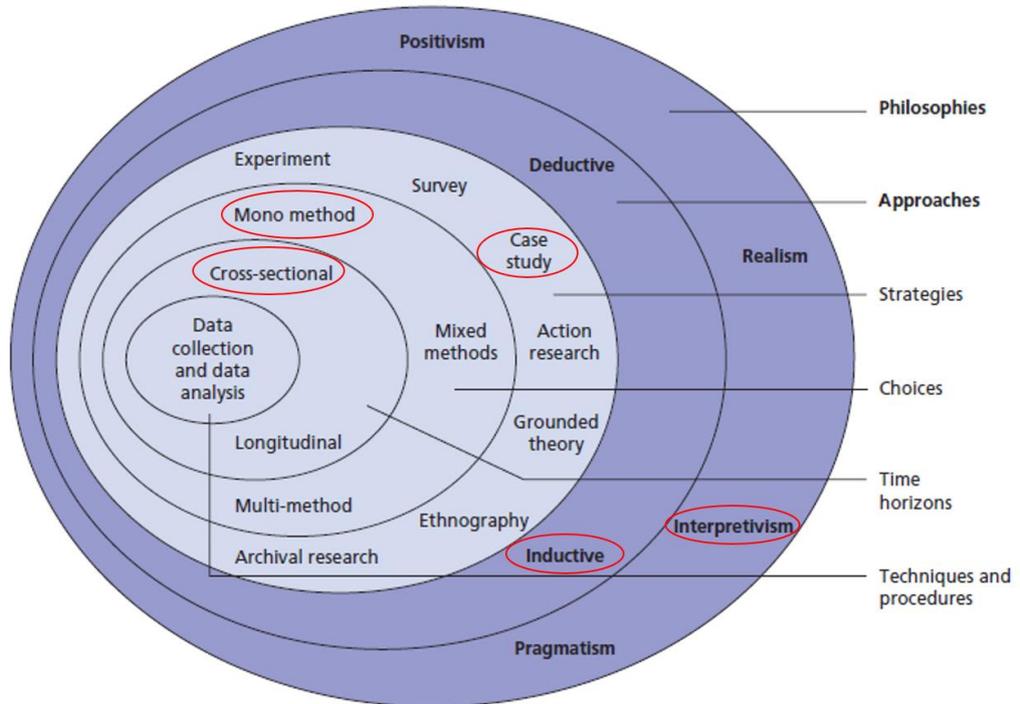


Figure 4: Research onion (Saunders, Lewis, and Thornhill, 2009)

Saunders, Lewis, and Thornhill (2009) proposed a research onion to clarify each stage of the research design and help researchers to develop their methodology by peeling off the outer layers step by step. The circled points are suitable for this research topic and will be explained in more detail in the following sections.

This chapter specifies the methods of the research being carried out by explaining the research paradigm, overall approach, research design, research ethics issues, the techniques for data analysis and interpretation, time horizons and also briefs the potential outcome of the research

3.2 Research Paradigm: Interpretivism

There are four paradigms, positivism, realism, interpretivism and pragmatism, but the positivistic paradigm (positivism) and the phenomenological paradigm (interpretivism) are the two mainly recognized philosophies and they have contrasting figures (Collis and Hussey, 2003). A positivist researcher uses scientific quantitative methods, while an interpretivist would like to adopt humanistic qualitative methods and tends to follow subjectivist assumptions with regard to the knowledge (Saunders, Lewis, and Thornhill, 2009).

The current research aims to determine whether the customer experience can be improved directly by using VR to have room tour on OABP and if it affects their purchase decision indirectly. So, the purpose is to explore the perception and the perspective that the customers attach to OABP with VR function. Therefore, the research is seeking for the certainty more than generalizability, which fits with phenomenological paradigm (interpretivism) rather than positivistic paradigm (positivism) and tends to follow the approach which can gather the data of in-depth investigation.

3.3 Overall Approach: Qualitative and Inductive Approach

The current research is suitable for qualitative data collection. Qualitative data are in a nominal form with small samples and in-depth investigations while quantitative data are in a numerical form with large samples and measurement (Collis and Hussey, 2013). In other words, qualitative is interested in qualitative phenomenon such as quality or variety. Whereas, quantitative is connected to object that can be revealed regards of quantity or something that is countable (Mishra and Alok, 2017). Thus, this research will adopt qualitative approach which is more suitable for certainty and gather subjective and perceptive experiences of participants to know their favour and opinion of using 3D VR to look into the room on OABP.

The current research is mainly an inductive approach but also adopts some elements of a deductive approach. Deduction is the process by which we reach out to a rational conclusion by logical generalization of a known fact. (Sekaran, 2003). Therefore, the deductive approach aims to test theory, so the researcher develops a theory and hypothesis, then finds a research strategy to evaluate the hypothesis (Saunders, Lewis, and Thornhill, 2009). Induction, in other words, is the process that begins with observing certain phenomena and reaches conclusions on that basis (Sekaran, 2003). Thus, an inductive approach aims to collect data to generate a new theory (Saunders, Lewis, and Thornhill, 2009). Also, Saunders, Lewis, and Thornhill (2009) indicates that if a topic has an abundance of literature from which the researcher can describe a conceptual framework and hypotheses, it is more like deductive approach. However, researching a new topic with little existing literature may be more suitable to do inductive approach.

According to following characteristics of the current research outlined below, a sentence No.1 is more readily aligned to a deductive approach and sentences from No.2 to No.5 are consistent with an inductive approach. Thus, the researcher's main approach is inductive but with some parts being deductive. Furthermore, Saunders, Lewis, and Thornhill (2009) argues that no matter what the researcher starts with, either a deductive or an inductive approach, the research is probable to combine elements of both in practice.

1. In the current research, the researcher adopts the theory from two different concepts, value cocreation concept (Zhang *et al.*, 2018) and the extended S-O-R model (Kim *et al.*, 2020), and then combines and adapts them as the conceptual framework of the current study.
2. Although the current research has combined two existing concepts, they are from different fields that are destination online platforms and virtual reality tourism; Therefore, a lack of literature mentioning VR utilized on OABP, which reveals that the current topic may be new.

3. The research does not set the hypotheses to test the theory because the researcher can focus on the research by using research objectives, questions, and propositions.
4. In order to have an in-depth research, the researcher will collect data through interviews to gain experience from interviewees, which is consistent with qualitative data collection mentioned previously.
5. After collecting the data, the researcher may refine the theory based on the phenomena observed.

3.4 Research Design

3.4.1 Research Strategy: Case Study

There are seven research strategies, experiment, survey, case study, action research, grounded theory, ethnography, and archival research (Saunders, Lewis, and Thornhill, 2009). According to the information mentioned in the previous section, the current study adopts qualitative data collection so an exploratory case study strategy will be chosen. Case study is a strategy for doing research that includes an observed and experiential investigation of a certain contemporary phenomenon within its real-life adopting multiple sources of evidence (Robson 2002, cited in Saunders, Lewis, and Thornhill, 2009). This is for the reason that case study is normally related to qualitative methods (Bell et al., 2018). Also, the current study intends to collect small samples to do an in-depth investigation so as to understand the perceptive and interpretative experience of travellers.

Nowadays, it is common for us to browse rooms via 2D pictures on OABP prior to the trip but not 3D VR view. Therefore, it is not sure which way is more efficient for travellers to make the decision since there is a lack of past comprehensive research in this field. Moreover, 3D VR is an emerging technology that is worth to adopt the case study strategy in current modern topic to explore and illustrate this phenomenon. Furthermore, Saunders, Lewis, and Thornhill (2009)

argue that a well-constructed case study strategy would be a valuable way for exploring and challenging existing theory.

3.4.2 Methods for Collecting Data and The Sources of Data: Semi-Structured Interview

As mentioned in overall approach section, the research will be conducted by qualitative data collection. The main data collection techniques are interviews, observation, documentary analysis and questionnaires (Saunders, Lewis, and Thornhill, 2009). The mono-method of primary data will be used in this research and it will be collected through semi-structured interviews. A qualitative semi-structured interview is helpful for the researcher to find out what is happening and look for new insight in exploratory research (Robson 2002, cited in Saunders, Lewis, and Thornhill, 2009). Therefore, semi-structured interviews are guided by topics containing major questions that are used in the same way in every interview but interviewers also can keep probing when a new comment was presented by interviewees, which enable the researcher to code simply through focused range of information and the interviewees also can be flexible to express their in-depth experience to increase the validity.

