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# Factors affecting customer satisfaction when utilizing a virtual tour 360- degrees at hotels in Can Tho City

Bachelor of Hospitality Management Thesis

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Wishing you are healthy and have success in your work.

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Authors of the thesis

# EXCUTIVE SUMMARY

This study aims to evaluate the factors affecting customer satisfaction when using a 360-degree virtual reality tour at hotels in Can Tho City. Moreover, the team will also analyze how those factors affect customer satisfaction and suggest solutions to improve the virtual 360-degree tour to enhance customer satisfaction. The proposed theoretical framework has been tested by 250 samples of data obtained in an online survey. Respondents are customers who have used virtual tours 360- degrees when booking in Can Tho and have experienced the services at the hotel. The data were analyzed by using SPSS 25 and AMOS 24 software. Research results show that Social influence (SI) has a positive impact on Service environment (SE) and Perceived usefulness (PU). In addition to that Social influence (SI), Service environment (SE), and Perceived usefulness (PU) all have a positive impact on the satisfaction of customers when customers use virtual tours 360- degrees in the booking and staying in the hotels. The thesis team gives suggestions for hotels in Can Tho that have employed virtual tours 360-degree based on the study findings such as concentrate on improving the primary aspects, attract and keep clients, concentrate on segmenting customers and use media and social networks. In addition to advice for practice, the group offers proposals for future research, such as scaling up the survey; cultivating and improving research theories and data analysis methodologies; based on the current topic select the time and research topic appropriate to the times.

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# CHAPTER 1

# INTRODUCTION

*In Chapter 1, the group will provide an overview of information technology in Industry 4.0 and an introduction to the hotel sector. This section will highlight the content, such as topic background, research problems, practical problems, theoretical problems, literature gaps, research objectives, research question, research scope, methodology, and data overview. Therefore, this study will study the topic of "Factors affecting customer satisfaction when utilizing a 360-degree virtual tour at hotels in Can Tho City."*

## 1.1 Topic background

Information technology is gradually becoming one of the most influential industries and is also considered to be the most rapidly developing industry for today's society, life, and business. This is an important core economic sector that contributes significantly to the GDP of the country. For example, in 2019, the information technology sector contributed 14.3% to GDP, with revenue reaching over 120 billion USD, and has become the largest secondary economic sector in Vietnam (Nguyen, 2020). Digital transformation is paving the way for industries including the digital economy, digital society, and e-government so Vietnam has excellent potential to make strides and catch up to growing nations. As a result, businesses increasingly seek to employ technology to apply it to their businesses to develop further and update the trend around the world as industries also embrace the trend of digital transformation. Furthermore, incorporating digital technology into Vietnamese firms will foster creativity and be crucial to achieving the potential and opportunities of digital transformation in the areas of social life. As far as advancements are concerned, technological advances in all forms of development will have a direct long-term impact on the tourism industry (Guttentag, 2010).

In the hotel industry, digital technologies are used in their development strategies. When the COVID-19 pandemic has changed the world and all industries, such as retail tourism and so on, it is impossible to function. People cannot travel during this time because they are prohibited from going out and not being in close contact with people; therefore, hotels and restaurants are unable to serve guests. The technology industry has since exceeded expectations, especially in its ability to overcome and re-operate in areas like shopping,

education, business meetings, exhibitions, events, and tourism, where restaurants and hotels are all used on networks.

Virtual reality is a sort of digital technology that is quite advanced and well-liked when used in the hotel and restaurant industries nowadays. It can simulate 360-degree images and videos, and when people use it, it will feel like real life because it replicates space, circumstances, and surroundings in real life (Vr360, 2019). It is a very popular technology for the hotel business to construct a big space (Space3D, 2022), is simple to use, and does not require any additional instruments to participate. It makes a strong first impression, connects with clients wherever they are, and attracts a large number of local and distant customers. Additionally, it will aid in cost optimization, reduce consulting time, and improve customer personalization. Also, it is possible to grow consumer and brand trust, boost translation value, gain an advantage over rivals, and raise the digital conversion rate (Tour 360, 2019). Besides, virtual tours meet the customers desire for experience and give them a feeling of contentment (Vrplus, 2022). Furthermore, the 360-degree tour will provide visitors with a thorough look at the hotel space, amenities, location, and so on, from a distance to up close. Customers can actively interact in all aspects and freely explore hotel services at any time and from any location without being constrained by geography with a 360-degree virtual tour. Moreover, 360-degree videos and 360-degree images can make customers feel the full degree of authenticity and thereby build up their personal expectations before having an experience.

## 1.2 Practical problems

According to Can Tho City People's Committee (2022), which has implemented a plan to develop digital technology in Can Tho in 2020, the government has relied on Directive No. 1/CT-TTg to promote the development of digital technology in digital technology enterprises. It clearly defines objectives, tasks, and solutions that must be put into practice to fit Can Tho City's circumstances. Under the direction of the government as well as to keep up with the trend of the technology era, the hotel industry in Can Tho now has a number of hotels using 360-degree virtual tours in their services to develop digitally in the city. Some hotels in Can Tho have 360-degree virtual tours, such as the Sheraton Can Tho, Victoria Hotel, Holiday One Hotel, and Azerai Can Tho Resort (Can Tho tourism portal, 2023). When bringing a 360-degree virtual tour into the hotel, the customer experience will be enhanced when customers are exposed to virtual technology. It will affect their perception, behavior, and senses, thereby creating memories and feelings for them about the hotel's service during

the entire booking process (Lemon and Verhoef, 2016). Besides, customers really like the experience that a 360-degree virtual tour brings, which they will continue to use for a long time and recommend to others. In addition, maximizing customer experience helps hotels get a data source based on their reviews and experiences, from which they can improve and fix errors effectively and quickly to provide a great experience for customers (Hoang, 2022). In addition, bringing a personalized experience to their entire process drives loyalty, satisfaction, and revenue, with 73% of customers agreeing with this (Nguyen, 2022). According to a survey by Cavallaro et al. (2021), up to 66% of customers think that experience affects their opinion. According to Wolhuter (2021), up to 88% of customers will pay for a service if they have a great experience.

For years, 360-degree virtual tours were not a strange technology, but people usually did not focus much on them until COVID-19 appeared. Due to the past highly developed tourism habit, but also to the COVID-19 pandemic's ongoing spread and the advice to restrict interaction, movement, and going outside in order to keep safe. Additionally, when clients interact with the 360-degree virtual tour, they will feel excited to participate, at ease, relieved of the pressure of COVID-19, and less stressed because they have not been exposed to the outside environment for a while (Yang, 2021). In addition, the 360-degree virtual tour after COVID-19 has changed customers' habits about how they can evaluate and test in a virtual environment before using it. The tendency of customers to choose to book a tour is 62% for direct tours and 44% for online platforms (Ministry of Culture, Sport, and Tourism, 2020). As a result, it is clear that people are becoming more accustomed to utilizing technology, and using 360-degree virtual tours is becoming more common because it allows users to check and assess potential uses before committing to them in real life. By increasing the level of trust and quickly making hotel choices at home, customers also tend to stick with brands that create high satisfaction and emotions (Wolhuter, 2021).

Additionally, competition is a necessary component for hotels; it is particularly fierce because this is the sector that has garnered the most attention recently, along with the advancement of digital technology (Bota, 2019). Therefore, any hotel business needs to design novel and fresh customer-attracting orientations and tactics in order to boost its competitive edge and keep up with current technological developments as well as development chances. Therefore, using a 360-degree virtual tour inside the hotel has a lot of advantages; it is also a cutting-edge marketing tool, and using this tactic will help the hotel stand out from the competition's lack of use (Vrplus, 2022). As consumers become more

discerning, they will choose accommodations that are cutting-edge, considerate, updated frequently with fresh information, and offer a variety of unique and engaging experiences, which will boost reservations and income (Tuoi Tre, 2022). Besides, a 360-degree virtual tour boosts the hotel's value, service quality, and capacity while also enhancing its competitiveness (Tran, 2019). The hotel will therefore have a competitive advantage over rivals in the same market or region, thanks to the 360-degree virtual tour.

## 1.3 Theoretical problems

The number of research on 360-degree virtual tours affecting customer satisfaction in the hospitality industry is still limited. Most studies show an impact on the intention to use 360-degree virtual tours or virtual reality. For example, the research paper by Lee et al. (2020) talks about the factors affecting behavioral intention when using virtual reality. In addition, Israel et al. (2019) studied the factors affecting the use of virtual reality in hotels. Customer satisfaction is more important than intention and behavior. According to Fred Davis (1996), customer satisfaction will increase when exposed to 360-degree virtual tour technology. Through 360-degree virtual tour technology, customers can easily choose services and travel information. Several studies also show that customer satisfaction is the key to the success of every organization in the hospitality field (Slevitch & Oh, 2010; Chen, 2015; Xiang et al., 2015; Tontini et al., 2017). Customer satisfaction has a positive impact on staying and hotel customers; it generates positive word of mouth (WOM) and increases the rate of return guests (Kim et al., 2001), increasing the customer experience (Tussyadia et al., 2018a), increasing competitiveness (Tour 360, 2019). It cannot bring a completely immersive experience like the real-life experience and most importantly, the lack of social interaction because they only see images through the computer screen and the phone can be experienced outside, so the interaction in society is not comprehensive anymore. Therefore, the group decided to investigate the factors affecting customer satisfaction when using a 360-degree virtual tour for hotel booking in Can Tho.

## 1.4 Literature gaps

The research by Wang et al. (2011) did not investigate how social influence impacts the service environment in the web technology environment. The service environment is the environment as a whole of system quality and information quality. Many elements will be considered for the service environment, including both vividness and content quality (Wei, 2019). This research investigates how social impact influences the vividness factor of service

settings in virtual reality technology environments in this study. Furthermore, Yang et al. (2001) investigated the social influence factor influencing the perceived usefulness factor for technology users' attitudes. However, many prior studies have found that satisfaction is an important component in determining the success and adoption of technology by users of an information system (IS) (Santa et al., 2019; Xu and Du, 2019; Salam, 2020; Forster et al., 2020). Due to the team acknowledging this, the group chose social influence to affect perceived usefulness on customer satisfaction in the virtual reality technology environment for this study.

Similar to the study of Wang et al. (2011), Almufarreh et al. 's (2023) study on learners' views about online courses, there is a vividness element that influences learners' satisfaction. The author (Almufarreh et al., 2023) has not investigated the influence of content quality on happiness in the technological environment. Similarly, Park et al. (2018) published a study on customer satisfaction with mobile Radio Frequency Identification services. Park et al. (2018) investigated the content quality affects consumer satisfaction. Based on the general definition of service environment, the group will add the vividness of the service environment to the customer satisfaction in the virtual reality technology environment in this study.

Amin et al. (2014) also investigated perceived usefulness that impacts customer satisfaction in the digital environment (mobile users). The author of the study Amin et al. (2014) did not investigate if social influence has an impact on perceived usefulness in customer satisfaction. Our research will clarify the social influence component that influences perceived customer satisfaction in the virtual reality technology environment further in this study. Previous research has looked at behavioral attitudes toward virtual reality as well as behavioral goals in order to better understand virtual reality experiences. However, customer satisfaction is more essential than intention, and satisfaction has a greater impact on consumer intent. As a result, our research concentrates on customer satisfaction as the primary study issue.

## 1.5 Research objectives

**Research objective in general**

Evaluate the level of consumer satisfaction when utilizing a virtual tour 360 degrees at hotels in Can Tho City.

**Research objective in specific**

- Assessment of the current status of customers using virtual tour 360 degree when using the service at hotels in Can Tho.

- Determine the factors that influence customer satisfaction when using virtual tours 360-degrees to book rooms and have experience at hotels in Can Tho City guests book hotels in Can Tho.

- Propose solutions to optimize the utilization of virtual reality tour 360$^{o}$ and enhance customer satisfaction while utilizing virtual tour 360$^{-}$ degree at a hotel in Can Tho City.

## 1.6 Research question

Question 1: What is the current situation of utilizing virtual tours 360 degrees at hotels in Can Tho City?

Question 2: What do factors affect customer satisfaction utilizing a virtual tour 360 degrees at a hotel in Can Tho City?

Question 3: What solutions are proposed to improve customer satisfaction utilizing a virtual tour 360 degrees at a hotel in Can Tho City?

## 1.7 Research scope

- The time of research: The study took place from April 1st to August 1st, 2023.

- Respondents' characteristics: The Vietnamese respondents used virtual tours 360- degrees when booking and experiencing services at Azerai, Sheraton, Victoria, and Holiday One hotel in Can Tho.

- Survey type: The survey will be conducted by creating a questionnaire on Google Forms. After that, the survey will be posted on social networking sites and shared in Can Tho travel groups so that customers who have stayed in Can Tho and use 360-degree virtual reality in hotel booking can easily participate in the survey.

- Gender: Male, female and others.

- Age: Group will focus on those who have 18- to 45-year-olds as the main subjects for data collection. According to eMarketer (2018) and Young (2016), young consumers watch a lot of digital videos and are more interested in virtual reality technology. According to Jennifer Herrity (2023), Generation Y is the first generation to grow up with the internet, phones and digital media. They are likened to "digital natives," which is a good term used to refer to people who grew up being tech-savvy.

- Expected number of respondents: 300

## 1.8 Methodology and data overview

### Quantitative Approach

Muijs (2004), in quantitative research, phenomena are explained by gathering quantitative data that are then analyzed using techniques with a mathematical foundation. It's common to pit quantitative research against qualitative study. When researchers are searching for breadth, want to test a hypothesis, or wish to examine something quantitative, many researchers adopt a pragmatic approach to their work and apply quantitative approaches. In the social sciences, survey research is the most often used quantitative research design. Since survey research designs are quite flexible, they can take on many different types. However, they all share the common feature of collecting data using standard questionnaires that are given out over the phone, in person, by postal pencil-and-paper questionnaires and increasingly via web-based and e-mail forms. The author decided to use quantitative research by applying a 5-level Likert scale to the survey form to collect numerical data.

Collected data will be processed by SPSS 25 and AMOS 24 software for descriptive statistical analysis, reliability measurement for variables by Cronbach's Alpha, identification of latent factors (EFA), test to test model plausibility (CFA) and to test structural modeling and relationships between variables (SEM).

### Primary data

According to Ajayi (2017), primary data are information that has been collected directly by the researcher. Surveys, observations, questionnaires, focus groups, case studies and interviews are a few examples of primary data sources. The author collects primary data by conducting surveys. The author creates a questionnaire on Google Forms and sends the link containing the questionnaire via email and travel fan pages on social networks or Facebook. The responders only fill in the prepared questions. The expected sample size is 300 samples and responders used the 360-degrees virtual tour at hotels in Can Tho City.