In order to collect the data from different perspectives, the interviewees will be classified into two groups, one is regular customers as users of OABP, the other one is professionals who work in tourism or hotel industry. The main interviewees are the users of OABP (i.e.: Airbnb, Booking.com, Agoda, Hotels.com and so on) since they have more experience to compare the differences of 2D room pictures with 3D VR room tour mode when the researcher conducts the interview. Also, according to the Statista UK report (2017), the person whose age from 18 to 54 prefers to book accommodation online rather than at a travel agency or a counter. Thus, the age group of sampling will be chosen as per this age range. Furthermore, in order to garner the different perspectives, the insight of professionals who work in tourism or hotel industry is valuable for the in-depth study. Consequently, there are eleven interviewees including four

professionals (hosts/hoteliers) and seven customers (guests) to form the study sample.

All interview section will approximately range from 30 to 45 minutes and conducted through online video or voice call instead of face to face mode in order to guarantee the interviewees' safety during the Covid_19 pandemic. If there are technical or other related problems in holding the meeting, a contingency plan of using questionnaires with open-ended questions will be sent by e-mail in order to collect the participants answers.

3.4.3 Nature of Data: Open-Ended Question

As previously mentioned, the research collects the main data primarily through interviewing the professionals who work in tourism or hotel industry and the users of OABP. However, there are numerous types of questions such as open-ended questions or closed-ended questions. Open-ended question allows interviewees to express their opinion widely. Closed-ended questions, on the other hand, give interviewees limited choices to decide the possible answer. Thus, in order to achieve the objectives, Interviews operated with open-ended questions, which enable the researcher to receive a deeper understanding from interviewees. The utilization of open-ended questions and dependence on interviewee responses shows that, while you must keep reactive to the interview objectives and the time constraint, interviewees need the chance to present developmental answers (Saunders, Lewis, and Thornhill, 2009). Therefore, Ghauri and Grønhaug (2005 cited in Saunders, Lewis, and Thornhill, 2009) indicates that interviewers should avoid interrupting frequently but will have to cover the topics and questions shown and probe replies within available time.

Because of two interviewee groups, the research uses two types interview questions during interview; "OABP Users Interview Questions" (please see Appendix D) and "Professionals (tourism/hotel industry) Interview Questions" (please see Appendix E).

3.5 Time Horizons

There are two types of time horizons, cross-sectional and longitudinal study. Cross-sectional study is like a "snapshot" for a short time and the study can be finished in which just gathers data once; oppositely, longitudinal study is like a series of snapshot and the researcher would observe change and development of people or phenomena over a period of time (Sekaran 2003; Feather 2012). As time constrained, it is not practical for the research to conduct with longitudinal study so cross-sectional study is more suitable for this study to gather the data and finish the research on time.

3.6 Access and Research Ethics Issues

Saunders, Lewis, and Thornhill (2009) mentioned that to reach the success of any research plan, the access and ethics are critical aspects to which researchers should pay attention. The research conducts with observing customer behaviour so the ethical issues should be considered in every stage. Accordingly, the primary data collection should be confidential and anonymous. The researcher will brief her information, study purpose, and assurance of confidentiality and anonymity. Also, before starting the interview, researcher should advice potential interviewees to read the plan language carefully and do sign the consent form after finishing the reading. Furthermore, the interviewees will be informed that attending the interview is completely voluntary. Last but not least, the research met the ethical clearance including plain language statement and consent form of Griffith College. The secondary data will adopt open documents online so there is not any ethical issue to use the information.

3.7 The Techniques for Data Analysis and Interpretation

Because of the large quantity of collected data, approximately sixty pages of transcription and five hours of interviews, the notes were made within 24 hours after each interview was finished to make sure the data analysis was being

carried out when the researcher remembered interviewees' expression and responses. Furthermore, in order to garner a more precise perspective of interviewees, after a couple of interviews, the researcher refined the probing questions slightly for other participants. In addition, all the recordings were checked and listened to many times in order to have a comprehensive understanding of interviewees' experience and to add the notes to avoid missing the important message from the interviewees.

Saunders, Lewis and Thornhill (2009) indicated that during the qualitative data analysis, the complicated and non-standardised nature of the data collected would likely need to be grouped into three main processes: condensed (summarised), grouped (categorised) or restructured (ordered) as a narrative. Therefore, after every interview, researcher did the transcription process first in order to further analyse the data. The recorded interviews were subsequently transcribed and interpreted as the actual words account. Data collected would be categorised and prepared as a code book to analyses and the theme would follow the conceptual framework as per study. After generating the findings, the researcher hopes that the result can form a proper theory.

Code book example

Codes	Definition	Example
Virtual Reality (VR) authentic experience	The actual feeling of destination shown in VR	I feel that I am immersing into the room environment.
Affection (emotional involvement/enjoyment)	arousing feelings or emotions by atmosphere	I feel good and enjoy browsing the room via 3D VR view.
Cognition (usefulness/trust/engagement)	the mental action or process of acquiring knowledge and understanding through thought, experience, and the senses.	The 3D VR room view is consistent with destination, so the platform is useful, which increase my trust and engagement to the website.
Improving online accommodation booking	Compare the past experience, the value	The immersive room viewing improved my

(OABP) platform experience	is increased.	booking experience.
Visit intention	The travellers' plan for future travel behaviour.	If it is a trustworthy website, I will look forward to visiting the room.

Figure 1: Code book example

3.8 Potential Outcome of the Research

The potential outcome of this research is identifying the impact of VR on OABP to the users. It can benefit OABP and its related hospitality industries such as guesthouses, hotels, B&B and so on. This research is looking for doing a qualitative analysis to see customers response to the technological advancement such as VR as it is an emerging platform. Moreover, the outcomes of this study offer marketing strategies to the tourism and hospitality industry especially third-party websites by considering consumer behaviour in VR related experiences.

The innovation from convention to digitization may have a shift in the customer behaviour so this research will help the OABP to understand the difference of customer behaviour to book accommodations online through normal picture and through 3D VR room tour video. If the outcome is positive, it can increase the customer trust and engagement both to the hotel and OABP. When the customer satisfaction increases, they will stick to this trustworthy website. Thus, it is important for researcher to explore customers perception and satisfaction by doing an in-depth study. Specifically, developers of VR in hospitality industry could emphasize on producing authentic experiences that contribute to affective and cognitive responses, resulting in VR users' visit intention and purchase decision to the destination (accommodation).

3.9 Chapter Conclusion

This chapter has provided complete information to build this research on a sound methodological basis. It explained specific process of the interview such as the sample of the participants, the details of interview questions, and the methods for collecting data. Furthermore, in order to gain the perceptive and interpretative experience of travellers and have an in-depth investigation, the researcher followed the above methodology and research design to implement this research and ensures that every element is consistent and coherent. Therefore, following a phenomenological method, eleven in-depth semi-structured interviews will provide the primary data and its analysis will be generated into the substance of the findings in the next section.

4 Presentation and Discussion of the Findings

4.1 Chapter Introduction

The purpose of this chapter is to reveal the findings from the interviews conducted and the analysis of the findings. Subsequently, the researcher will discuss and recontextualize these findings by investigating them in view of existing knowledge acquired from literature review (chapter 2). In a nutshell, the findings and discussion section introduce the data collected, the analysis undertaken, and the information acquired from this piece of research.

Despite interviewees having different backgrounds and levels of experience, several common themes can still be generated from the experience shared by all or most participants. The thematically grouped findings are presented in different sections, but these outcomes are interwoven, and some ideas overlap. Therefore, for the findings section, in order to speak specifically for the interviewees' point of view and feelings, several direct quotes are provided. It seeks to discover the main motivational factors that impact the customers to use VR on OABP and how does it improve the customers' experience. Thus, the findings from this investigation are categorised into the following themes:

1. Simple profile of participants' experience regarding OABP
2. Perception of room display on the OABP
3. Virtual reality
4. Comparison of the 2D picture and 3D VR room tour
5. The recommendations for OABP in using 3D VR room tours to display the rooms they are selling.

For the discussion section, the researcher will compare the finding of collected data with the existing obtained from literature review (Chapter 2), so the key findings have been reorganized in three thematic themes and the following themes are regarding the research questions:

1. Motivation to use 3D VR room tour on an OABP
2. The Process that VR improves the customer online booking experience and gain customer confidence in the OABP
3. The behavioural of newly 3D VR room tour vs normal 2D picture online booking experience.

4.2 Finding

4.2.1 Simple Profile of Participants' Experience Regarding OABP

The interviews consist of eleven participants, including seven customers who are regular visitors of OABP and four professionals who are hosts and hoteliers. In order to protect the participants' anonymity and privacy, the study will not reveal their personal information and will use the coded name as their appellation, A to J are customers and H to K are professionals. As the 3D VR room tour is not a common tool for OABP to display the room, so prior to the interview, the researcher provided them with 3D VR room tour video and 2D room pictures as reference. The following tables presents the OABP that participants usually used and their basic perception of room display tool to provide a fundamental understanding of the participants' experience.

Participants (Customers)	What OABP have participants used?	Have participants seen 3D VR room tour?	Preference of room display tool (2D or 3D)
A	Airbnb, Booking.com Agoda	Yes, from hotel official website.	3D
B	Booking.com	No, the sample video of the research is the first time to see.	3D
C	Airbnb, Booking.com	Yes, from hotel official website.	3D
D	Airbnb, Booking.com	No, the sample video of the research is the first time to see.	3D
E	Airbnb, Booking.com	No, the sample video of the research is the first time to see.	Both
F	Airbnb,	No, the sample	3D

	Booking.com	video of the research is the first time to see.	
G	Airbnb, Booking.com	No, the sample video of the research is the first time to see.	3D

Table 2: Simple Profile of Participants' (Customers) Experience Regarding OABP

Participants (Professionals)	Participants background	Have participants seen 3D VR room tour?	Is 3D VR room tour a potential room display tool for OABP to use?
H	Airbnb host	Yes, from hotel official website.	Yes, although I think both 2D and 3D are needed, adding 3D function is like a bonus.
I	Airbnb host	Yes, from agency selling the houses and apartments.	Yes, if it is free, I would love to use it because it can reduce the misunderstanding between the guests and the host.
J	Airbnb host	No, the sample video of the research is the first time to see.	Yes, it can reduce the misunderstanding which can't meet customer expectation.
K	Airbnb host/hotelier	No, the sample video of the research is the first time to see.	Yes, I think it's technically advanced, innovative and good quality.

Table 3: Simple Profile of Participants' (Professionals) Experience Regarding OABP

4.2.2 Perception of the Room Display tool on OABP

The purpose of this part is to present the observations made regarding the participants' perceptions about the room display tool on OABP based on their

experience. Besides, explores the impact of the accuracy of accommodation room view between pictures online and actual accommodation on their trust, confidence, visit intension and purchase decision.

4.2.2.1 Usual Booking Experience

Customers (guests) Perception:

According to the table 2, although the customers are frequent users of OABP, most of them have never seen 3D VR room tours before, which means OABP are still using 2D pictures as a room display tool. However, most customers (5/7) had a poor booking experience with 2D picture room display. The main problems were related to the pictures of interior room space and structure that are not close to the reality of the room interior, which disturbed customers badly during their trip, whereby resulted in the negative feedback from the customers.

It was a disaster for me because the pictures were like so beautiful when I saw them on the OABP but when I actually landed at the place, the rooms were very small, the ceilings were very low, the carpet was stained and the sofa was not kept properly. So, I have not had very positive feedback when it comes to viewing the 2D pictures. (Participant A)

I would say that maybe 50% of my experience wasn't so good. Normally I travel with my family or group of friends, so we need a quite big room for all of us. And from the picture, sometimes maybe the host they use a wide-angle to take the picture, so the room looks quite big. And when we arrive there, sometimes we can't even open our luggage in the room. (Participant C)

Only two customers (Participant D and E) revealed that they did not have much of a bad experience before they made the room reservation through 2D pictures. They could accept the slight differences between the pictures and actual accommodation, such as some unimportant corner, or light difference.

I find that there is no big difference between the images and the physical accommodation. Maybe there are a few differences in viewing some corners or spaces due to the different angles of the pictures taken. (Participant D)

Most accommodation is physically the same as the 2D picture. Only the small part is different, such as it is lighter and cleaner in the picture, but darker and dirtier in reality. (Participant E)

Professionals (host/hoteliers) Perception:

From the professionals' point of view, they replied that their guests have complained about the issue of room space, that the actual accommodation was not similar to the pictures online. It did increase the misunderstanding for the customers regarding the room space and impacted their experience when they made a reservation through a 2D picture as the room display tool.

In my experience, when I host Americans, they will come to you straight away, and tell you "hey, this room doesn't look the same how it shows on the pictures. (Participant I)

When the host shows the picture on the website, it may be looked bigger than the reality, which leads to the misunderstanding from the customer and doesn't meet the customers expectation. (Participant J)

4.2.2.2 The Impact of the Accuracy of the Accommodation Room View on Customer Trust and Confidence

Customers (guests) Perception:

After exploring the customers' experience, the study found that the accuracy of the accommodation room view will impact customers' expectation and feelings to the destination. Subsequently, if this situation does not improve, the problem will gradually influence the customers' trust and confidence in the OABP.

Yes, the accuracy of room view will impact my trust and confidence on this website. This is because if the room views image has a big difference from the real room, it is considered cheating. (Participant D)

I make a reservation because it is a reliable platform. If it doesn't meet my expectation, the platform will lose my trust and loyalty can decline. (Participant E)

Furthermore, some customers even revealed that if the OABP cannot keep their trust and confidence, they will probably shift to other platforms, and vice versa.

Thus, trust and confidence will be built up gradually if they have further good experiences.

Yes, as I said if you have a good experience, you won't bother to use other platforms, because you already used one and had a good experience, so you will stick to this platform. (Participant B)

Highly believe that the accuracy of the room will definitely impact my trust and confidence, especially in a certain platform. So, my experience could be good sometimes and it could be bad sometimes on Airbnb, so that was one of the reasons I was shifting from Airbnb to Booking.com. (Participant F)

Professionals (host/hoteliers) Perception:

From the professionals' point of view, they agreed that the accuracy of the room view would impact customers' trust and confidence, so this was an influential part that had to be the focus. Furthermore, one of the hosts revealed that current OABP also encouraged them to put up with lots of photos to display room views as detailed as they can.

I think the degree of the accuracy of the room view will impact customers' different level of trust and confidence. If we provide them with more information and pictures, the more trust customer will have, and then improve the confidence in the website. (Participant H)

I would because Airbnb encourages you to do that. The potential bookings like to see as many photos as they can. (Participant K)

4.2.2.3 The Impact of the Accuracy of the Accommodation Room View on Customer Visit Intention and Purchase Decision

Customers (guests) Perception:

During this part, all customers indicated that the accuracy of accommodation room view is a big part of the concern for them to consider when they were proceeding a room reservation because room display tool gives someone to serve as an image of how it will look like and how it will be done. Some of the customers would compare more lists and check the reviews in order to gather enough information about accommodation environment before making the decision. Therefore, an accurate accommodation room view may impact customers' visit intention as well as purchase decision in a positive way, as a

result, it may also increase the customers' revisit intention.

I really like those hotels are like those resorts and I have visited every time and again, the only reason is because of the accuracy of the room view that they have had on their particular websites, so it will increase my intention of the visit, and I will also share positive reviews. (Participant A)

The accuracy of the room is important. And then going there seeing that whatever is not up to the expectation, you'll feel, well, it really, really hurts you. So, it's the point and it will definitely make me rethink my purchase decision. The next time I'm going to be travelling to another place using the same platform. (Participant F)

Professionals (host/hoteliers) Perception:

From the professionals' point of view, they also accepted that the accuracy of room view is one of the key elements that impact customers' visit intention and purchase decision. One of the professionals said that it depends on how much time will the customer spend on the trip and how many days will they stay. If it is a long trip, customers will probably stay a couple of days, then definitely customers will choose the room that can satisfy them, so the room view should be close enough to the one they chose online in order to meet customers' expectation. Furthermore, someone sharply indicated that the accuracy of accommodation room views on the platform is the first point of sales, which means it should be accurate and slick to catch customers intention so that they can make a quick decision to book the accommodation.