## 1.9 Thesis outline

### CHAPTER 1: INTRODUCTION

This chapter presents the reason to choose the topic, research questions, research objectives, research purposes and research scope and thesis outline.

**CHAPTER 2: LITERATURE REVIEW**

Presents the research methods and works related to the research topic as a basis for building the research topic and research questions.

**CHAPTER 3: METHODOLOGY**

This chapter presents the research approach, study design, samples, data collection procedures and data analysis methods.

**CHAPTER 4: ANALYSIS AND FINDINGS**

This chapter presents the sample descriptive statistics, evaluation of the scale of Cronbach's Alpha reliability coefficient, structural equation modeling and the influence of differences in demographic on variables.

**CHAPTER 5: CONCLUSION AND RECOMMENDATION**

This chapter present determines the relationship between the variables, how they affect each other and the factors and extent of influence satisfaction when using virtual tours 360-degree at hotels have been identified.

# CHAPTER 2

# LITERATURE REVIEW

*In Chapter 2, the research team will thoroughly explain the information pertaining to the research topic "Factors affecting customer satisfaction when using a 360-degree virtual tour in Can Tho city". The 360-degree virtual tour in particular, the idea of virtual reality technology in general and issues relating to the subject will all be covered in the content collection. A study model, hypotheses and scales are suggested for the thesis based on those ideas and prior studies that were similar to this one.*

## 2.1 Virtual reality technology

Burdea (2003) defined virtual reality as a multimedia environment that is a three-dimensional space including width, length, depth and has voice support. Moreover, it can be used by a variety of devices in the form of glasses, jumpsuits, gloves, headsets, or helmets with a display that enables the user to use their senses as smell, sight, auditory or even tactile. It helps users become more immersed in 3D environments rich in life and aesthetics. When virtual reality and 360$^{o}$ mode are combined, a new and emerging trend has just emerged in recent years (Wang Han et al., 1996).

Also included in the category of virtual reality are 360-degree virtual tours and augmented reality. With the aid of 360-degree virtual tour technology, users can experience a 360-degree environment, giving them the impression that they are standing in the heart of a virtual reality world and can look around from all directions. In order to let viewers perceive the landscape more thoroughly and clearly, developing augmented reality, which is a technology that enables users to examine the surrounding virtual world through picture synthesis placed on real photographs (Krijn et al., 2007). The two technologies above are conceptually connected, but not conceptually identical (Burdea et al., 2003).

## 2.2 Virtual tour 360 degree

The 360-degree virtual tours are referred to as immersive technologies because they give users the impression that they are in a virtual environment. Through the use of a series of static images that are combined and consecutively created to create a landscape without interruption or void, this technology enables them to gather data and analyze them more clearly in the form of a landscape modeled after the actual scene in the business (Baura et al., 2018). In addition, according to the Shof360 website from the service of full point

company, a virtual tour is a visit to any location such as hotel, school or business, as exhibited on electronic devices. In a word, a virtual tour is a digital simulation of a physical place or asset belonging to a certain organization. According to Nulhakim et al. (2019), the virtual tour is separated into two modes, 360$^{o}$ video and 360$^{o}$ virtual tour so it has maintained their popularity as of the present. Due to 360$^{o}$ virtual tour is a collection of linked images that are presented as a business running each scene in an orderly fashion, it cannot be adjusted or zoomed in and out, comfortably moved to another nearby scene as you like.

The content viewers choose to watch is entirely up to them. With prior knowledge of and expertise with virtual tours, 360$^{o}$ virtual tour is a practical tool adored by many clients and companies. Particularly gen Z youngsters today who always prefer enterprises that employ cutting-edge technology, generating enthusiasm for their trip. Virtual tour technology is widely used in social media platforms, commercial websites about restaurants and hotels, some main pages of museums and applications that are specifically devoted to virtual reality (Schwieger et al., 2018). According to Itani and Hollebeek (2021), in the context of the Covid 19 pandemic, the intention to visit the website for a 360-degree virtual tour during the pandemic is higher than usual. According to Yang et al. (2021), the 360-degree virtual tour maintains the interest of tourists during travel restrictions at attractions and tourism during the pandemic. Virtual tours 360 degrees are very important. It is considered a safe solution and thanks to that the service industry can still operate, after the pandemic the use of technology has become a habit, saving time but bringing a great experience, unique experience.

Badrinarayanan et al. (2019) said that virtual reality technology has been used to expand and develop the brand of enterprises. Moreover, Jungsun Kim & Andrew Hardin (2010) identified virtual reality applied in the process of attracting customers in the hotel sector. Good examples of virtual reality technologies in the hotel sector as they can simulate the structure of an existing hotel, lobby corridors, entrances, rooms as if they were actually in the place themselves. When the viewer is able to see the environment and good images, it will stimulate the approach response, thereby speeding the tourists to easily reach the hotels far away. It also helps businesses to promote their product images and brand images to the community more effectively than advertising in the usual way in some ways such as promoting products through websites or inserting ads into websites and other unrelated videos, unrelated websites. Information and images need to be of high quality and clear so that viewers can visualize the details and experience in the best way. Virtual tour 360-degree

provides critical visibility into the user experience and increases customer re-usability. The tourism industry provides opportunities to interact with tourists and develop tourism destinations rich in information and unique experiences. Effective connection between customers and businesses, creating opportunities for interaction and increasing bookings for businesses (Argyriou et al., 2020).

Tom Dieck et al. (2019), this technology helps to increase the level of interaction, attract customers and bring them a remote experience. With social influence, it is convenient for them to be able to see the image vividly and clearly, specifically with a 360-degree virtual tour that can see every angle before making a selection. Furthermore, the application helps viewers visualize and provide entertainment experiences by incorporating ramification techniques (Argyriou et al., 2020). Eliminate potential risks that are difficult to see when just looking at the pictures available on the web. Based on perceived usefulness, 360-degree virtual tour technology can be viewed anytime, anywhere; saving time and money by shortening geographical distances and travel time between locations (Nata et al., 2021). Through the service environment, instead of looking at the lines of information attached to each recommended service available on the website, the descriptions, attached images and unreliable feedback, the hotel provides this technology to increase the reliability of the hotel in persuading customers. Allow customers to admire the space, the facilities in the room and experience the "trial" of the service, visiting nearby attractions to maximize customer satisfaction.

### 2.2.1 Social influence

Salancik and Pfeffer (1978) suggest that social influences one's views and behavior. According to Rice et al. (1990), social influence has an impact on an individual's behavior, judgment, and cognition. Furthermore, social influence is defined as the perceived pressure that an individual feels to perform certain behaviors (Triandis, 1980). Messages or signals that make individuals aware of specific items or technology generate social impact. Additionally, Venkatesh (1996) identified social influence as an activity as a major factor in the acceptance of products and technologies. For example, an individual's conduct and subjective standards will be impacted directly by their sense of what their peers anticipate in a specific context (Fishbein and Ajzen, 1975). Similarly, in the virtual reality world, social considerations strongly influence the acceptability of new technology. The adoption of a virtual tour 360 degrees by colleagues will have an impact on your view, and vice versa.

Furthermore, Shen et al. (2006) addressed the social influences that shape students' perceived effectiveness of online learning in their research.

Social influence is divided into two types, namely normative social influence and informational social influence (Kim & Srivastava, 2007). First, normative social influence is used to create pressure that forces people to act and think in the same way as their peers. Second, informational social influence is a form of influencing behavior by specifically shaping what makes people feel trusted and recognized. For example, customers will learn about things they buy or plan to buy by reading or hearing about experiences and recommendations from previous users. Therefore, they have higher trust when using new products (Kim and Srivastava, 2007). According to Kim and Srivastava (2007), people will feel outdated if they don't use new technologies when everyone around them already uses them. In the context of high-tech use when booking hotel rooms, like 360-degree virtual tours, this translates into the pressure that they have to use the same technology as their influencers. As a result, Triandis (1980) defined social influence as the perceived pressure a person feels to engage in particular conduct.

Social influence has a great effect on the service environment in virtual tour. According to Lucas (1987), management's assistance has a positive influence on employees' attitudes about using information systems. Wang et al. (2011) conducted a study on the social effect of bloggers' opinions. In research, social impact is regarded as the most important component influencing information quality and system quality. Wang et al. (2011) discovered a high effect of social influence on information quality and system quality. Klobas et al. (2001) has successfully studied the influence of society on users' perception of information systems. Moreover, Wang et al. (2011) showed that the term "service environment" refers to various contexts and situations associated with the usage of virtual reality. Wang et al. (2011) investigated components of the service environment in a virtual reality setting as well. According to Tom et al. (2018) and Kim et al. (2016), the application system quality element is part of the service environment. As a result, the technology of a 360-degree virtual tour is similar to virtual reality and technology in general in several ways.

According to Rice et al. (1990), social influence impacts an individual's behavior, judgment and cognition. The adoption of a virtual tour 360 degrees by colleagues will have an impact on your view and vice versa. Furthermore, Shen et al. (2006) addressed the social influences that shape students' perceived effectiveness of online learning in their research. Moreover,

Bonn et al. (2016) demonstrated that social influence influences the perceived usefulness of a website in alcohol purchase decisions.

Some researchers on virtual tour applications have found that tourists use virtual tour spontaneously and voluntarily. This also agrees with the previous study by tom Dieck et al. (2017) that the author has affirmed the importance of social influence in voluntary digital tourism. We can assume that social influence also affects the satisfaction levels of customers because of the intentional behavior of customers after using technology if social influence guides the decision to use or purchase. Most studies refer to social influences guiding usage or purchasing decisions and relatively few studies address customer satisfaction evaluation (Jones et al., 2018). Especially, in the context of the 360-degree virtual tour, it is hard to find many articles about the relationship between social influence and customer satisfaction.

### 2.2.2 Service environment (SE)

The service environment, which represents the context through which customers can view hotel products and services through technology more easily (Wirtz, 2018). Based on Cheng et al. (2014), thanks to the service environment factor, it was easy for customers to grasp the interface and standard methods at that location such as the service registration mechanism, paying attention to places that might otherwise be missed. Through the service environment factor, customers can easily see the physical elements, products and services, the general layout of each area at the hotel, the staff and the overall layout (Parasuraman et al., 1991). The level of accuracy and reliability when providing guests with a hotel experience through 5.0 technology equipment is relatively high (Parasuraman et al., 1991). From there, stimulating the excitement of customers, enhancing their experience to a new level.

The service environment is divided into two factors including the quality of web-mediated virtual information (content quality) and the formation of a positive destination image (vividness) (Hyun et al., 2012). Steuer (1995) believes that vividness is divided into two parts, which include breadth and depth. The number of different senses that a medium can engage is called breadth and depth is the extent to which parts of the human sensory system can be reproduced by a medium. By enhancing the richness of the experience, videos or images are considered vividness enhancers (Coyle & Thorson, 2001). In the VR context, 3D visuals provide rich visual, audio and other rich content to the user to evoke attention along with vivid mental images of the product experience (Kim et al., 2020).

Content quality conveys the information that a 360-degree virtual tour wishes to transmit so that viewers can experience the product's content in the most authentic and correct manner. It delivers the most extensive and precise text formatting and interpretation (Nelson et al., 2005). Besides, Lee et al. (2020) determined three aspects to help content quality: content presentation format, content accuracy, and completeness. Vividness is conceptualized as a content that must be rich and grab the user's attention (Howarth et al., 2022). Almufarreh & Arshad (2023) state that content richness can convey persuasive signals to future users about that content and that richness can lead to considerable satisfaction. Thus, it can be concluded that vividness positively affects users of that technology.

In the context of this thesis, 360-degree virtual tour technology provides customers with all kinds of information about the hotel, such as location, room items and other types of useful information. This information must be proven to be accurate and reliable from time to time. Previous researchers suggested that in order to assess online customer behavior, content quality plays a very important role in being an indicator of the environment (O'cass and Carlson et al., 2012). In addition, previous researchers demonstrated that the positive impact of content quality on customer satisfaction was supported (DeLone & McLean, 2003; Seddon, 1997; Park & Rim, 2008). The research results of previous researchers, it has been demonstrated that both service environment factors, including vividness and content quality, have a positive influence on customer satisfaction. Thus, it can be seen that the service environment has a positive influence on customer satisfaction.

### 2.2.3 Perceived usefulness (PU)

According to Sarkady and Egger (2021), usefulness refers to a person's perceived capacity to accomplish more and complexity to the additional effort that IT demands. The user can engage with the virtual environment in the virtual world by tapping to search more about the tourist destination. Users can gain an accurate sense of the travel place in advance thanks to this virtual experience. As a result, the virtual world provides users with practical benefits for information gathering and streamlining travel arrangements. Therefore, virtual tour technology makes the user's travel planning and decision-making process quick and easy (Huang et al., 2013). Thereby helping users to know situations in advance and avoid risks that will occur during the trip. The degree to which a consumer believes that conducting business online would improve their transaction performance is known as perceived usefulness (Tandon et al., 2016). Users only need to operate their hands in the 360-degree virtual tour available on the hotel's website, they do not need to leave the house but still have

enough information and experience vivid images similar to reality to save the cost of fuel and save time.

The study of Zviran (2005), Amin et al. (2014) and Huang (2018) indicated that perceived usefulness and user satisfaction are closely correlated. Furthermore, they also showed that perceived usefulness is one of the factors affecting user satisfaction, including those who know but not using virtual reality and having used virtual reality. Customers perceive the usefulness of a 360-degrees virtual tour when they see the convenience of easy to find information like it provides the necessary amount of information to the customer. These make customers feel the convenience and usefulness that 360-degrees virtual tour bring. All of the above factors help the hotel improve customer satisfaction during the virtual tour 360-degrees experience.

## 2.3 Customer satisfaction

According to Dmitrovic et al. (2009), customer satisfaction is the most important core factor in the process of serving customers and in all services. Customer satisfaction is a measure of customer expectations after accessing and using services at the hotel; they have a great influence on customer retention, brand development and their trust. Following Dmitrovic's concept, in the hotel industry, customer satisfaction when experiencing 360-degree virtual tour technology is an extremely complex experience (Kim et al., 2019) when each guest has their own preferences and feelings, so the same service can hardly meet the majority of customers. Satisfaction is only established when and only when that service has all the conditions and factors that the service brings to them. Increase customer satisfaction, engage customers and make a deep, relatively new impression on them. In addition, the remote presence from the 360-degree virtual tour has a strong impact on customer experience and satisfaction because it gives customers a real sense of being able to feel your current self directly at that destination (Tussyadia et al., 2018a). Yu et al. (2012) argued that customer satisfaction is the key to success in the service industry.