The closer accuracy of room views online displays to the reality, the more opportunity of purchase decision will customer make. (Participant H)

I think if you are just looking for a room to stay in and you have an 8-hour layover it should be fine. However, if you would like to visit and travel around for a bit then I think you would want rooms to look and feel similar to the local culture. (Participant I)

I think it impacts it in a big way. It's your first point of sales, so it has to be very slick. (Participant K)

4.2.3 Virtual Reality

This part is to observe the perception of participants towards VR and its use in OABP. It also explores the effects of 3D VR room tour on the customers from

affection and cognition aspects then proceeds an in-depth observation of customers' reaction and motivation of users to this new innovative function.

4.2.3.1 Participants Perspective Towards VR

4.2.3.1.1 The Perception of participants' previous experience towards VR

Refer to table 2 and table 3, only four out of eleven participants have seen 3D VR room tour in their past including on the official website of the hotel, and the web page of real estate agency. Most of the participants' knowledge regarding 3D VR is about games and Google street viewing function. Although they did not have much knowledge of VR, both customers and hosts still had a positive attitude towards VR and its use on OABP as a room display tool.

Actually, I have never done 3D VR before, but I think it will be a great thing to the website because the 3D VR always can show you more detail. (Participant B)

I have used Google Maps. And I think even when I have been a person that was going to stay somewhere, I would use it because I wanted to see where they were, how is the feeling and turn it around. It's a very good idea. (Participant K)

Furthermore, two customers (Participant A and C) who have used 3D VR room tour on the official website of the hotel revealed that the function was quite helpful.

There's a chain of hotels, which is called the Omni hotels. They provide the 360-degree view of their rooms, so I have done those reservations. It was a very interactive video; it gives me a simulated environment. (Participant A)

I've booked the hotel through a hotel official website before; I have seen this function like 3D VR room tour. It was quite helpful. (Participant C)

4.2.3.1.2 The Perception of Participants Experiences 3D VR Room Tour Video in the Research

Customers (guests) Perception:

During the interview conversation, VR seemed a useful tool for viewing the room on the official website of the hotel or adopting in other fields. However, it was not common to be used on OABP, so the research provided a 3D VR room tour video for participants to experience. After checking the video, the customers seemed satisfied with the function, because it was an innovative tool that enabled them to see the clear interior and the space of the accommodation. Hence, it gave them a clear picture of what they will encounter, so the 3D VR room tour is not only attractive but also offer customers a sense of security.

I find that it is quite interesting as I could view it with 360 degrees. I could see through the whole room including every corner, bathroom, bedroom, mattress, etc. (Participant D)

With 3D VR room tour, I almost can see whatever I want, like from the roof to floor, and every room interior. It shows the real thing that makes me more comfortable to make the room reservation. (Participant G)

Professionals (host/hoteliers) Perception:

If the platform provided the 3D VR room tour, most hosts were quite positive with this function, because it enables their guests to browse the interior of the accommodation straightforwardly as well as reduces some misunderstanding, whereby can improve customers' confidence to their platform. However, somehow, they also concerned about the fee generated by this function, so if OABP provides it with free service, then the hosts will not have the problem to use it.

For my customer, they will easily to see what the room looks like, how big is the room, and every detail of the room. (Participant J)

I would love to try however as I am a host, I am required to invest some money on this equipment. And it highly depends on how much it costs. (Participant I)

Surprisingly, one of the hosts (Participant K) revealed that the 2D picture could sometimes show better and bigger than a 3D video. The host indicated that for Airbnb, it was more about human contact between the guest and the host, so it was more important to build a good review from receiving satisfied customers

service. Therefore, she would use a 3D VR room tour, if this is a standard function on the platform, but she believed that it would not help too much in her case.

The video that I saw that you sent me, it's kind of a bit tight. You're circling around. Whereas in a picture, you can stand in a corner and you make the room look big. I think photos of your place are not always your greatest asset. It's more your location, and the fact that you build good reviews from getting good customer service. (Participant K)

4.2.3.2 The Motivations for Using VR on OABP

4.2.3.2.1 The Affective Response Towards 3D VR Room Tour

Customers (guests) Perception

The subsection will analyse the customers' affective response to the 3D VR room tour. During the interview, all participants expressed their thought with joyfulness when they were talking about the 3D video, whereby the researcher could feel the positive emotional involvement and enjoyment delivered by the participants. From the conversation, apparently that the authentic experience of VR is the main reason that motivates their emotion such as they had 360-degree view when making a room reservation.

When I have had the 360-degree view during the booking in the hotels (Radisson hotel), I was carefree, you know, so I was very happy, I already knew that I have set everything in place. (Participant A)

I feel really enjoyable and exciting because I could control the view of the room, and I can see through the whole room and also, I feel that it provides me with the authenticity of the room. (Participant D)

Professionals (host/hoteliers) Perception:

All the professionals believed that 3D VR room tour would bring the authentic experience to their customers, and this function was visually appealing to which it would attract customers especially young generations for using this platform.

It will especially appeal to younger generations as they are very used to these electronics. (Participant I)

Well, it's fun because it's like being there in a sense. And it builds the excitement for your holiday. (Participant K)

4.2.3.2.2 The Cognitive Response Towards 3D VR Room Tour

Customers (guests) Perception

The subsection will analyse the customers' cognitive response to the 3D VR room tour. The participants indicated that this authentic view was helpful to reduce their anxiety with an unknown, whereby enhances their trust to the platform. Moreover, they could control the vision to see every space by a single move, which makes them more engaged with the platform. Therefore, through the conversation, it showed that the authentic experience of VR motivates customers' cognitive response to the platform such as usefulness, trust and engagement.

The authenticity, vividness and ability to view the whole room by myself have enhanced my cognition of the website. I could engage with the website; I could control the entire around to view the room instead of just viewing the pictures. (Participant D)

You have to be able to feel at peace that wherever you're going. It helps you feel safe, because you go into, like the unknown. So, I think it would definitely help enhance my trust towards a particular booking platform. (Participant F)

Professionals (host/hoteliers) Perception:

From the professionals' point of view, it does motivate users' cognitive response to the platform. Users will be engaged in the part of the process when making a room reservation, which can build up their trust in the platform. Besides, it also makes users feel that the website is professional and with quality.

People are engaged in part of the process when booking the room. Also, the 3D VR can accumulate their trust because the room view through 3D VR shows exactly the same as the destination. I think this is a quite useful function. (Participant J)

I think it'll give it quality on something that is technically advanced. You will think that this is a professional website. (Participant K)

4.2.4 Comparison of 2D Picture and 3D VR Room Tour

After discussing users' OABP booking experience as well as the room display tool of the 2D picture and 3D VR room tour, the research already had some perspectives of different aspects. Therefore, this part is to have a further analysis based on the interpretation given by participants and compare the preference of customers on these room display tools. Moreover, this part also discusses the comparison of effects of room display tools with regards to customers' trust, confidence, visit intention and purchase decision.

4.2.4.1 Participants Perception: The Difference between 2D Pictures and 3D VR Room Tour

This part is to explore participants' perspective towards the difference between 2D pictures and 3D VR room tour. The most different is the accuracy of the space shown in both views. For 2D picture, it may have to provide more pictures in order to display a complete room, but for 3D VR room tour, the users can stand at one point and browse the entire room space. Therefore, the participants revealed that the 3D VR room tour was more elaborate and was more transparent when it comes to selling a particular accommodation. Furthermore, the view of 2D pictures is flat compared to 3D VR so 3D VR can offer more considerable sensory influence for the users.

What has to be expressed in two or three pictures can basically be expressed in just one small video like that is and you have the freedom to move around to take a look around, and zoom in wherever you want to. And to see, like to look at to have a better view of the entire room to understand how big it is and to kind of connect with it. (Participant F)

For the 2D picture, people can avoid some angles they don't want to show in the picture. For 3D VR room tour, you can stand at one point, and browse the 360 views of the room, and you can see exactly what you want. (Participant G)

4.2.4.2 The Comparison of Preference and Efficiency between 2D Pictures and 3D VR Room Tour

Customers (guests) Perception

During the interview, six out of seven customers revealed that compared to the 2D pictures, they preferred to have a 3D VR room tour as a room display tool. Most of them indicated it could reduce their time in searching or looking into more pictures because the authentic views reduced their anxiety to consider more options and they did not have to browse more pictures in order to have an entire room view.

The 3D VR room tour will be much more efficient for me to book the room, because instead of 10 or 11 photos, you can just see the room view from a video includes every angles. (Participant B)

However, one customer recommended that there should be both 2D pictures and 3D VR room tour room as display tools so that she could switch the different modes to browse the accommodation. Maybe some customers are still used to the 2D pictures, but if adding the function of 3D VR room tour can reinforce customers confidence and also enables the customers to make a quick decision.

I think there should be both modes then I can switch two modes to view the room. My main room reservation experiences were with 2D picture, but if I can see more details by 3D VR room tour, I will book with this, because I can feel that I'm in the room, which makes me to make the quick decision. (Participant E)

Professionals (host/hoteliers) Perception

The professionals agreed that there should be both room display tools (2D pictures and 3D VR room tour). From their point of view, 2D pictures can be shown on the main page to attract customers to click in, and then there is a 3D VR room tour for having complete browsing of the room. On the other hand, the 2D pictures are more mature on various websites, so customers are used to this mode specifically the elder generation. Thus, the 3D VR room tour is a function like a bonus that can increase the efficiency of making the room reservation.

I prefer to have 3D, but I think 2D is needed as well. If there is a 3D VR room tour function, you don't have to show so many 2D pictures. The function of the 2D pictures is only for showing on the main page to

attract people and then when you click into the page, there is a 3D VR room tour that shows the entire space of the room. (Participant H)

Nevertheless, one professional indicated that 2D pictures are much simpler for customers to use so in her opinion, the 2D picture is more efficient than 3D VR room tour when customers are making the room reservation.

I think it would be 2D picture because it's there, small, and you can scroll. 3D requires you to do something, the most efficient one is 2D. It's the one that you're going to see first when you're browsing. (Participant K)

4.2.4.3 The Comparison of Effects between the 2D Pictures and 3D VR Room Tour Regarding Customers' Trust, Confidence, Visit Intention and Purchase Decision.

Customers (guests) Perception

For the overall customers, they believed that compare to the 2D pictures, 3D VR room tour will reinforce their trust and confidence, whereby increase their visit intention and purchase decision. As aforementioned, the 3D VR room tour is an interactive tool, so it motivates users from different aspects either affection or cognition, which means every element is connected and impacts on each other. Therefore, it is getting easier for customers to engage in a platform once their attention is caught. Consequently, if their trust and confidence are constructed by which also increases their intention to visit the accommodation and then make a quick purchase decision.

It is the 3D via room for sure which will reinforce my trust. For the same reason I said then to be anxiety free with the 3D VR room. It will definitely be the 3D VR room because it will give me a sense of comfort as well as wherever I feel comfortable, I definitely have the intentional visiting it again and again and this has been in the past as well. (Participant A)

But based on the sort of bad experience I've had with just 2D pictures, I am very willing to actually give 3D VR room tour a try and based on theoretically based on the benefits that I can see and the accuracy where rooms are being portrayed in 2D and 3D version, I am actually very confident that 3D VR room tour will definitely help increase my visit intention and definitely make my next purchase decision clearer than ever. (Participant F)

Professionals (host/hoteliers) Perception

From the professionals' point of view, they will be more positive if OABP provides both functions (2D pictures and 3D VR room tour) on the platform. They believed that the 2D pictures still empower on the website, but 3D VR room tour will reinforce customers' trust and confidence, which turns to be the main factor that pushes the customer to the final decision. For example, if customers compare the websites, one only shows pictures while another one shows both functions of the 2D pictures and the 3D VR room tour, they are probably going to like the 3D VR view, then end up making the room reservation that has a 3D VR view. Therefore, 3D VR room tour is still a beneficial tool for OABP to market the accommodations.

I suppose 3D will reinforce customers' trust. 2D is an introduction and 3D goes into further detail, so it's more in depth. 3D is going to bring the customer to the final decision. (Participant K)

4.2.5 The Recommendations for OABP in Using 3D VR Room Tour to Display the Rooms They Are Selling

Most customers and professionals believed that VR could be a tool to help or impact users in the different ways such as reducing the misunderstanding, reducing the anxiety, browsing the entire rooms, and improving their experience. For Participant A who has used 3D VR function to book the hotel room revealed that VR technology is an advancing frontier for all industries so OABP definitely can utilize this new-age technology to reap all the benefits of it. The contents of 3D VR are more engaging and more interactive, as a result, when it comes to business, it is going to increase the website traffic and have more conversion rates such as they are going to have more booking for some time. Besides, Participant F said it also improves customers experience and can benefit both website and customers. It makes customers feel that the company cares customers' care. Therefore, virtual tools or 360-degree images have a lot of importance when it comes within the marketplace.

However, in order to have a more compatible booking system, professionals recommended that the website should provide both functions (2D pictures and 3D VR room tour), which like aforementioned, 2D is an introduction and 3D VR is an in-depth viewing. Additionally, Participant A and D revealed that providing the information to explain the content in the 3D VR can strengthen the clarity of concept. For example, in the video provided, it shows the information “Bedroom has a king-size bed, ample storage and an en-suite bathroom” when the user is browsing this room.

The participants include customers and professionals exposed a lot of views on OABP and its room display functions such as how to build, what effects it brings, and their expectation. According to all the messages from the interviews, the majority of participants are quite optimistic about the 3D VR room tour and are getting ready to try this function.

4.3 Discussion

4.3.1 Motivation to Use 3D VR Room Tour on OABP

The first section is to discuss the reason that makes customers attempt to use 3D VR room tour on OABP. The present study sheds light on the motivation of using 3D VR room tour on OABP, and it found that customers tend to be concerned about unknown accommodations before the trip. From the analysis of customers' usual OABP booking experience (Section 4.4.2.1), the main issue derived from poor experience was that the interior room space and structure was not close to the pictures on the website when they arrived at the accommodation. Therefore, to have a sound accuracy of the accommodation room view is the main reason for customers to choose the 3D VR room tour as a room display tool. Consequently, the authentic experience provided by VR becomes the motivation of customers to utilize this function. In the following subsections will further explain the issues that motivate the customers to utilize 3D VR room tour on OABP.

4.3.1.1 The Issue of Inaccurate Accommodation Room View

According to Lee *et al.* (2013), much of hotel web activity shifted to OABP because it offered the convenience of the functional and efficient interface. Although many studies focused on the relevance of website design regarding effectiveness and usefulness such as filters, apartment deals, easy-to-use interface and so on (Balouchi *et al.*, 2017; Foris *et al.*, 2019; Kim and Stoel, 2004; Wu *et al.*, 2014), the discussion of the room display function was absent. However, the outcome of this study shows the room display issue has not been discussed in the previous studies. According to the analysis (Section 4.2.2), the majority of participants commended that they encountered the issue regarding the accuracy of accommodation room view when they arrived at the destination. For example, customers complained the room space is further smaller than the views online, or there was a door between two rooms, which was not shown in the picture. These cumulative issues impacted their trust, confidence, visit intension and purchase decision to the website.

4.3.1.2 The Anxiety Derived from the Unknown Accommodation

Although the website provides plenty of information that is normally practical for easing the fear of the unknown, some people who have anxiety cannot satisfy with merely providing the texture information, so they want to be more familiar with the location (Lee and Oh, 2007). During the interview, Participant K revealed that Airbnb also encourages the host to provide as many photos as they can in order to garner the potential bookings. According to Zhang *et al.* (2018), emotion is a leading factor which influences human behaviour. Therefore, the study found that, in addition to the unknown accommodation issue, previous poor booking experience of accuracy room view is also the reason that leads to their rising anxiety when they were searching for accommodation.