Using virtual tour technology, they provide customers with the convenience and usefulness of their future destination search and are searchable anytime, anywhere. After customers experience this technology, in addition to the virtual product shown in the actual technology, the service environment shown in the thesis including the image quality, sound system, resolution and transmission speed are key factors that increase customer satisfaction (Park et al., 2012). Moreover, the personal behavior of customers such as objective comments,

reactions after the experience. When they approach the ways of evaluating products and services in a positive or negative way, it is likely to have an impact on customer satisfaction. At the same time, social networks and communication methods can create new trends, change opinions or personal views and thereby promote behavior and increase satisfaction significantly dependent on social influence. The final factor that this 360-degree virtual tour technology brings to customer satisfaction is convenience for remote planning while minimizing risk, loss of cost and effort and protecting the environment for the community (Huang et al., 2013).

## 2.4. Theoretical framework

### 2.4.1. Customer satisfaction theory

According to the theory of expectation-non-confirmation of Parasuraman (1985), customer satisfaction is an important factor in the hotel industry to provide a competitive advantage over other competitors. According to Kotler (1984), the theory of satisfaction depends on the difference between after-service experience and expectations. Then, satisfaction is a concept that measures the satisfaction or disappointment of customers when experiencing a service compared to their expectations. Applying Kotler's theory of satisfaction in virtual reality technology to the guest field, it allows customers to experience hotel services in an intuitive and vivid way so it can enhance a customer's satisfaction. In addition to the theories presented in the thesis, the stimulation of customer satisfaction when using 360-degree virtual reality tour technology for booking rooms at hotels in Can Tho city is applied through the following factors.

### 2.4.2 Technology Acceptance Model (TAM)

When customers place their trust in the application of technology, it will easily support and benefit their needs, minimizing risks and disadvantages in terms of distance, cost and time for customers finding the ideal location, so the thesis applies the theory of the TAM of Fred Davis (1989). This is a model that can check customer satisfaction for accessing 360-degree virtual tour technology. Through this technology, customers are convenient in finding the necessary data and hotel information relevant to their needs. Davis (1989) developed the technology acceptance model, which posits that users' adoption of a computer system depends on their behavioral intention to use it, driven by their attitude, comprising perceived usefulness. According to TAM, if a technology is perceived as easy to use and useful, it will

positively influence users' attitudes, leading to increased intention to use the technology and promoting adoption behavior.

Perceived usefulness is defined as the extent to which individuals believe that using the system will enhance their performance. TAM has been widely employed in empirical studies and has demonstrated its superiority in explaining intention and attitude towards using information technology compared to other models such as the theory of reasoned action and the theory of planned behavior (Mathieson, 1991). Due to its effectiveness, TAM is frequently utilized in studying information system acceptance (Al-Gahtani, 2001). Its robustness, reliability and predictive power make it applicable in various contexts (King and He., 2006). The perceived usefulness of the Technology Acceptance Model (TAM) is crucial in understanding customer satisfaction and the acceptance of 360-degree virtual tours at hotels. By evaluating customers' trust in the technology's ability to enhance their experience and knowledge of hotel facilities, businesses can optimize virtual tours to meet customer expectations and improve overall satisfaction. In this thesis, we aim to investigate user psychology regarding the attributes of a 360-degree virtual tour that lead to customer satisfaction. Additionally, we will supplement the TAM model with Social influence and service environment factors to further understand customer satisfaction when utilizing 360-degree virtual tours.

Numerous studies have confirmed the effectiveness of TAM in various fields, such as education (Granić & Marangunić, 2019), entertainment and tourism (Huang et al., 2016), sports (Tsai et al., 2017), retail (Wu et al., 2020), etc. Additionally, Huang et al. (2016) applied TAM to virtual tourism marketing and found that immersive virtual environments effectively attract potential tourists. Anita et al. (2022) attempts to show how this technology in the hotel business is accepted by customers to enhance travelers' inclinations to stay at hotels.

## 2.5 Conceptual Framework

### 2.5.1 Research by Wang et al. (2011)

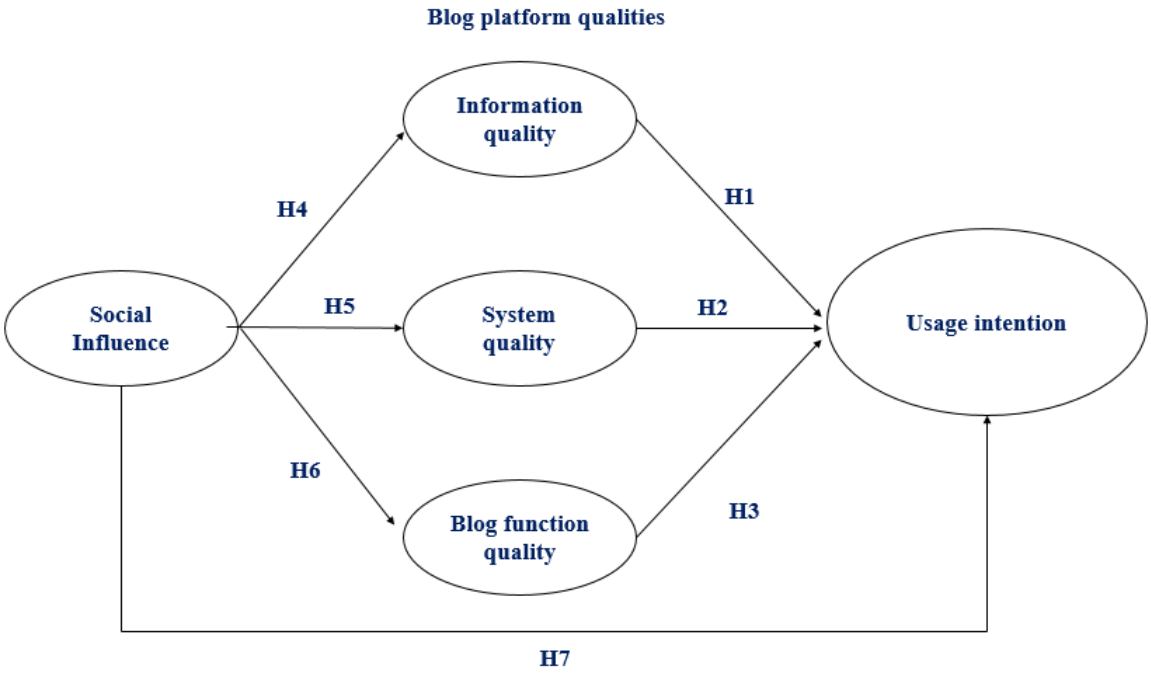


**Figure 2.1: Conceptual framework by Wang et al. (2011)**

Wang et al. (2011) conducted a study on the social influence of bloggers' intentions. According to the survey results of Wang et al. (2011), social influence has a favorable impact on information quality and system quality in the setting of digital technology. The study was carried out on well-known forums and websites. The poll obtained 613 valid samples; more than half of the survey respondents were students, and two-thirds had three years or more of online experience. Another study by Klobas et al. (2001) found that social influence has a considerable beneficial impact on internet users' perception of information systems. According to Wang et al. (2011), information quality and system quality are common conceptions of content quality. The quality of information and the quality of the system are inextricably linked (Wang et al., 2011). Furthermore, content quality is a component of the service environment in Wei's (2019) literature analysis on virtual reality in service and hospitality contexts. As a result, based on Wang et al. (2011)'s model, the group proposed that social influence would have an impact on the service environment via information quality and system quality.

### 2.5.2 Research by Beyari et al. (2019)

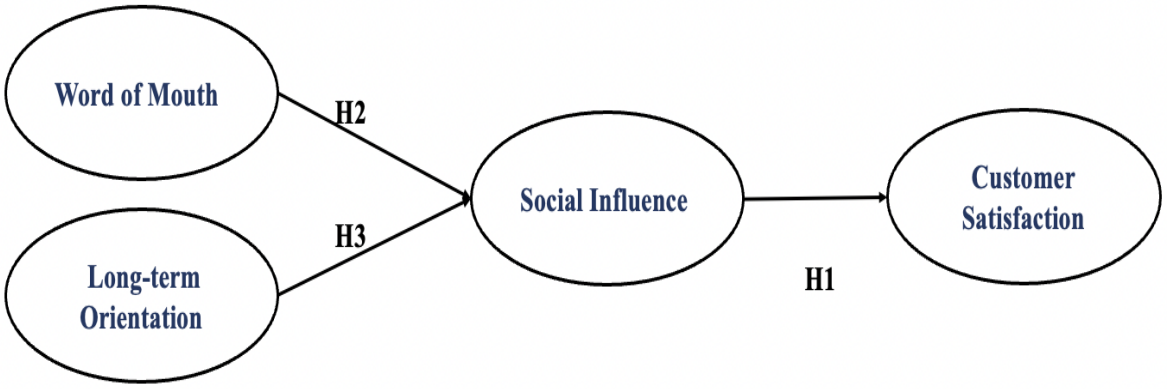


**Figure 2.2: Model of customer satisfaction evaluation by Beyari et al. (2019)**

This research aims to explore the impact of relationships on social influence and customer satisfaction in the context of social commerce. In particular, the factor impacting social influence is word of mouth. According to Kim & Prabhakar (2000), word-of-mouth is defined as the exchange of information between one person and another to indicate the intention to purchase or use the service. Thus, based on the definition proposed by Kim and Prabhakar (2000), WOM is the influence of the community or people around who have used the product and given advice that affects the intention to use the product. Especially discovering the impact of social influence on customer satisfaction.

The research samples focused on students from Saudi Arabia and some students from Australia and to assess whether there were any differences between the two countries in the use of online shopping sites. The survey obtained 300 completed samples and this study implemented the Smart PLS application program to analyze the factors that were put into operation. The research found that social influence has a positive impact on customer satisfaction, demonstrating that social influence plays an important role in enhancing customer satisfaction and this is consistent with previous studies. In short, for online site owners in general and hotel owners in particular (in the context of a 360-degree virtual tour) that research provides them with a tool that can help improve service quality to satisfy customers. In addition, this study also provides knowledge about the factors affecting satisfaction and creates a premise for future research.

### 2.5.3 Research by Yang et al. (2001)

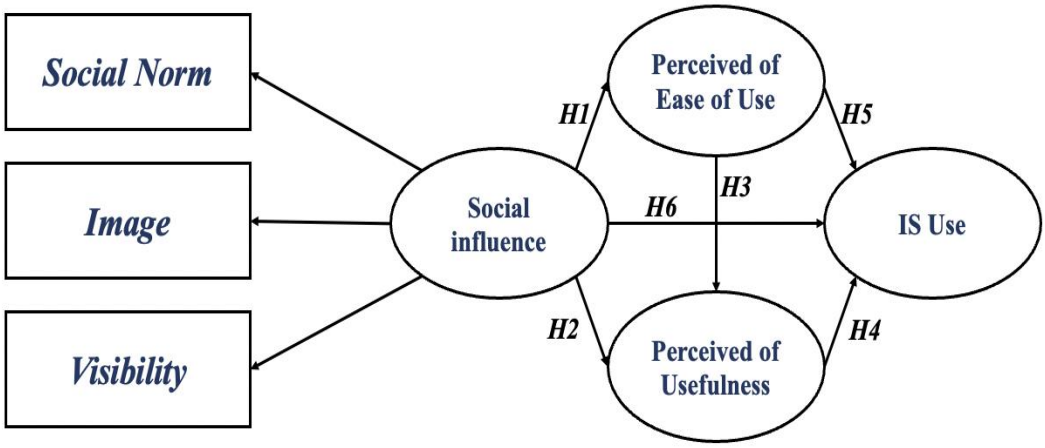


**Figure 2.3: Yang et al. TAM model**

Source: Yang et al.

The research on social impacts on technology adoption trends conducted by Yang et al. (2001), social influence was shown to be the most influential element. The study results were accepted because social impact was thought to be a particularly significant component on perceived usefulness. The survey 420 samples and was sent to MIS (management information systems) students in New England. Similarly, Shen et al. (2006) conducted research on the social influence from the perceived usefulness in students' online learning environments. The study's goal is to better understand the social influences that determine students' perceptions of the value of online learning in the educational system (Shen et al., 2006). As a result, social influence variables have a substantial impact on molding students' judgments of usefulness in online learning (Shen et al., 2006).

### 2.5.4 Research by Almufarreh and Arshad (2023)

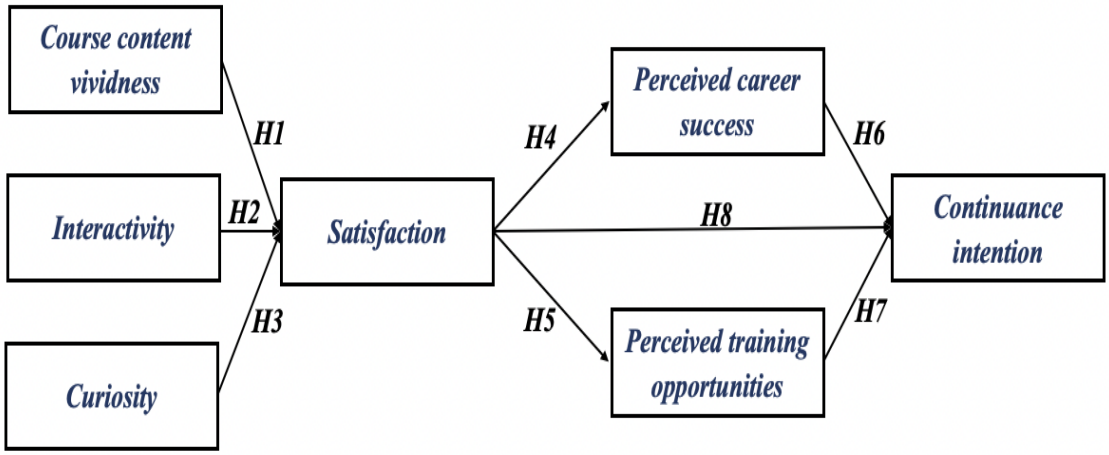

**Figure 2.4: Conceptual framework.by Almufarreh & Arshad (2023)**

The purpose of this study was to find out why learners did not continue with the courses. The model is studied based on a questionnaire designed according to quantitative research. There were 377 completed samples collected, of which the majority were university students from Saudi Arabia. Data analysis was practiced using partial least squares structural equation modeling (PLS-SEM). The author proposed seven components for this research model, including content vividness, interactivity, curiosity, satisfaction, perceived career success, perceived training opportunity and continuance intention. Research results show that three factors including satisfaction, perceived career success and perceived training opportunities have a positive influence on the intention to continue. In particular, the results also show that content vividness, interactivity and curiosity have a positive effect on satisfaction. Content and its vividness is one of the key elements and characteristics of MOOCs as a service that can help learners perceive its value. In the context of a 360-degree virtual tour, vividness gives users sensory satisfaction and vivid content also gives customers a very realistic experience in terms of the image quality it delivers.