4.3.1.3 Authentic Experience of VR

Guttentag (2010) also indicated that tourists' authenticity awareness of VR tourism is one element in their agreement of VR tourism as a substitute for actual experience. The function of VR is to deliver a realistic experience to reduce the risk of purchasing online (Wodehouse and Abba 2016). By using 3D VR room tour, users of OABP can move a mouse to see 360-degree views of various parts of the accommodation. Therefore, VR tour makes the unknown become known so that it reduces the anxiety of people (Lee and Oh, 2007).

Refer to analysis (Section 4.2.3.1.2), the majority of participants agreed that 3D VR room tour not only enabled them to browse the entire accommodation but also made them more comfortable to book the room. Consequently, authentic experience of VR becomes a motivation of customers to utilize this function.

4.3.2 The Process That VR Improves the Customer Online Booking Experience and Gain the Customer Confidence in the OABP

4.3.2.1 The Affective Response and Cognitive Response towards VR

According to Kim et al. (2020), the authentic experience has a positive effect on both affective response and cognitive response to the VR tourism experience. Refer to the analysis (Section 4.2.3.2) the participants believed that VR could stimulate their affection and cognition. For example, Participant D revealed that the authenticity, vividness and ability to control the room view had enhanced his cognitive response to the website. It made him feel that the website was useful, trustworthy and engaged with it. Furthermore, he felt enjoyable and excited when he could control the view to see every angle of the room, which means he derived emotional involvement and enjoyment from VR. Zhang et al. (2018) indicated that the experience of the online platform impacts the experience of destination emotion significantly. Additionally, the experience of the online platform is the result of value cocreation encounters between tourists and online platforms (Zhang et al, 2018). Therefore, in this

study, the elements of affection and cognition stimulated by VR authentic experience create the cocreation value towards the destination.

4.3.2.2 Customer Trust and Confidence in the OABP

The trust built between the customers and the service firms can strengthen customer loyalty for a corporation (Leninkumar, 2017). Therefore, in the web of the hospitality industry, word-of-mouth, rating and comment system, and the previous staying experience are the most reliable and trustworthy way as they are the direct experience obtained from past customers (Hyun et al., 2009). It shows that people seek feedback that can describe the destination vividly. Moreover, people need enough information to reinforce their sense of safety and trust before the trip. However, as aforementioned, some people with anxiety could not satisfy with mere text description on the website.

Refer to the analysis (Section 4.2.4.3) customers indicated that 3D VR room tour definitely could reinforce their trust and confidence to the website. It made them feel anxiety-free and gave them a sense of comfort to make the booking decision. Interestingly, professionals recommended that if providing both room display tools, which were a 2D picture and 3D VR room tour could enlarge the power to retain the customers' trust and confidence to the website. According to Deale and Crawford (2018), a research of online travel businesses and value cocreation revealed that the customer is a co-creator of value. As previously mentioned, the affective response and cognitive response of the customers create the cocreate value to the destination. Therefore, the perceived value of the customer has a vital influence on deriving loyalty towards the organization (Polo Peña et al., 2014).

4.3.2.3 S-O-R Decision Making Process

According to Wohlwill (1976), enjoyment and inspiration stimulated by the website atmospherics, are confidently connected with customer satisfaction,

purchase intention, and approach behaviour. Furthermore, Jani and Han (2015) indicated that the S-O-R model is greatly effective in interpreting that stimuli affect response through the process. Therefore, from the above two subsections, they approved that VR authentic experience (stimulus) affects customers' visit intention and purchase decision (responses) through customers' affection and cognition (organism). At the meanwhile, the collaborative and interactive value cocreation happens in the process of SOR derived from 3D VR room tour.

4.3.3 The Behavioural of Newly 3D VR Room Tour vs Normal 2D Picture Online Booking Experience

Due to the small sample size, only four out of eleven participants including customers and professionals have seen the 3D VR room tour from the official website of the hotel whereas none of them has seen this function on OABP because the OABP nowadays are still adopting 2D picture as a room display tool. However, five out of seven customers have had a poor experience with 2D picture booking experience due to the accuracy issue of the accommodation. Only Participant D and E had no issues with it because they revealed that the slight difference between the picture and the actual accommodation was still acceptable. Although Lee et al. (2013) mentioned hotel web activity shifted to OABP due to its convenience and Floris et al. (2019) recommended various figures to form functionality and efficiency of the booking website. However, the result of the study found that the majority of participants were still disturbed by the issue of room display views presented in text and photo booking experience.

Participant A and C who has made room reservation on the official website of the hotel via 3D VR room tour did indicate this function was efficient and helpful. It was very close to reality as possible. For the rest of customers who were the first time to experience the 3D VR room tour during this research also indicated VR brings the authentic experience that reinforces their trust and confidence to the website and increases their intention of visit and purchase decision. Kim et

al. (2020) brought up that authentic experience is a crucial role in anticipating slow tourists' behavioural intention and positive online reviews. VR creates a new feeling for people to experience that what is happening virtually is happening in real (Slater, 2009). Furthermore, 3D VR room tours provide anxious customers with some relief by familiarizing them with the unknown (Lee and Oh, 2007). Therefore, the majority of customers in this research prefer 3D VR room tour more than a 2D picture.

Interestingly, from the professionals' point of view, they recommend that the OABP should adopt both functions 2D picture and 3D VR room tour together on it because the 2D picture is a more mature display function to the website and it can be view as an introduction on the main page whereas 3D VR room tour as an in-depth viewing.

4.4 Chapter Conclusion

This chapter provided a thematic presentation of the findings of the study. It covered the perception of room display on OABP, the perception and motivation of VR, the comparison of room display tools, and participants' recommendations for OABP in using 3D VR room tours. Every thematic theme included both customers' and professionals' opinion in order to gather a comprehensive analysis of the research.

Next, this chapter also provided a discussion of the findings, inspecting them with regards to the existing literature. Many pieces of the literature analysed the web design of the booking platform, but a lack of literature focused on the room display function especially 3D VR room tour. According to Guttentag (2010), emerging VR has been applied in six main tourism-related areas which are heritage preservation, accessibility, education, entertainment, planning and management, and marketing. The result of the study appears that the majority of participants would like to use this function due to its innovated system and authentic view. Therefore, it is also a potential tool for utilizing in the

hospitality industry and on OABP to display the rooms they are selling. Airbnb (2017) revealed that they are also continuing to test the VR function and hope VR room tour can bring the new experience to the customers when viewing and making a room reservation through their platform.

Another finding is that although much tourism-related literature promoted the advantages and effects of VR, the professionals in this study exposed that the room display tool of the 2D picture is still needed because it is more mature for customers to use, can be an introduction to attract customers, and easier for elder generation to use. The next chapter will have a complete conclusion which sums up the context of this research.

5 Concluding Thoughts on the Contribution of this Research, its Limitations and Suggestions for Further Research

5.1 Chapter Introduction

The study has analysed the motivation of customers to use VR and examined the vital factors of VR that affect customers' intention to visit the accommodation shown in 3D VR room tour. VR offers customers a chance to experience the entire room space in advance, which is an effective marketing-tool for OABP to implement. More importantly, 3D VR room tour provides potential customers with the chance to visit the accommodation displayed in VR. Therefore, the research developed a conceptual framework for the relationships among VR authentic experience (stimulus) affects customers' visit intention and purchase decision (responses) through customers' affection and cognition (organism). The result revealed that highly important influence of customers' authentic experience on their cognitive and affective responses to 3D VR room tour, indicating that authentic experience is one of the key elements in the profit-oriented of VR. The research provided hospitality industries with an academic basis of VR room tour, but there are still some limitations and recommendations for future research to discuss and investigate.