### 2.5.5 Research by Park & Rim (2008)

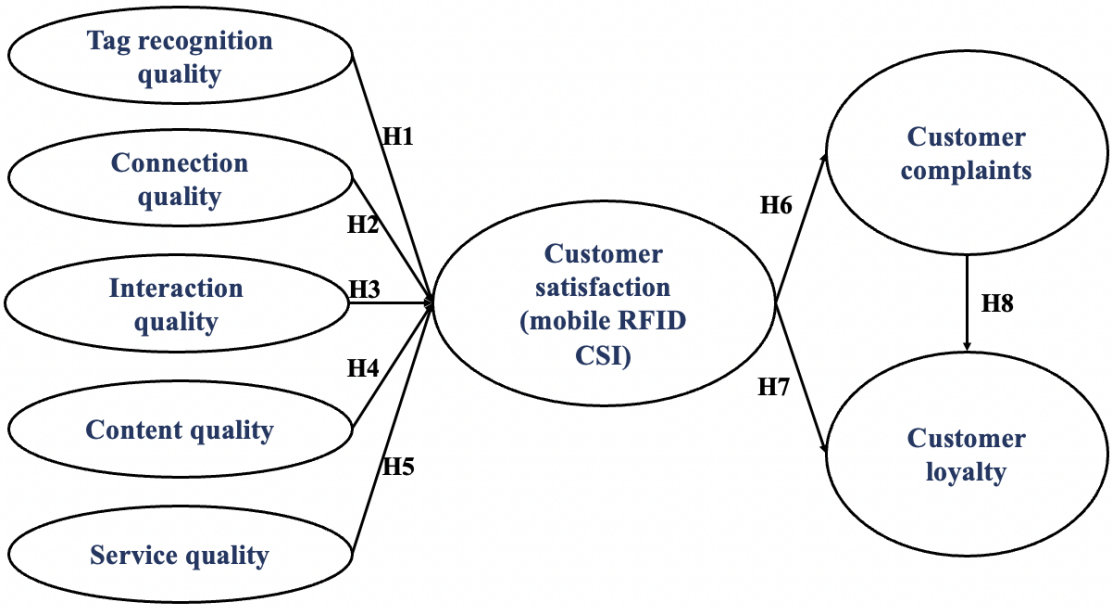


**Figure 2.5: Customer satisfaction index model for mobile RFID services**

The objective of this study was to provide practical implications for providers and make suggestions regarding improving the quality of pre-market mobile RFID services. The proposed model for research is a customer satisfaction index (CSI) model, which includes five variables: tag recognition quality, connection quality, interaction quality, service quality

and content quality to assess customer satisfaction. Regarding the research method, the questions used for the survey are mostly references from previous studies and the author has selected 23 questions for verification with the scale item being a 10-point scale. There are 202 samples valid, in which the majority of respondents are university graduates and employed. A structural modeling method based on partial least squares (PLS 3.0) was used to test the model and the hypotheses proposed in this study. Research results indicate that the satisfaction level with mobile RFID services of customers in other countries is slightly higher than the corresponding estimated values for mobile services in Korea. The performance indicators of quality factors that positively affect customer satisfaction are quite low. This result indicates that more effort is needed to improve the overall quality to enhance the level of user satisfaction. Similarly, in the context of a 360-degree virtual tour, we need to take a closer look at the content quality factor in order to be able to make useful recommendations on improving customer satisfaction for the owners of hotels in Can Tho.

### 2.5.6 Research by Amin et al. (2014)

The author's model proposed three factors affecting user satisfaction with mobile websites, including perceived usefulness; perceived ease of use; and trust.

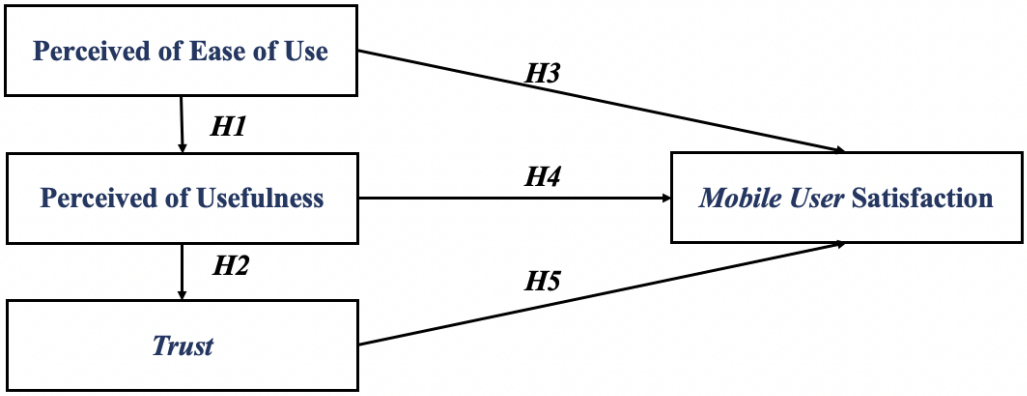


**Figure 2.6: Amin et al TAM Model**

Source: Amin et al

There are 302 samples that were considered valid. This study aims to examine the effects of perceived usefulness (PU), perceived ease of use (PEOU) and trust on Malaysian mobile phone users' satisfaction with mobile websites. In order to assess users' acceptance of mobile services, Zarmpou et al. (2012) created a model that takes behavioral intention, PU, PEOU and trust into consideration. This study demonstrates that mobile sites should be perceived as useful if they make users' lives and work easier, make it simple for users to find the

information they need and are useful in general. The results of the analysis indicated a favorable correlation between PEOU, PU and mobile users' satisfaction. Besides, perceived usefulness is also associated with satisfaction and trust among mobile users. The author proposes that if the formation of perceived usefulness is well handled, customer satisfaction should increase. Therefore, our team decided to propose to perceived usefulness into this thesis's research model to demonstrate how the utility of the virtual tour 360-degree will satisfy customers.

## 2.6 Hypothesis development and research model

### 2.6.1 Proposed research model

Customer satisfaction has been a popular issue in the world of research; especially, in the hospitality business. It has become a significant consideration for hotel executives. As a result of societal pressures, the variables of consumer satisfaction are rising. Technology is evolving in tandem with the advancement of civilization. The most current 360-degrees virtual tour, one of the sorts used in hotels has become well-known across the world. Furthermore, in order to keep up with the global innovation trend, Vietnam has begun to employ 360-degree virtual tours to the tourist and hotel industries. Therefore, virtual tour 360 is no longer a stranger to 3 to 5-star hotels throughout the world, but it has yet to reach many clients in Vietnam, particularly in Can Tho City. As a result, this study proposes models and ideas regarding virtual tour 360 based on past investigations on the elements contributing to client satisfaction. To be able to increase customer satisfaction and describe the elements influencing customer satisfaction when clients schedule a virtual tour 360 degrees in Can Tho city, Vietnam. In this thesis, we suggested a study model on factors influencing consumer satisfaction while using a virtual tour 360 degrees. This model is based on previous research on the parameters that influence consumer satisfaction while utilizing virtual tours 360 degrees and has been adjusted to suit the context of hotels in Can Tho city.


**Figure 2.7: The proposed research**

### 2.6.2 Hypothesis

**Hypothesis 1**: Social influence has a positive effect on the service environment when customers use 360-degree virtual tour in hotel booking in Can Tho.

**Hypothesis 2**: Social influence has a positive effect on customer satisfaction when customers use 360-degree virtual tour in hotel booking in Can Tho.

**Hypothesis 3**: Social influence has a positive effect on perceived usefulness when customers use 360-degree virtual tour in hotel booking in Can Tho.

**Hypothesis 4**: Service environment has a positive effect on customer satisfaction when customers use 360-degree virtual tour in hotel booking in Can Tho.

**Hypothesis 5**: Perceived usefulness has a positive effect on customer satisfaction when customers use 360-degree virtual tour in hotel booking in Can Tho.

### 2.6.3 Construct components' scale

**Table 2.1: The scale of Service environment**

| Code | The scale of Service environment | Source |
|---|---|---|
| SE1 | When using the 360-degree virtual tour, the depth and breadth of the space in the 360-degree virtual tour make the destination feel more alive. | Li et al. (2002) |
| SE2 | When using the 360-degree virtual tour, the video quality makes the destination feel more alive. | Lee et al. (2020) |
| SE3 | The image of the destination is simulated extremely realistically and as vividly as the actual experience. | |
| SE4 | When using a 360-degree virtual tour with full information about the hotel, it gives me a more general view of the hotel. | Lee et al. (2020) |
| SE5 | The accuracy of the hotel information through the 360-degree virtual tour helped me plan my trip. | |

**Table 2.2: The scale of Social influence**

| Code | The scale of Social influence | Source |
|---|---|---|
| SI1 | Social influence leads me to believe in the benefits of a 360-degree virtual tour. | Bonn et al. (2016) |
| SI2 | Surrounding people use 360-degree virtual tours, it affects my viewpoint makes me want to use 360-degree virtual tour. | |
| SI3 | 360-degree virtual tour are the current technology trend and using them helps me keep up with the times. | |

**Table 2.3: The scale of perceived usefulness**

| Code | The scale of Perceived usefulness | Source |
|---|---|---|
| PU1 | I can easily find information about hotels in Can Tho through a 360-degree virtual tour. | Jung (2018) |
| PU2 | Using a 360-degree virtual tour, I can improve my travel planning efficiency. | Huang (2013a) |
| PU3 | When using a 360-degree virtual tour, I save time and reduce travel costs from searching for hotel information to booking. | Tandon (2016) |

**Table 2.4: The scale of customer satisfaction**

| Code | The scale of Customer satisfaction | Source |
|---|---|---|
| CS1 | I feel satisfied when using a 360-degree virtual reality tour in my hotel reservation. | Huang et al. (2013) |
| CS2 | I am satisfied with the practical experience that 360-degree virtual reality tour brings. | Tussyadia et al. (2018a) |
| CS3 | I am satisfied with the usefulness that 360 virtual tour brings. | Zviran (2005) and Huang (2018) |

# CHAPTER 3

# METHODOLOGY

*In Chapter 3, the group will present in detail the process of methods to carry out the research, including: philosophy of research (realism, pragmatism, positivism), research approach (deduction, induction), research methods (quantitative, qualitative), data collection methods (sampling, secondary, primary, sample characteristics), data analysis methods (theories/models, sensitivity), research ethics (ethical considerations, possible ethical issues and solutions), especially access, approaches and scope.*

## 3.1 Introduction:

### 3.1.1 Research philosophy:

Research philosophy is viewed as a set of beliefs and presumptions about how knowledge is developed; all presumptions are carefully and consistently taken into account to create a research philosophy that is trustworthy and agreeable (Crossan, 2003). As a result, the research philosophy is a crucial component of a research paper. Before beginning to implement a certain topic or field, it is required to have hypotheses, ideas and theories that need to be investigated, explored and tested in order to be used as support for a compelling study. Additionally, research philosophy will guide decisions regarding relevant procedures, theories, research plans, data collection and analysis and data analysis techniques. Furthermore, when researching a topic, it is possible to learn new information, whether or not it is previously known, which could help to disprove some presumptions that contradict the findings of the study or that have no relevance to the subject at hand (Burrell & Morgan 2019). The three theories of realism, pragmatism and positivism in the philosophy of research also serve as a basis for making practical judgments that result in the conduct of research.

**Realism**

Realism is a relativistic epistemology that can be employed by research as an explanatory premise for arguments in the field since it refers to knowledge that has previously been explained and assigned causes. Additionally, a thorough understanding of earlier theoretical frameworks paired with fresh perspectives will broaden the field, improve methodologies and get rid of irrelevant data (Crossan, 2003).

**Pragmatism**

Pragmatism is focused on coming up with ideas and selecting study topics. It is essential to have an epistemology, understanding, interest in and viewpoint on the particular study subject in order to have an appropriate research topic. Additionally, research questions can serve as a foundation for learning while using conventional approaches like quantitative and qualitative research to follow the issue. Furthermore, it's important to focus on the approaches and do thorough analyses of the areas that need improvement when investigating the subject. Also, they are intended to help you choose a topic for your research paper that is relevant to your expertise and will produce findings (Crossan, 2003).

**Positivism**

Positivism uses the observation of the outside world to build data collection methods based on scientific knowledge that has previously been strictly restricted. Besides, depending on that data, observations and measurements will be made, numbers will be interpreted and causes will be inferred. Additionally, research frequently uses quantitative analytic methods to collect data for verification and to identify issues that can refute some unwarranted ideas (Crossan, 2003).

### 3.1.2 Research Approach

The deduction method is frequently employed in research topics because general rules and ideas can be inferred from them and utilized as the foundation for more particular arguments specifically from the broad ones to the narrow ones. Meanwhile, the study paper's hypothesis might be derived from the presumptions already established in order to make other hypotheses that have not been explored or have not been confirmed by earlier studies. Moreover, it is possible to determine whether a theory is acceptable or influences the subject by testing, observing, collecting and evaluating data. This allows one to decide whether to keep or discard the theory (University of Commerce, 2015).

In contrast to the deductive method, the inductive method proceeds from the specific to the general, taking into account the particular to infer the general (Rossi, 1978). In addition, the inductive method will gather data, observe events, investigate and analyze them to scientifically support the research hypothesis. As well, pre-existing hypotheses can be utilized to construct a theory based on reality and practical experience that is linked to research theory.

As any research work requires the two scientific methods of deduction and induction to ascertain the premises and give sound, scientific theoretical foundations, inference and

induction are the two methods we will discuss here. Regarding the deductive methods, it would entail developing an already-existing theory and then coming up with a plan for conducting research to test it (Lee, 2020).

### 3.1.3 Researches methods

Quantitative approaches use data for mathematical analysis as measurement instruments (Muijs, 2004). Additionally, gathering statistical data is crucial for quantification because the study report will employ those data to describe particular phenomena. Besides quantitative internal data relates to particular numbers and quantities like the proportion of males to women, the age range and the income.

The qualitative method is also a quantitative tool but uses the data collection method for analysis. In addition, to obtain information and analyze it, information must be collected through groups, many from asking suggestive questions to direct data (Hollstein, 2011).

Despite the fact that there are two measuring methods, the team chose to conduct research using the quantitative method because it uses statistical data rather than non-numerical data. This approach will yield precise and understandable statistics, which may then be easily processed and evaluated to produce outcomes. In addition, the convenience of this approach and the extremely specialized questionnaire, which allows for quick answers without consuming too much time, are further reasons for choosing it. Therefore, the team designed on Google Form a 5-level questionnaire with satisfaction levels from disagree to agree and took it to survey those who have used 360-degree virtual tours at guests' hotels in Can Tho. Moreover, the outcomes can then be obtained and scrutinized in order to ascertain which factors have an effect on customer satisfaction and which do not. Besides, it is possible to analyze and remove some assumptions and variables that do not affect the 360-degree virtual tour, thereby drawing conclusions for the team's research paper.

## 3.2 Data collection methods

### 3.2.1 Sampling techniques

The primary study subject of this thesis is clients who utilized virtual tour 360 degrees in hotel booking in Can Tho city. Our team decided to conduct a survey in the most crucial scene to better understand the elements influencing customer satisfaction while utilizing a virtual tour 360 degrees in room booking. The group decided to take the sample at a ratio of 1:10, which is an important indicator for determining sample size (Hair et al., 2012). The

group has 18 questions for 6 main variables, so the minimum sample size of the group will be: 18x10 = 180. Tabachnick et al. (1996) also identified 6 levels of survey sample from very poor to very good for an article thesis (or scientific research). Among those six levels, Tabachnick et al. (1996) also showed that a sample size of 200 to 300 is quite good. Due to several sampling constraints, our group opted to employ the non-probability sampling approach and convenience sampling. To save time and money, the organization will limit the grouping of virtual tour 360-degree users in the booking (by gender, age and income). Lamm et al. (2019) investigated the ease of use of online non-probability sampling. According to the previous study (Lamm et al., 2019), non-probability sampling is more convenient in terms of time, information accessibility and simplicity of information collecting.

### 3.2.2 Secondary data

Secondary data is an important data source for a research article; it serves as the foundation for future research publications. Secondary data is main data that has been obtained previously by another entity (Ajayi, 2017). These are also data sources gathered by the team from prior research publications on virtual reality and customer satisfaction in local and international service contexts. The main benefit of second data is that it is simpler to acquire information since it has been processed by a third party, it is less expensive than primary data and it is easier to discover. Secondary data, on the other hand, is readily outdated since data searchers do not have time to update the most recent data from main data. Knowing the limits of secondary data, the team chose and updated secondary data from the most recent sources in terms of virtual reality technology and customer satisfaction in the service environment.

### 3.2.3 Primary data

Garbach et al. (2017) defines primary data as information gathered through face-to-face interviews, surveys and experiments. This is the group's primary data source for this thesis; data is collected directly by group members online or offline. The benefit of primary data is that it is simple to develop strategies, research methodologies and access to research objectives. However, gathering original data is time-consuming, expensive and labor-intensive. Knowing the limits of primary data, the team relied heavily on social media to acquire primary data. The group will construct surveys using Google Forms and then distribute them to websites and groups relevant to tourism and hotels in Can Tho City.

### 3.2.4 Sample characteristics

According to the group's study topic is "Factors affecting customer satisfaction when utilizing a virtual tour 360- degrees at hotels in Can Tho City". As a result, the study's purpose is to identify clients who have utilized a virtual tour 360 degrees and book rooms from this hotel in Can Tho City and have experienced the service at those hotels in order to provide the most accurate assessment of the finest services. The age range chosen is 18 to 35 years old since this age group has been shown to be the most accessible and tech-savvy (eMarketer, 2018; Young, 2016).

## 3.3 Data analysis methods

### 3.3.1 Descriptive statistics

Statistics that can be used descriptively to highlight the features of a group of observations (i.e., the raw data). Descriptive statistics are the easiest to conduct and interpret and they are a good way to summarize data and provide a description of the sample. (Marshall and Jonker, 2010). In this thesis, we propose descriptive statistics for demographic analysis including gender, age, place of living, education level and income. And then, our group used SPSS to perform an analysis of the primary data collected from the respondents.

### 3.3.2. Cronbach's alpha reliability

Cronbach's alpha is a common technique for calculating reliability, such as when assessing the dependability of a score to condense the information from numerous questionnaire items (Christmann and Van Aelst, 2006). According to Lee Cronbach (1951), the internal consistency of a test or scale can be measured with Cronbach’s alpha, which is displayed as a value between 0 and 1. Internal consistency refers to the degree to which each item in a scale measures the same notion or construct and is thus related to how closely related the items are to one another. Before a scale is used for research or examination purposes, internal consistency should be assessed to assure validity. Reliability estimates also display the level of measurement inaccuracy on a scale. This definition of dependability is the correlation of a scale with itself, to put it simply. It is obvious that researchers will employ this technique to get rid of useless variables and maintain the accuracy of the scale. Cronbach's alpha reliability coefficient is analyzed by the following criteria, if the coefficient is 0.70 or higher, the scale is considered to be reliable. A high value of alpha (> 0.90) may indicate redundant items in the scale, while a low value of alpha may be the result of a small number of questions in the scale (Kilic, 2016). Brown (2002) concluded that researchers can investigate the

dependability of observed variable test outcomes using Cronbach's alpha tool because it is useful and flexible.

In conclusion, we propose the reliability analysis of Cronbach's Alpha based on SPSS software. This tool will assist in determining whether the parent factor's observed variables are good or dependable. This test measures how closely observed variables in the same factor are correlated. In this thesis, we use Cronbach's alpha to test the reliability of variables such as social influence, service environment, perceived usefulness and customer satisfaction.

### 3.3.3. Exploratory Factor Analysis (EFA)

Exploratory factor analysis is a sophisticated and multivariate statistical method frequently used in psychology, social science, education and information systems (Taherdoost et al., 2022). By identifying common factors that affect the measured variables, EFA aims to discover the hidden structure of the observed variance and reduce them to be more manageable, while keeping the original variance. From the above concept, EFA is suitable for the thesis when finding the factors affecting customer satisfaction. According to Shrestha ( 2021), the Kaiser-Meyer-Olkin (KMO) measure of sample adequacy and Bartlett's test of Sphericity are two statistical measures to evaluate the factorability of the data. The range of Kaiser-Meyer-Olkin (KMO) values is 0 to 1. Kaiser-Meyer-Olkin (KMO) values between 0.8 and 1.0 show that the sampling is sufficient. Kaiser-Meyer-Olkin (KMO) levels between 0.6 and 0.69 are mediocre, whereas those between 0.7 and 0.79 are merely average. Kaiser-Meyer-Olkin (KMO) values below 0.6 indicate insufficient sampling and corrective action should be taken. The results of the factor analysis will surely not be adequate for the examination of the data if the value is less than 0.5. The null hypothesis is tested using Bartlett's Test of Sphericity. A component analysis may be useful for the data set if the significant value is less than 0.05 (< 0.05). Besides, the number of factors in the EFA analysis is indicated by Eigenvalue and factors having an Eigenvalue equal to 1 (or > 1) are thought to match the requirements. The Total Variance Extended is greater than or equal to 50 percent, which indicates that the EFA model is appropriate. A Multivariate Data Analysis load factor of 0.5 is a good observational variable (Hair et al., 2009). Factor Loading has a value of 0.3 to 0.4 to meet the minimum condition that the variable is accepted as a significant variable (Nunnally, 1978).

In conclusion, to identify observed variables that upload numerous factors or observed variables that have been incorrectly allocated from the start, this method aids in assessing the correlations between variables in all distinct groupings (factors). We chose SPSS to

facilitate the implementation of Exploratory Factor Analysis (EFA). In this thesis, our research model has identified 3 independent, dependent and intermediate variables, according to Hair et al (2010) "Mixing dependent and independent variables in a single factor analysis and then using the derived factors to support dependence relationships is inappropriate". Thus, we use exploratory factor analysis (EFA) to test separately for independent variables (social influence), intermediate variables (service environment; perceived usefulness) and dependent variables (customer satisfaction).

### 3.3.4 Confirmatory Factor Analysis (CFA)

Confirmatory factor analysis (CFA) is one of the types of factor analysis and is commonly applied by researchers to their scientific research analysis models (Kline, 2023). Like EFA, Confirmatory Factor Analysis (CFA) is to explore new constructs and confirms hypothesized constructs of a measurement (Fayers and Machin, 2000). But unlike EFA, researchers think that a hypothesized latent variable, displays the behaviors or thoughts of individuals that are observed (Phakiti, 2018). According to Preedy's paper (2010), the author defines CFA as a method of factor analysis to validate a pattern of relationships estimated based on theory or previous analytical findings. Another theory, CFA is a multivariate technique that allows researchers to verify that a latent variable's inference from observed variables can be supported (Phakiti, 2018). Bagozzi & Foxall (1996) suggest that CFA is a more effective technique for assessing the accuracy and dependability of measures.

According to Hu & Bentler (1999), the fit model evaluation indicators are as follows:

- TLI is good when $\geq 0.9$
- GFI $\geq 0.9$ is good, GFI $\geq 0.95$ is excellent
- CFI $\geq 0.8$ is acceptable, CFI $\geq 0.9$ is good and CFI $\geq 0.95$ is excellent
- CMIN/df CMIN/df $\leq 5$ is acceptable, but if $\leq 3$ is good.
- RMSEA $\leq 0.08$ is acceptable and while RMSEA $\leq 0.06$ is good

In conclusion, Confirmatory Factor Analysis (CFA) supports testing and evaluating the overall fit of the data based on the model fit indexes, assessing the quality of the observed variables, considering whether the observed variables in the scale whether it is suitable, have met the standard and finally evaluates the convergence and discriminability of the variable structures. To make these assessments effective, we have recommended Amos software to perform Confirmatory Factor Analysis.

### 3.3.5 Test Modeling with Structural Equation Modeling (SEM)

Structural equation modeling (SEM) is an all-around statistical methodology to test or evaluate hypotheses on relationships between observable and latent variables (Hoyle, 1995). Another theory, SEM is a multivariate statistical method that assists researchers in assessing the validity of a theory or hypothesis using empirical data (Phakiti, 2018). Therefore, SEM is frequently used to test theoretical hypotheses against empirical evidence (Haenlein and Kaplan, 2004). On the other hand, the causal model and confirmatory factor analysis were assessed using structural equation modeling (Harrington, 2008), which was utilized to investigate the validity and reliability of the measurement model. The structural equation model (SEM) is being used as an alternative by more and more authors in the study (Haenlein and Kaplan, 2004). In addition, one of SEM's advantages is its adaptability, which enables the analysis of complex relationships, the use of diverse data types (such as category, count variables, censored and dimensional) and comparisons between different models (Wolf and Miller, 2013). As a second-generation technique, SEM permits the simultaneous modeling of relationships between several independent and dependent constructs, in contrast to regression-based approaches, which only study one layer of linkages between independent and dependent variables at a time (Gefen and Boudreau, 2000). The convergence values are calculated by Anderson and Gerbing (1988) as follows: Regression Weight > 0; P- value < 0.05; Standardized Regression Weight $\geq 0.5$.

In conclusion, SEM was the method we used to investigate the relationships the proposed model suggests and to make the testing of the proposed model go smoothly, structural equation modeling (SEM) was carried out in AMOS using a maximum likelihood estimate.

## 3.4 Research ethics

### 3.4.1 Ethical considerations

Ethics is regarded as a way of doing and human conduct in all situations and endeavors must be moral. Research ethics also refers to the laws governing research, normative behavior, right and wrong and what should be done or not (Dolly, 2017). The conduct of research is also covered by ethics, which must be taken into account at different stages of the research process (Bickman & Rog, 2009). In addition, the significance of the research community is a topic of ethical concern, with human rights legislation and restrictions on investigatory discretion that should be viewed as moral and self-contained to preserve your research.

### 3.4.2 Possible ethical issues & solutions

There are several ethical issues for the research sector nowadays as a result of the introduction of more and more widely used technology. Additionally, it is possible to access research information that is no longer confidential as it once was, spread it throughout the website and use other people's research papers as a source of knowledge without giving credit, acknowledging the source, or naming the author's own, plagiarized, or requesting someone else to do the research. Furthermore, these issues, which include disrespecting the research paper's author and even exploiting it for unethical objectives like stealing the research paper's exact words, are widespread and easy to come across today. Also, information and personal data should be kept confidential in order to address the issue of unlicensed research that has been placed on websites. In addition, several institutions employ apps that check for plagiarism; if there is a high proportion, they will be punished and given the opportunity to retake the course. Moreover, you are accountable for your own ethical conduct in terms of research if you engage in unacceptable, unethical, or unethical actions (Dolly, 2017). Therefore, in order to avoid unneeded events, it is important to be honest, objective and ethical when performing research for a paper, you should also pay attention to each research stage.

## 3.5 Especially, privacy protection

It is important to maintain the confidentiality of respondent data and ensure its integrity. Investigators personal data must be kept confidential. No tampering or misrepresentation of information. In summary, the researcher warrants that the study will not have any negative impact on any individual or organization participating in the research. Data security principles include data integrity, safety, confidentiality and responsible storage. The author will be solely responsible for any matters relating to the research, including the article or any publication.

### 3.5.1 Difficulties in getting data; difficulties in using models.

Respondents: The author sends the survey form online via social networking sites like Zalo, Facebook and email, etc but some customer surveys don't pay much attention to them, so they don't provide research-worthy answers. If the survey fails, it takes a lot of time and effort for the research team to conduct the next survey.

The time required to collect survey data is limited, as the survey period lasts from 7 days to 14 days. In summary, the information we received from online survey respondents was very limited and lacking in terms of information and sample size.

Using and choosing a model to fit the topic of the thesis is a big challenge. On the other hand, this model takes the necessary hypotheses from previous research and incorporates them into its practical applications to match the thesis topic chosen by the team.

## 3.6 Conclusion

A non-probability sample approach was used by the team to match members' time and cost requirements. Create a compelling thesis by combining primary data with secondary data sources at the same time. Although primary and secondary data have benefits and drawbacks that are different, both are crucial to the argument. The study team will subsequently devise a procedure for applying descriptive statistics to data analysis. This is the simplest method because it asks consumers questions about the hotel's 360-degree virtual tour technology while also gathering basic demographic data from them. The second is to use Cronbach's alpha reliability to evaluate the degree of consumer trust after they have contributed surveys and answered questions using a five-level Likert scale. Applying the factor discovery approach is the third step. This is a technique for locating and decreasing the observable mistake's hidden structure so that it may be easily managed while retaining the original error. This technique, in contrast to the reliability application method, requires more work since it must identify the components that correlate to the variables listed in the thesis, assess the load coefficients associated with those variables and provide a variable that is suitable for the research. Next is the confirmation method. Unlike the factor exploration method, it is used to identify models through theories from previous studies and potential variables that can represent the behavior and feelings of the object being observed. Finally, experimental modeling and structural equation modeling. The model is capable of analyzing complex and diverse data, unlike the regression method, which only studies the link between independent variables and dependent variables at the same time.