5.2 Recommendations for Future Research

To obtain a better insight of the topic, several improvements could be considered and evaluated for future research. The recommendation for the future research towards each research objective are as follows:

RO1: To determine what motivates customers to use 3D VR room tour as a room viewing tool on OABP

- As aforementioned, the OABP is a popular third-party booking website, more and more hosts and hoteliers have been selling their accommodation through it. The customers intent to collect as much information as they can to examine the authenticity of the

accommodation before making a room reservation. However, only some official website of the hotels have used VR to display the rooms whereas it has not adopted in OABP. Furthermore, several studies have analysed the effects of VR on tourism-related activities, but a lack of studies mentioned it in the hospitality industry such as hotel booking system and OABP booking system.

The research found two reasons that motivate people to use 3D VR room tour as a room viewing tool on OABP, which are the issue of inaccurate accommodation room view and the anxiety derived from the unknown accommodation. Therefore, the authentic experience of VR becomes the motivation of people to use it as the room display function.

However, along with the advance in technology, the motivation of people to use 3D VR room tour on OABP could be diverse and changing, as a result, current research is incapable of fully observing and interpreting. Furthermore, the negligence of the research could miss some of the issues or factors that potentially motivate customers to use 3D VR room tour on OABP.

RO2: To identify how can VR improve the customer online booking experience and gain the customer confidence in the OABP.

- The current research identified that the affective response (enjoyment, emotion involvement) and cognitive response (usefulness, trust, and engagement) stimulated by VR authentic experience create the cocreation value towards the destination (accommodation). The entire value cocreation process improves customer experience then motivates customers' visit intention and purchase decision. The consistent variables form the extended S-O-R conceptual framework of the decision-making process (Figure 3).

According to Zhang et al. (2018), the online platform experience can classify into five dimensions which are aesthetics, usefulness, ease of use, trust and interactivity. The current study found that authenticity is also a vital element for the OABP to be concern with. However, following the advance of websites and technology, various vision display tool is being developed, for now, such as Augmented reality (AR) and mixed reality (MR). They would deliver a different level of authenticity to the users, so the variables stimulated by them would probably change. Additionally, future research can also investigate these relationships in a more comprehensive decision-making model.

RO3: To compare the efficiency between VR and the normal online booking experience of the customer.

- In the current study, a majority of participants preferred 3D VR room tour more than normal 2D picture booking experience on OABP. However, all professionals and one customer indicated that booking platforms should keep both functions of a 2D picture and 3D VR room tour in order to maximize the utility whereby also giving customers the options to switch the vision.

Many studies focus on the functionality and efficiency of VR and booking platform separately, but quite less studies focus on using VR on booking platform. Along with the growth of OABP, the display function is getting more importance for professionals to observe in the future, especially the customer behaviour impacts on OABP.

5.3 Limitations

The weakness of the study is with regards to the sample size and time limitation. As previously mentioned, limited amount of literature available to discuss the VR

using on OABP and not many participants have used 3D VR room tour to view the accommodation. Hence, the current study could not observe the differences and similarities between customers who visited the accommodation shown in 3D VR room tour and those who did not visit the accommodation shown in it. Moreover, although two out of seven participants (customers) who have visited the accommodation shown in VR revealed that the 3D VR room tour was a helpful function and the rest of five participants (customers) were based on their imagination by viewing the VR video, the sample size is not enough to support this result. However, this is still a potential finding for the future research to explore and extend the insight.

The current study was a qualitative approach which collected an in-depth experience of customers, but the sample size was small, so for future research a quantitative approach could be adopted to collect larger samples in order to investigate a larger number of customers' willingness in using VR on OABP.

5.4 Final Conclusion and Reflections

The current study intends to explore the factors that motivate customers to use 3D VR room tour on OABP and the entire process of decision-making via VR as a room display tool on OABP in order to improve the overall customer experience. This research adopted the extended stimulus-organism-response (S-O-R) model of VR on tourism customer behaviour (Kim et al., 2020) and the model of experiencing value cocreation on destination online platforms (Zhang et al., 2018) to evaluate the VR system implements on OABP.

First of all, Zhang et al. (2018)'s modelling analysis shows that online experience crucially affects the destination emotional experience which are aesthetics, usefulness, ease of use, trust and interactivity. However, aforementioned, authenticity is one of the vital elements for OABP to concern. Authenticity is viewed as a new customer sensibility that includes perceptions of the level to which novel, real, original, extraordinary, and unique experiences, products, or

services are real (Kim et al., 2020). Mehraliyev et al. (2020) indicate that almost 80% of customers will read accommodation reviews before the trip takes place, and 53% will not move on to book an accommodation in the absence of online reviews, which means people need the security to reinforce their sense of safety and trust prior to the trip. Lee and Oh (2007) reveal that people travelling to an unknown place seem to have more or less degree of anxiety. Besides, the current research also found that the accuracy of the room view is a concern for customers because they will feel cheated if the actual room view does not meet their expectations. According to Hyun et al. (2009), word-of-mouth, rating and comment system, and the previous staying experience are the most reliable information as they are the direct experience obtained from past customers because the customers seek for the feedback that can describe the destination vividly. Therefore, OABP needs to observe what motivate customers to use VR as a room display tool on OABP first.

VR is a potential tool adopted in various fields to display gripping visions. It creates a new feeling for people to experience that what is happening virtually is happening in real (Slater, 2009). Lee and Oh (2007) said VR makes the unknown become known. The research started the SOR model to examine the customers' decision-making behaviour by exploring the affection and cognition of customer stimulated by VR on OABP. Refer to Kim et al. (2020), the authentic experience has a positive effect on both affective and cognitive response to VR tourism experience. The result of the study showed that the affective and cognitive response stimulated by VR strengthened the OABP users' trust and confidence to the website then improve their visit intention and purchase decision. To evaluate the capacity of a room display tool, it is necessary to discover its influential elements on improving customers booking experience.

At last but not least, the research inquired about the view of the participants to understand their perception of the 2D picture and 3D VR room tour. Although 3D VR room tour is successful to grab customers' attention, surprisingly, the professionals reveal that the 2D picture function still reserves the power of the

website. Therefore, they recommend that the 2D picture function is used as an introduction for customers to quickly scroll. Whereas the 3D VR room tour is an in-depth viewing function for customers to inspect the entire room space which is also the key point that pushes customers to the last decision. To introduce a new room display function on an OABP, it is essential to explore the efficiency between the traditional and the new one.

However, due to the small sample size and a lack of literature regarding using VR on OABP, the current research cannot collect more data from the users who did not book the accommodation shown in VR and the and the users who book the accommodation shown in VR. Therefore, it is difficult to compare the similarities and differences between them.

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Appendices

Appendix A – Plain Language Statement



GRIFFITH COLLEGE DUBLIN

Plain Language Statement for Research Participants

Introduction to the Research Study

The working title for this piece of research is “To Study the Impact of Virtual Reality (VR) on Online Accommodation Booking Platforms (OABP) to Improve the Overall Customer Experience.”

Principal investigator: Chia An Yu, an MSc student of international business management in Griffith college. E-mail: chiaan.yu@student.griffith.ie

Details of Involvement in the Study

The participants will be required to be available for an audio/video call interview which will be kept anonymous from the researcher. The estimated time to complete the interview will be 30-45 minutes and should last no longer than 1 hour to complete the 15 questions. If there are technical or other related problems in holding the meeting, a contingency plan of using questionnaires with open-ended questions will be sent by e-mail in order to collect the participants' answers. It is possible that the researcher may request a follow up interview. Participants retain the right to decline the researcher's request to record the interview. The interview will be conducted in the 2020/2021 academic year.

Potential Risks to Participants

There is no any risk involved in this research interview. If the participant feels any distress, he/she could withdraw at any time.

Benefits (Direct or Indirect) to Participants

This result may improve the online booking platform system in the future and benefit the participants indirectly.

Procedures to Protect Confidentiality of data

All the data is collected is for research purpose only and confidentiality of information provided is subject to legal limitations. The research should be anonymous. The collected data and related analysis information will be stored in the safe place (personal laptop of the researcher).

Data Destruction

Any data related information of participants will be destroyed after the approval and successful completion of the dissertation.

Voluntary Participation

If the research makes participants feel anyway uncomfortable or unwilling to continue, the participants can withdraw from this research at any time, if they wish to.

Additional Information

If participants are in a dependent relationship with the researcher, it won't affect the process of assessment/grades/management due to their involvement or non-involvement in this project.