# CHAPTER 4

# ANALYSES AND FINDINGS

*In Chapter 4, the group will focus on data analysis and findings regarding customer satisfaction when using 360-degree virtual tours at hotels in Can Tho City. The group will utilize the SPSS and AMOS program to identify factors influencing satisfaction and explore the impact of demographics on these variables. Data analysis reveals a strong positive correlation between customer satisfaction and the use of virtual tours. This result suggests that customers using virtual tour technology tend to have higher levels of satisfaction.*

## 4.1 Descriptive statistical analysis

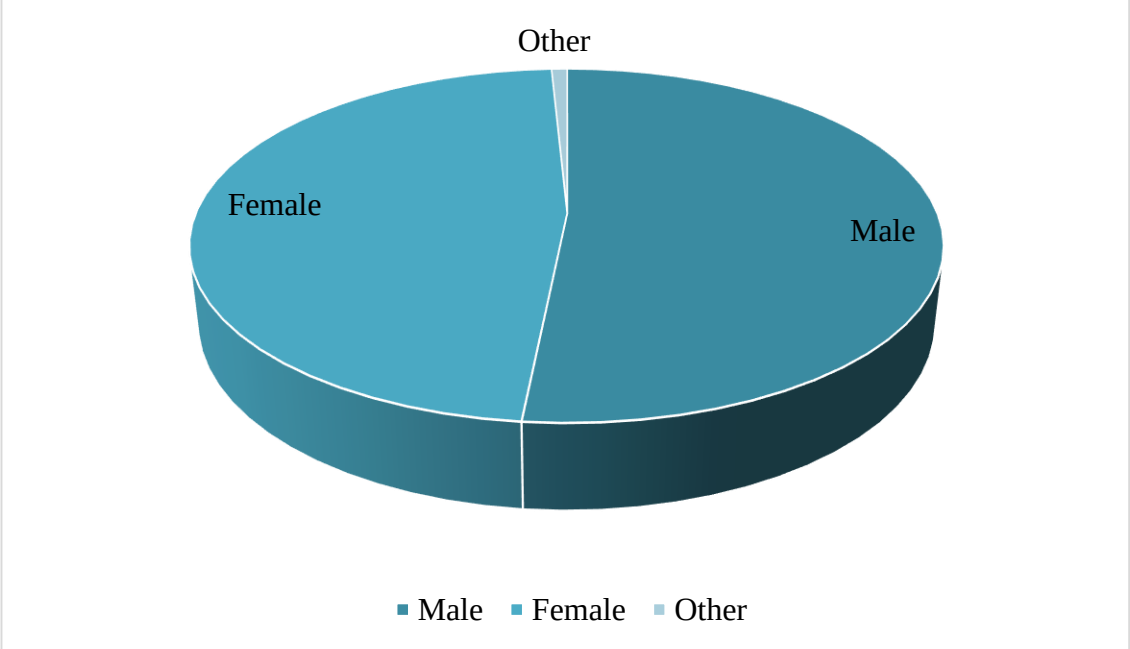


**Figure 4.1: Gender statistics**

According to Figure 4.1, among the 250 participants, 52.6% were male (129 respondents), 47.6% were female (119 respondents) and 0.8% identified as another gender. According to the data, we can see that the differences between the answers of males and females are not significant.

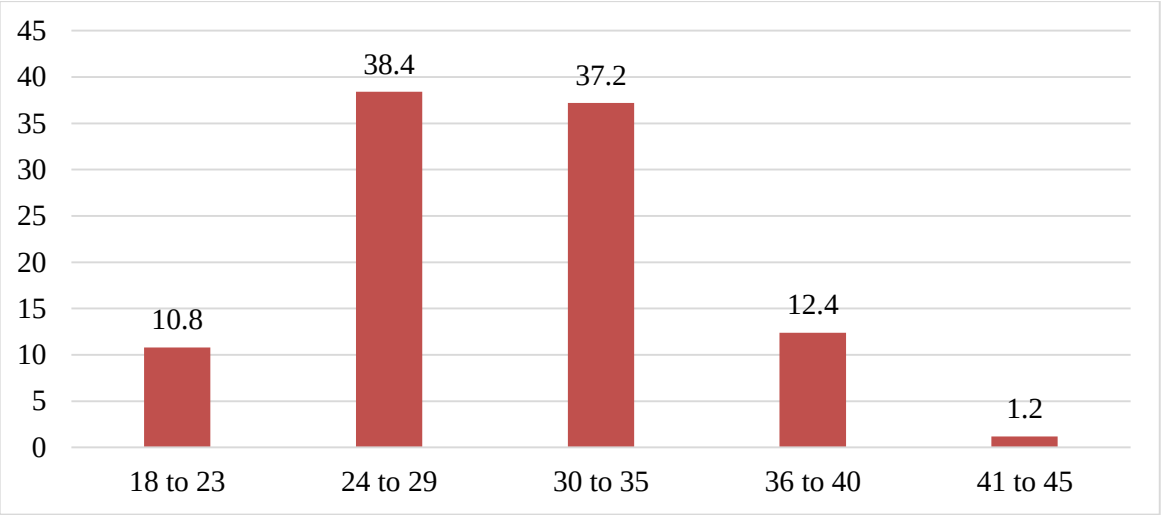


**Figure 4.2: Age statistics**

The distribution of survey participants by age group from Figure 4.2 shows that the highest percentage is in the age group of 24 to 29 years old (38.4%), followed by the age group of 30 to 35 years old (37.2%). The age group of 36 to 40 years old accounts for 12.4% with 31 individuals. The age group from 18 to 32 years old has 27 individuals, representing 10.8%. The age group of 41 to 45 years old has the lowest representation, accounting for only 1.2% of the survey sample. These findings highlight the importance of different ages in order to enhance customer satisfaction with the virtual tour experience.

**Table 4.1: Hometown statistics**

| | **Frequency** | **Percent** |
|---|---|---|
| Vinh Long | 8 | 3.2 |
| Kien Giang | 11 | 4.4 |
| Ca Mau | 11 | 4.4 |
| Soc Trang | 4 | 1.6 |
| Bac Lieu | 7 | 2.8 |
| Hau Giang | 3 | 1.2 |
| An Giang | 9 | 3.6 |
| Dong Thap | 5 | 2.0 |
| Lam Dong | 5 | 2 |

| | Frequency | Percent |
|---|---|---|
| Tra Vinh | 2 | .8 |
| Ho Chi Minh | 37 | 14.8 |
| Ha Noi | 28 | 11.2 |
| Da Nang | 18 | 7.2 |
| Moc Chau | 1 | .4 |
| Hue | 6 | 2.4 |
| Ha Tinh | 5 | 2.0 |
| Thai Binh | 4 | 1.6 |
| Thanh Hoa | 4 | 1.6 |
| Nghe An | 3 | 1.2 |
| Long An | 12 | 4.8 |
| Quang Ninh | 3 | 1.2 |
| Son La | 2 | .8 |
| Tay Ninh | 6 | 2.4 |
| Quang Nam | 7 | 2.8 |
| Gia Lai | 4 | 1.6 |
| Binh Dương | 15 | 6.0 |
| Ha Nam | 2 | .8 |
| Lang Son | 6 | 2.4 |
| Hai Phong | 15 | 6.0 |
| Ben Tre | 2 | .8 |
| Đong Nai | 3 | 1.2 |
| Binh Đinh | 1 | .4 |
| Vung Tau | 1 | .4 |
| **Total** | **250** | **100.0** |

The results from Table 4.1, show that within the survey sample of 250 individuals. It can be observed that their hometowns originate from 34 different provinces and cities. The most represented provinces and cities are Ho Chi Minh City with 37 individuals, accounting for 14.8%. Following closely is Hanoi with 28 individuals, representing 11.2%. Da Nang has 18 individuals, making up 7.2%. Hai Phong and Binh Duong both have 15 individuals, each accounting for 6%. Long An accounts for 4.8% with 12 individuals. Kien Giang and Ca Mau each have 11 individuals, constituting 4.4% each. The provinces of Moc Chau, Binh Dinh, and Vung Tau have the lowest representation, each accounting for 0.4%.

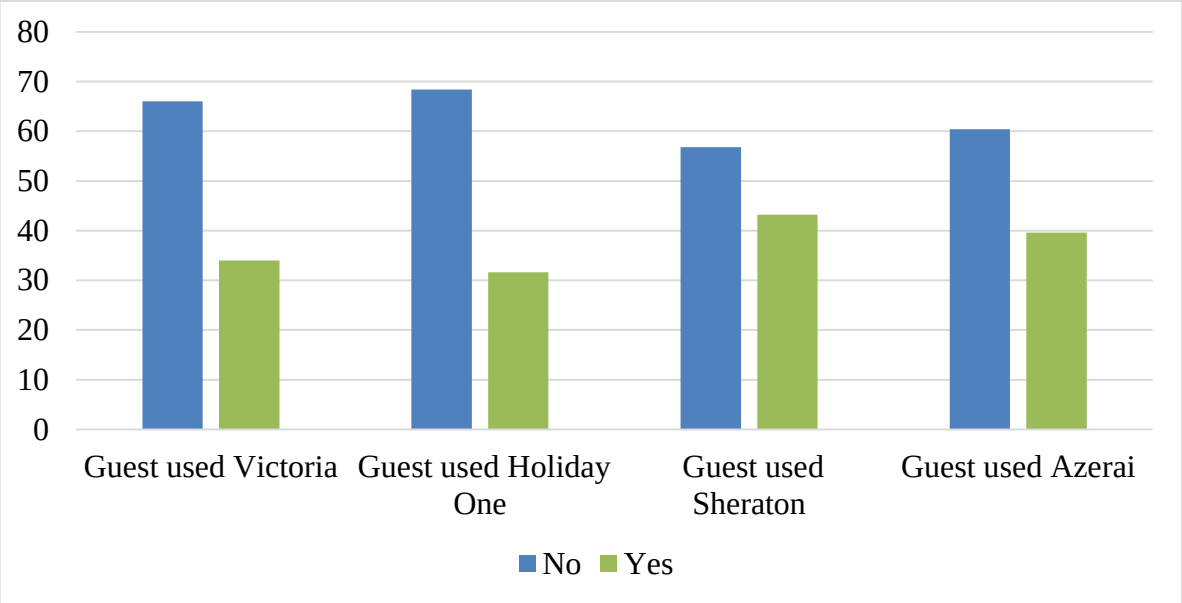


**Figure 4.3: Guest used hotel statistics**

From Figure 4.3, we can observe the number of customers who selected to utilize the service at four hotels. The highest number of respondents was for the Sheraton Hotel, with 108, accounting for 43.2%. Azerai received 99 respondents, representing 39.6%. The Victoria Hotel was chosen 85 times, accounting for 34%. Finally, there were 79 selections, representing 31.6%.

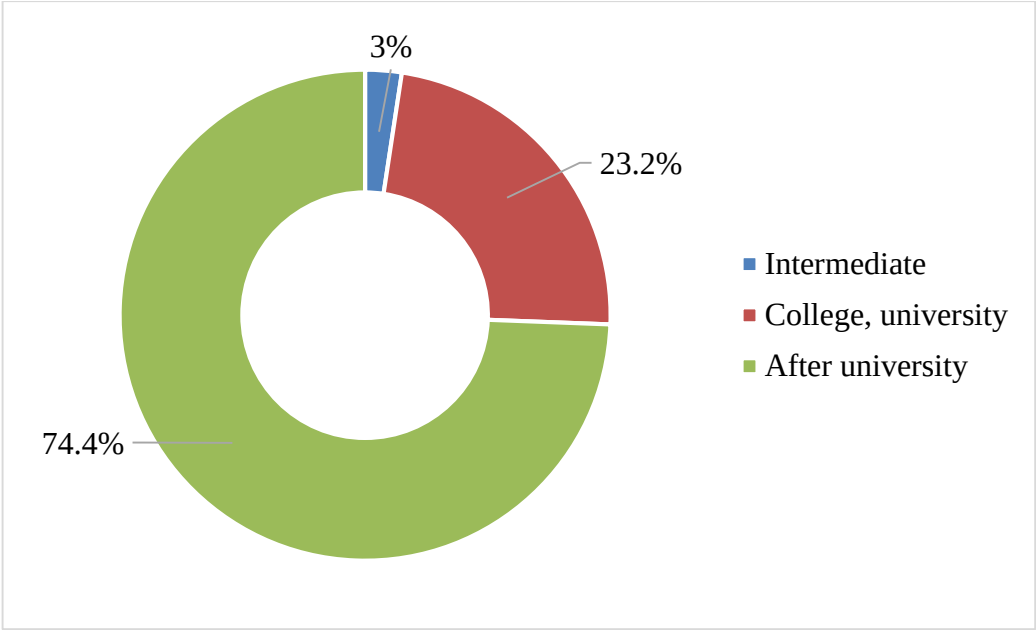


**Figure 4.4: Education statistics**

From Figure 4.4, we can observe the education level of customers who have chosen to use the virtual tour 360 degrees when booking hotel rooms at a hotel in Can Tho City: 6 individuals (2.4%) had completed a vocational education level, 58 individuals (23.2%) had a college or university degree and the highest proportion was postgraduate education, with 186 individuals (74.4%).

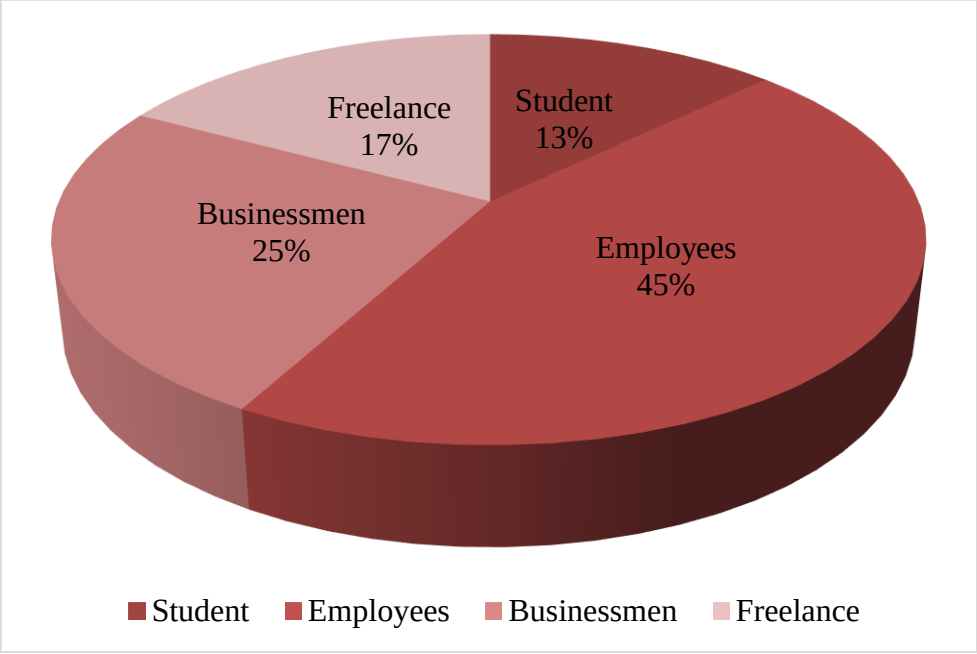


**Figure 4.5: Job statistics**

From Figure 4.5, we can observe the occupation of customers who have chosen to use the virtual tour 360 degrees when booking hotel rooms at a hotel in Can Tho City. The highest proportion was among employees or workers (45.2%), followed by businessmen (24.8%). The lower proportions were among students (12.8%) and the self-employed (17.2%). ion was postgraduate education, with 186 individuals (74.4%).

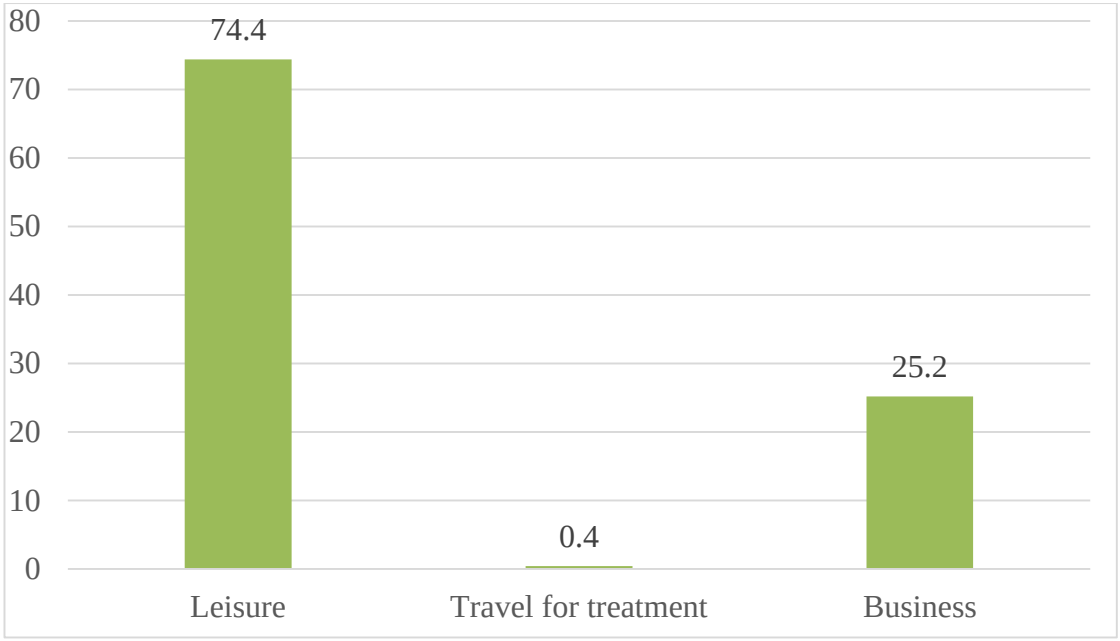


**Figure 4.6: Purpose of booking statistics**

The data from Figure 4.6, shows that travel is the primary purpose, accounting for 74.4% of the total. Meanwhile, the purpose of Travel for treatment has a very small proportion, only 0.4%. Besides, business purposes account for 25.2%.

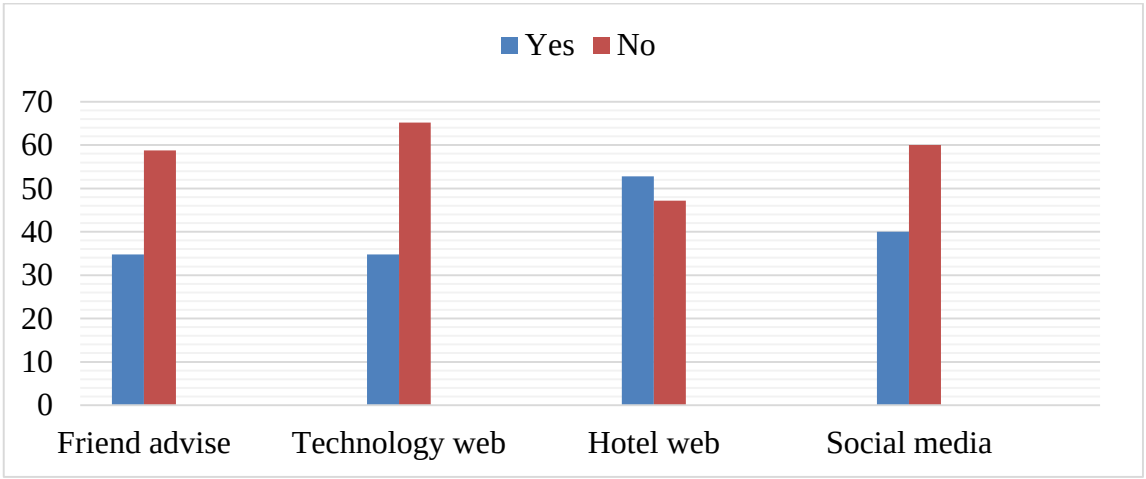


**Figure 4.7: Know virtual reality through statistics**

The results from Figure 4.7, show that awareness of Can Tho's virtual tour technology: The data reveals that 132 individuals (52.8% of the total) became aware of Can Tho's virtual tour technology through hotel websites, 103 individuals (41.2% of the total) were introduced to it by friends, social media accounted for 40% of 100 individuals, technology websites accounted for 87 individuals (34.8% of the total).

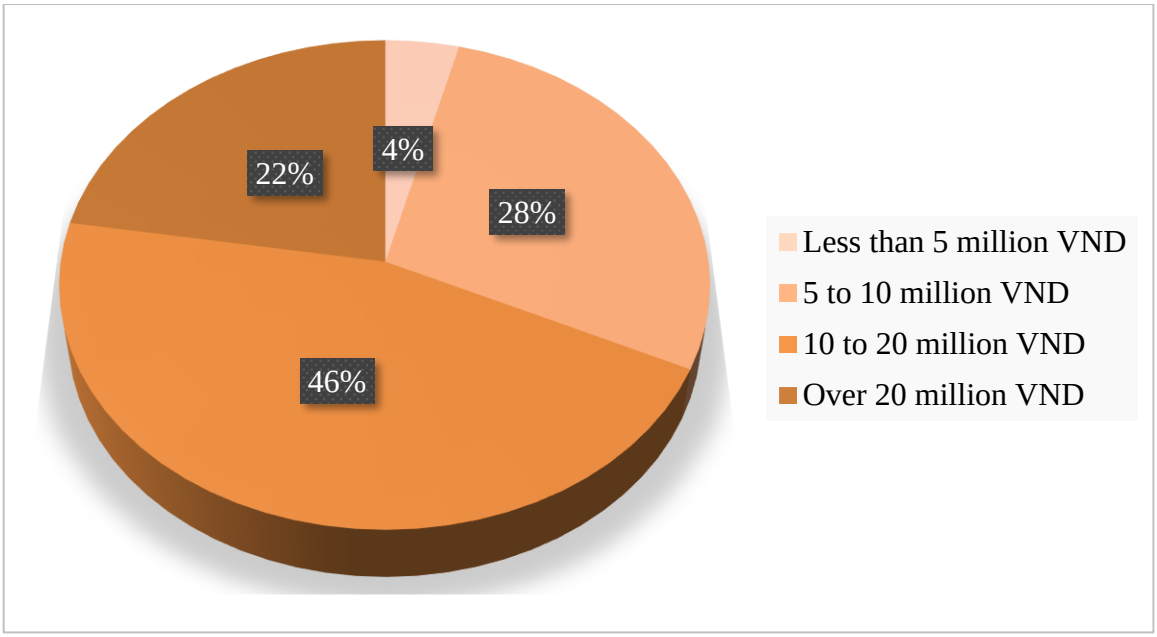


**Figure 4.8: Income statistics**

Frequency analysis data on income from figure 4.8, shows that: Below 5 million VND: 10 individuals, accounting for 4%. From 5 to 10 million VND: 70 individuals, representing 28%. From 10 to 20 million VND: 114 individuals, making up 45.6%. Above 20 million VND: 56 individuals, comprising 22.4%. This data indicates income disparities within the survey sample. The average income level falls within the range of 10 to 20 million VND, accounting for the highest proportion at 45.6%. However, there are also individuals with lower incomes (below 5 million VND) and higher incomes (above 20 million VND).

**Table 4.2: Descriptive Measuring Mean and Standard Deviation**

| | N | Minimum | Maximum | Mean | Std. Deviation |
|---|---|---|---|---|---|
| SE1 | 250 | 1.00 | 5.00 | 4.1160 | .90876 |
| SE2 | 250 | 1.00 | 5.00 | 3.9880 | .88487 |
| SE3 | 250 | 1.00 | 5.00 | 3.9120 | .97779 |
| SE4 | 250 | 1.00 | 5.00 | 3.9920 | .87349 |

| | N | Minimum | Maximum | Mean | Std. Deviation |
|---|---|---|---|---|---|
| SE5 | 250 | 1.00 | 5.00 | 3.9240 | .84918 |
| SI1 | 250 | 1.00 | 5.00 | 3.7840 | .96596 |
| SI2 | 250 | 1.00 | 5.00 | 3.7840 | .94918 |
| SI3 | 250 | 1.00 | 5.00 | 3.8800 | .94932 |
| PU1 | 250 | 1.00 | 5.00 | 4.0800 | .88812 |
| PU2 | 250 | 1.00 | 5.00 | 3.9880 | .92046 |
| PU3 | 250 | 1.00 | 5.00 | 4.1040 | .93846 |
| TE1 | 250 | 1.00 | 5.00 | 3.8440 | .95882 |
| TE2 | 250 | 1.00 | 5.00 | 4.0760 | .88167 |
| TE3 | 250 | 1.00 | 5.00 | 4.1520 | .89672 |
| CS1 | 250 | 2.00 | 5.00 | 4.1360 | .84401 |
| CS2 | 250 | 1.00 | 5.00 | 4.0600 | .83136 |
| CS3 | 250 | 2.00 | 5.00 | 4.3640 | .71663 |

Table 4.2, shows that all variables have a mean value of 4 (rounding according to the math formula). Furthermore, the standard deviation of the CS3 variable is the least (0.71) and the biggest is SE3 (0.97).

## 4.2 Reliability Test – Cronbach's Alpha

To determine the reliability of the scale, as well as the relationship between the observable variable and the independent variable. The group used Cronbach's Alpha to test. There are 4 key variables in total: Service Environment (SE), Social Influence (SI), Perceived Usefulness (PU) and Customer Satisfaction (CS).

**Table 4.3: Cronbach Alpha's test**

| Code | Scale Mean if Item Deleted | Scale Variance if Item Deleted | Corrected Item-Total Correlation | Cronbach's Alpha if Item Deleted |
|---|---|---|---|---|
| **Service Environment**<br>**Cronbach Alpha's = 0.798** | | | | |
| **SE1** | 15.8160 | 7.556 | .565 | .765 |
| **SE2** | 15.9440 | 7.290 | .655 | .736 |
| **SE3** | 16.0200 | 7.072 | .611 | .750 |
| **SE4** | 15.9400 | 8.008 | .492 | .786 |
| **SE5** | 16.0080 | 7.735 | .582 | .760 |
| **Social Influence (SI)**<br>**Cronbach Alpha's = 0.750** | | | | |
| **SI1** | 7.6640 | 2.730 | .566 | .680 |
| **SI2** | 7.6640 | 2.658 | .617 | .620 |
| **SI3** | 7.5680 | 2.817 | .550 | .698 |
| **Perceived Usefulness (PU)**<br>**Cronbach Alpha's = 0.758** | | | | |
| **PU1** | 8.0920 | 2.726 | .537 | .732 |
| **PU2** | 8.1840 | 2.360 | .666 | .585 |
| **PU3** | 8.0680 | 2.521 | .567 | .702 |
| **Customer Satisfaction (CS)**<br>**Cronbach Alpha's = 0.754** | | | | |
| **CS1** | 8.4240 | 1.771 | .610 | .640 |
| **CS2** | 8.5000 | 1.769 | .630 | .614 |
| **CS2** | 8.1960 | 2.231 | .518 | .742 |

Table 4.3, Cronbach Alpha's indexes range from 0.750 - 0.798 > 0.6. Besides, the total correlation coefficient (Corrected Item-Total Correlation) of the observed variables is greater than 0.3. Prove that the scales of the factors are reliable and also prove that the

reliability between the relationship between the observed variables and the independent variables is absolute.

## 4.3 Exploratory Factor Analysis (EFA)

### 4.3.1 Independent Variables

**Table 4.4: KMO and Bartlett's test of Independent Variables**

| KMO and Bartlett's Test | | |
|---|---|---|
| Kaiser-Meyer-Olkin Measure of Sampling Adequacy. | | .684 |
| Bartlett's Test of Sphericity | Approx. Chi-Square | 174.344 |
| | df | 3 |
| | Sig. | .000 |

From Table 4.4, the Kaiser-Meyer-Olkin index = 0.684 > 0.5 meets the conditions of exploratory factor analysis ($0.5 \leq KMO \leq 1$). Bartlett's Test sig = 0.000 < 0.005, so we can see the statistically significant correlation of the observed variables of the independent variable, so the observations are suitable for factor analysis to discover.

**Table 4.5: Total Variance Explained of Independent Variables**

| Total Variance Explained | | | | | | |
|---|---|---|---|---|---|---|
| | Initial Eigenvalues | | | Extraction Sums of Squared Loadings | | |
| Factor | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % |
| 1 | 2.001 | 66.690 | 66.690 | 1.513 | 50.422 | 50.422 |
| 2 | .552 | 18.411 | 85.101 | | | |
| 3 | .447 | 14.899 | 100.000 | | | |

From Table 4.5, total cumulative variance = 50.422% (under the condition >50%) and 2 factors of Initial Eigenvalues both have eigenvalues greater than 1. Therefore, it can be concluded that factor analysis is a suitable fit.

**Table 4.6: Pattern Matrix of Independent Variables**

| Factor Matrix[a] | |
|---|---|
| | Factor |
| | 1 |
| SI2 | .783 |
| SI1 | .684 |
| SI3 | .657 |

Besides, load factor of factors (>0.5), there is no disturbance between loading coefficients. That proves that the questions are not confused with each other and are the same. The indicators are all good and it is possible to test the next analysis.

### 4.3.2 Mediating Variable

**Table 4.7: KMO and Bartlett's test of Mediating Varia**

| KMO and Bartlett's Test | | |
|---|---|---|
| Kaiser-Meyer-Olkin Measure of Sampling Adequacy. | | .727 |
| Bartlett's Test of Sphericity | Approx. Chi-Square | 422.309 |
| | df | 15 |
| | Sig. | .000 |

From Table 4.7, the Kaiser-Meyer-Olkin index = 0.727 > 0.5 meets the conditions of exploratory factor analysis ($0.5 \leq KMO \leq 1$). Bartlett's Test sig = 0.000 < 0.005, so we can see the statistically significant correlation of the observed variables of the independent variable, so the observations are suitable for factor analysis to discover.