Approximately 11 people are chosen to attend this interview. The participants will be the hosts/hoteliers (professionals) and the guests (customers) of OABP.

If participants have concerns about this study and wish to contact an independent person.

Please contact:

Dr Garrett Ryan,

Griffith College Research Ethics Committee

South Circular Road, Dublin 8, Ireland

Mail: garrett.ryan@griffith.ie

Tel: +353 1 4163324

Appendix B – Informed Consent Form



GRIFFITH COLLEGE DUBLIN

Research Participants Informed Consent Form

Research Study Title

The working title for this piece of research is “To Study the Impact of Virtual Reality (VR) on Online Accommodation Booking Platforms (OABP) to Improve the Overall Customer Experience.”

Principal investigator: Chia An Yu. an MSc student of international business management in Griffith college. E-mail: chiaan.yu@student.griffith.it

Purpose of the Research

The current research aims to determine whether the customer experience can be improved directly by using VR to have a room tour on an OABP and if it affects their purchase decision and their purchase decision indirectly.

Confirmation of Requirements as Highlighted in The Plain Language Statement

As stated in the Plain Language Statement, a follow up interview will be requested if needed based on feasibility and time. Participants in this research will be requested to conduct the interview via video call or voice call, which the researcher will request to record (audio and video only).

Participant – Please complete the following (Circle Yes or No for each question)

I have read the Plain Language Statement (or had it read to me) Yes/No

I understand the information provided Yes/No

I have had an opportunity to ask questions and discuss this study Yes/No

I have received satisfactory answers to all my questions Yes/No

I am aware that my interview will be recorded Yes/No

I am aware that a transcription of my interview will be made Yes/No

I may aware that I can withdraw from the Research Study at any point Yes/No

I am aware that my real name will not be disclosed in the study Yes/No

Participant has the right to withdraw from the research study at any point. There will be no penalty for withdrawing before all stages of the research study have been completed.

Procedures to Protect Confidentiality of data

All the data is collected for research purpose only and confidentiality of information provided is subject to legal limitations. The research should be anonymous. The collected data and related analysis information will be stored in the safe place (personal laptop of the researcher).

Signature

I have read and understood the information in this form. My questions and concerns have been answered by the researcher, and I have a copy of this consent form. Therefore, I consent to take part in this research project

Participants Signature: _____

Name in Block Capitals: _____

Witness: _____

Date: _____

Interview Guidance

Acknowledgement

I would like to thank the participants who make themselves available to attend this interview. Your valuable pinion will be included in the research as a reference. This result may improve the OABP and also benefit the participants indirectly. Thanks again for helping the researcher to undertake this study.

Instruction:

The following are the main areas/questions you will be asked in the interview. The answers are based on your own opinion/view/experience.

The E-mail is attached with two different modes of room viewing, one is a 2D picture from a normal website and the other one is a 3D VR room tour. After checking these views, we will start our interview conversation.

The Questions Related Areas:

Part 1: Online Accommodation Booking Platform

Part 2: 3D Virtual reality (VR)

Part 3: 2D picture vs. 3D VR room tour

Appendix D – OABP Users Interview Questions

Online Accommodation Booking Platform:

1. What OABP are you using at the moment? (i.e.: Airbnb, Booking.com, Agoda, Hotels.com and so on)
2. Which mode (2D picture or 3D VR room tour) do you use for viewing an accommodation room (i.e.: hotel room, apartment, hostel and so on) on OABP? How much do you trust the interior views of rooms when you use this mode to browse the room?
3. Can you elaborate on your experience of viewing the accommodation physically when you arrive at the destination compared to the images you have seen while booking on the OABP?
4. Do you think that the accuracy of the room views on OABP impact upon your trust and confidence in the website? Please explain why?

(accuracy means if the website room views image is the same as the real room at the destination)
5. Do you think that the accuracy of the room view on an OABP will impact your intention to visit and on your purchase decision? Please explain why?

3D Virtual reality (VR)

1. How much knowledge do you have regarding 3D VR and its use in accommodation reservations? (i.e.: the function of "browse street view image" on google map)
2. Have you experienced 3D VR for viewing an accommodation room (i.e.: hotel room, apartment, hostel and so on) before?

IF YES, please describe your feelings about it.
IF NO, please describe based on today's video seen in this interview.
3. Based on the 3D VR room video tour, do you think that VR will stimulate your affection (i.e.: emotional involvement and enjoyment) of the website? (i.e.: it enhances your feeling and affection of the room view)

IF YES, what elements of the 3D VR and how does it stimulate your affection of the website? (i.e.: authentic experience)
IF NO, please explain why it does not?
4. Based on the 3D VR room tour video, do you think that VR will enhance your cognition of the website (i.e.: usefulness, trust, and engagement)?

IF YES, what elements of the 3D VR and how does it enhance your cognition of the website? (i.e.: authentic experience)
IF NO, please explain why it does not?

5. What is your opinion/view of an OABP that uses 3D VR room tours to display the rooms they are selling?

2D picture vs. 3D VR room tour

1. Compare the room views provided in the beginning, and identify the differences you see between them?
2. Which one of the views would you prefer to see on the website when you are making a hotel room reservation?
3. Compare the 2D picture and the 3D VR room tour, which one do you think is more efficient for you to use when booking a room? Please explain why?
4. Compare the 2D picture and the 3D VR room tour, which one will reinforce your trust in the website? Please explain why?
5. Compare the 2D picture and the 3D VR room tour, which one will increase your visit intention to the destination and your purchase decision?

Conclusion

For the overall aspects, do you think OABP can improve customers' booking experience if it uses 3D VR room tour to show the accommodation room views?

To improve the customer booking experience on OABP, what else would you recommend with regards to the room display?

**Thank you for sparing the precious time and attending this interview!
Be safe and sound!**

Appendix E – Professionals (tourism/hotel industry) Interview Questions

Online accommodation booking platform:

1. Which room viewing mode do OABPs use most so far? (i.e.: 2D picture or 3D VR room tour)
2. Based on your experience, how much can customers trust the interior views of rooms when they use these two different modes to browse the room? Which view is more accurate?
3. If the room view is not as good as customers' expectations, in your view how has the customer reacted in such a situation?
4. How does the accuracy of room views on OABP impact customers' trust and confidence in the website?
5. How does the accuracy of the room views on OABP impact customers' visit intention and purchase decision?

3D Virtual reality (VR)

1. How much knowledge do you have regarding 3D VR and its use in accommodation reservations? (i.e.: the function of "browse street view image" on google map)
2. Have you used 3D VR to display room tour before?
IF YES, what do you think about the function? Will it improve the selling of your rooms?
IF NO, would you like to use this function to display your room? Please explain why.
3. Based on the 3D VR room video tour, do you think that VR will stimulate customers' affection (i.e.: emotional involvement and enjoyment) of the website? (i.e.: it enhances their feeling and affection of the room view)
IF YES, what elements of 3D VR and how does it stimulate customers' affection of the website? (i.e.: authentic experience)
IF NO, please explain why?
4. Based on the 3D VR room tour video, do you think that VR will enhance customers' cognition of the website (i.e.: usefulness, trust, and engagement)?
IF YES, what elements of 3D VR and how does it enhance customers' cognition of the website? (i.e.: authentic experience)
IF NO, please explain why?
5. What is your opinion/view of an OABP that uses 3D VR room tours to display the rooms you are selling?

2D picture vs. 3D VR room tour

1. Compare the room views provided in the beginning, what are the differences between them?
2. Which one of the views in your opinion would customers prefer to see on the website when they are making a room reservation?
3. Compare 2D picture and 3D VR room tour, which one is more efficient for customers to use when booking the room? Please explain why?
4. Compare 2D picture and 3D VR room tour, which one will reinforce customers' trust in the website? Please explain why?
5. Compare the 2D picture and the 3D VR room tour, which one will increase customers' visit intention to the destination and customers' purchase decision?

Conclusion

For the overall aspects, do you think OABP can improve customers' booking experience if it uses 3D VR room tour to show the accommodation room views?

To improve the customer booking experience on OABP, what else would you recommend with regards to the room display?

Thank you for sparing the precious time and attending this interview!

Be safe and sound!