**Table 4.8: Total Variance Explained of Mediating Variables**

| Total Variance Explained | | | | | | |
|---|---|---|---|---|---|---|
| | Initial Eigenvalues | | | Extraction Sums of Squared Loadings | | |
| Factor | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % |
| 1 | 2.638 | 43.962 | 43.962 | 2.194 | 36.565 | 36.565 |
| 2 | 1.475 | 24.588 | 68.550 | 1.020 | 16.998 | 53.563 |
| 3 | .590 | 9.828 | 78.378 | | | |
| 4 | .521 | 8.683 | 87.060 | | | |
| 5 | .403 | 6.719 | 93.780 | | | |
| 6 | .373 | 6.220 | 100.000 | | | |

From Table 4.8, total cumulative variance = 53.563% (under the condition >50%) and 2 factors of Initial Eigenvalues both have eigenvalues greater than 1. Therefore, it can be concluded that factor analysis is a suitable fit.

**Table 4.9: Factor matrix of Mediating Variables**

| Pattern Matrix[a] | | |
|---|---|---|
| | Factor | |
| | 1 | 2 |
| SE2 | .788 | |
| SE1 | .745 | |
| SE3 | .664 | |
| PU2 | | .846 |
| PU3 | | .711 |
| PU1 | | .599 |

Besides the load factor of factors (>0.5), there is no disturbance between loading coefficients. That proves that the questions are not confused with each other and are the same. The indicators are all good and it is possible to test the next analysis.

### 4.3.3 Dependent Variable

**Table 4.10: KMO and Bartlett's test of Dependent Variable**

| KMO and Bartlett's Test | | |
|---|---|---|
| Kaiser-Meyer-Olkin Measure of Sampling Adequacy. | | .677 |
| Bartlett's Test of Sphericity | Approx. Chi-Square | 183.141 |
| | df | 3 |
| | Sig. | .000 |

From Table 4.10, the Kaiser-Meyer-Olkin index = 0.677 > 0.5 meets the conditions of exploratory factor analysis ($0.5 \leq KMO \leq 1$). Bartlett's Test sig = 0.000 < 0.005, so we can see the statistically significant correlation of the observed variables of the independent variable, so the observations are suitable for factor analysis to discover.

**Table 4.11: Total Variance Explained of Dependent Variable**

| Total Variance Explained | | | | | | |
|---|---|---|---|---|---|---|
| | Initial Eigenvalues | | | Extraction Sums of Squared Loadings | | |
| Factor | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % |
| 1 | 2.012 | 67.059 | 67.059 | 1.542 | 51.408 | 51.408 |
| 2 | .579 | 19.302 | 86.361 | | | |
| 3 | .409 | 13.639 | 100.000 | | | |

From Table 4.11, total cumulative variance = 51.408% (under the condition >50%) and 2 factors of Initial Eigenvalues both have eigenvalues greater than 1. Therefore, it can be concluded that factor analysis is a suitable fit.

**Table 4.12: Factor Matrix of Dependent Variable**

| Factor Matrix[a] | |
|---|---|
| | Factor |
| | 1 |
| CS2 | .788 |
| CS1 | .747 |
| CS3 | .602 |

Besides, load factor of factors (>0.5), there is no disturbance between loading coefficients. That proves that the questions are not confused with each other and are the same. The indicators are all good and it is possible to test the next analysis.

## 4.4 Confirmatory factor analysis (CFA)

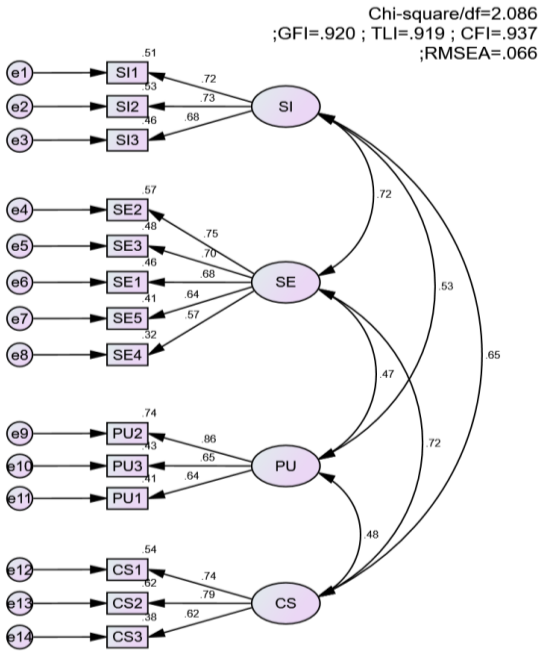


**Figure 4.9: Results of the standardized CFA model**

In Figure 4.9, confirmatory factor analysis (CFA) results in Chi-square/df = 2.086 ≤ 3; GFI = 0.920 ≥ 0.9; TLI = 0.919 ≥ 0.9; CFI = 0.937 ≥ 0.9; RMSEA = 0.066 ≤ 0.08 (Hu & Bentler, 1999). Thus, these analytical criteria all show that the above confirmatory factor analysis model is appropriate.

**Table 4.13: Model validity measures**

| | CR | AVE | MSV | MaxR(H) | SE | PU | SI | CS |
|---|---|---|---|---|---|---|---|---|
| **SE** | 0.801 | 0.449 | 0.517 | 0.81 | **0.67** | | | |
| **PU** | 0.767 | 0.528 | 0.281 | 0.813 | 0.467*** | **0.727** | | |
| **SI** | 0.751 | 0.502 | 0.517 | 0.753 | 0.719*** | 0.530*** | **0.709** | |
| **CS** | 0.759 | 0.515 | 0.513 | 0.774 | 0.716*** | 0.477*** | 0.650*** | **0.717** |

*** $p < 0.001$

According to Hair et al. (2010), they used composite reliability (CR) ≥ 0.7, Average Variance Extracted (AVE) ≥ 0.5, Maximum Shared Variance (MSV) < AVE and Square Root of AVE (SQRTAVE) > Inter-Construct Correlations in the Fornell and Larcker table to evaluate the convergent validity and discriminant validity of the scale. Thus, from the above evaluation criteria, we have the results from Table 4.13 as follows:

- Convergent Validity: CR is between 0.751 and 0.801 and AVE of all variables is greater than 0.5, except the SE variable has AVE = 0.449. Therefore, although the scale has high reliability, convergence is still not guaranteed.
- Discriminant Validity: Considering the evaluation criteria of Hair et al. (2010), the discriminant between variables is not guaranteed because SE and SI both have coefficients of Maximum Shared Variance (MSV) > Average Variance Extracted (AVE).

Therefore, the Validity and Reliability Test (Validity master tool) of AMOS software suggested that to increase the convergence of the model, two observed variables SE4 and SE5 should be removed (Gaskin et al., 2016). Therefore, we decided to remove two observed variables SE4 and SE5 to continue running the second CFA model test.

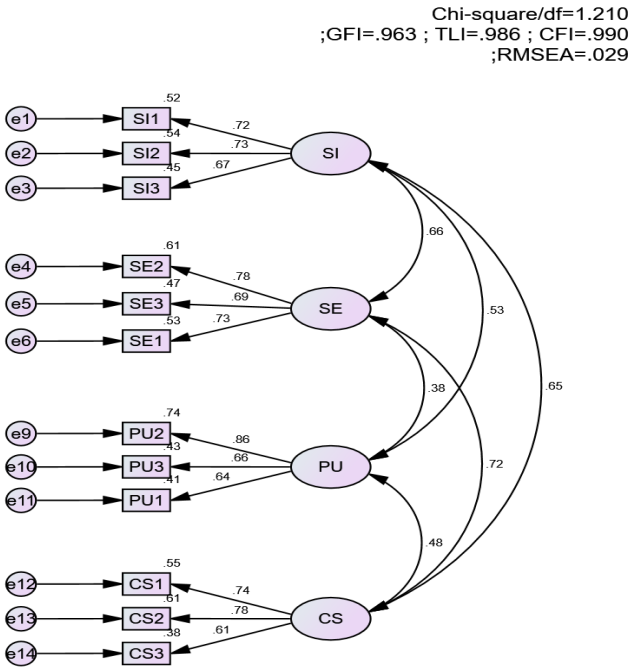


**Figure 4.10: Results of the standardized CFA model (2nd)**

After removing two observed variables SE4 and SE5 and running CFA for the second time, from Figure 4.10 we show that the confirmatory factor analysis (CFA) gives Chi-square/df = 1.210 ≤ 3; GFI = 0.963 ≥ 0.95; TLI = 0.986 ≥ 0.95; CFI = 0.990 ≥ 0.95; RMSEA = 0.029 ≤ 0.06 (Hu & Bentler, 1999). Thus, these analytical criteria all show that the second confirmatory factor analysis model fits higher than the first.

**Table 4.14: Model validity measures (2nd)**

| | CR | AVE | MSV | MaxR(H) | SE | PU | SI | CS |
|---|---|---|---|---|---|---|---|---|
| **SE** | 0.777 | 0.537 | 0.511 | 0.782 | **0.733** | | | |
| **PU** | 0.767 | 0.528 | 0.281 | 0.811 | 0.381*** | **0.727** | | |
| **SI** | 0.751 | 0.502 | 0.433 | 0.754 | 0.658*** | 0.530*** | **0.709** | |
| **CS** | 0.759 | 0.514 | 0.511 | 0.774 | 0.715*** | 0.478*** | 0.649*** | **0.717** |

*** $p < 0.001$

From Table 4.14, the second result for the reliability of convergence and discriminant are as follows:

- Convergent Validity: CR ranges from 0.751 to 0.777 and the AVE of all variables is greater than 0.5. Therefore, the scale is reliable and convergence is guaranteed.
- Discriminant Validity: All indices of MSV are less than AVE and the square root AVE of one variable (SE = .733; PU = .727; SI = .709; CS = .717) is greater than the correlation between that variable and other variables in the model. Thus, the variables in the model are guaranteed to be discriminant.

In summary, the affirmative factor analysis results of the model on customer satisfaction when using 360-degree virtual tour in Can Tho ensure reliability, convergence and distinctiveness.

**Evaluate the quality of observed variables**

**Table 4.15: Quality assessment table of observed variables**

| | | | Regression Weights | | | | Standardized Regression Weights |
|---|---|---|---|---|---|---|---|
| | | | Estimate | S.E. | C.R. | P | Estimate |
| SE2 | <--- | SE | 1 | | | | 0.78 |
| SE3 | <--- | SE | 0.975 | 0.099 | 9.814 | *** | 0.688 |
| SE1 | <--- | SE | 0.96 | 0.093 | 10.294 | *** | 0.729 |
| PU2 | <--- | PU | 1 | | | | 0.86 |
| PU3 | <--- | PU | 0.779 | 0.087 | 8.944 | *** | 0.657 |
| PU1 | <--- | PU | 0.721 | 0.082 | 8.805 | *** | 0.643 |
| SI1 | <--- | SI | 1 | | | | 0.721 |
| SI2 | <--- | SI | 0.997 | 0.106 | 9.431 | *** | 0.732 |
| SI3 | <--- | SI | 0.914 | 0.103 | 8.888 | *** | 0.671 |
| CS1 | <--- | CS | 1 | | | | 0.744 |
| CS2 | <--- | CS | 1.038 | 0.1 | 10.387 | *** | 0.784 |
| CS3 | <--- | CS | 0.7 | 0.081 | 8.594 | *** | 0.613 |

*** in AMOS is 0.000

**Evaluate the quality of observed variables**

From the results of Table 4.15, it is shown that the Regression Weights all have p-values of 0.000 < 0.05 and the estimates of Standardized Regression Weights ranging from 0.613 to 0.86 are all greater than 0.5, even greater than 0.7 (Hair et al., 2010). Therefore, observation variables like service environment (SE), perceived usefulness (PU), social influence (SI) and customer satisfaction (CS) are significant and fit well in the model.

## 4.5 Structural Equation Modeling (SEM)

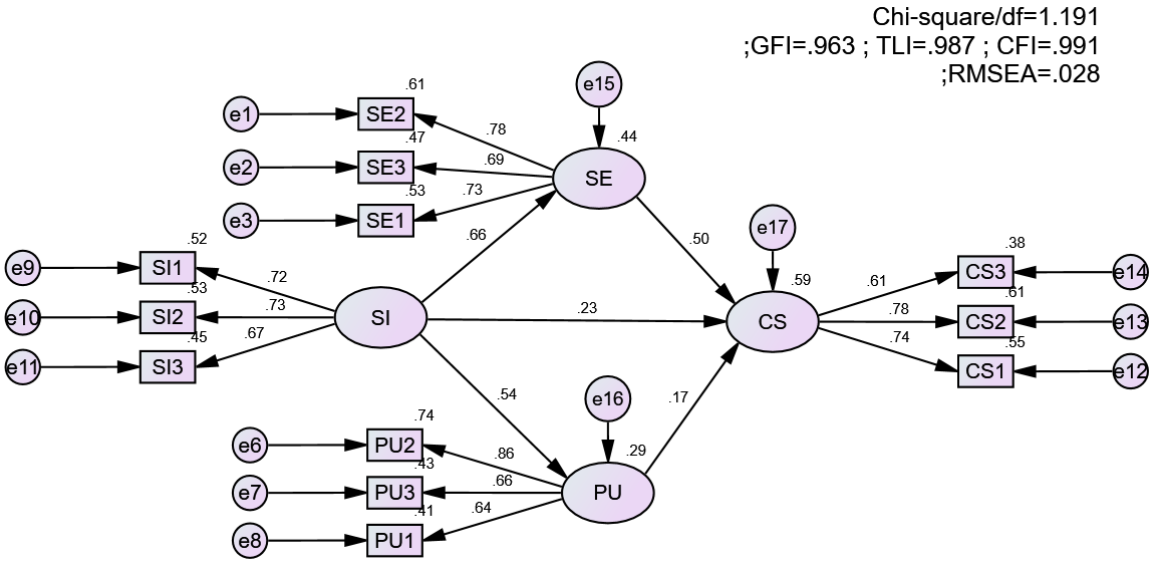


**Figure 4.11: Results of the standardized SEM model**

From Figure 4.11, the results of the SEM model show that Chi-square/df = 1.191 ≤ 3; GFI = 0.963 ≥ 0.95; TLI = 0.987 ≥ 0.95; CFI = 0.991 ≥ 0.95; RMSEA = 0.028 ≤ 0.06 (Hu & Bentler, 1999). The analysis results of Figure 4.11 show that the correlation relationship between the variables is appropriate.

So, the hypothesis's result below:

**Table 4.16: Results of testing the hypotheses in the theoretical model**

| | | | Estimate | S.E. | C.R. | P | Hypotheses accepted | Hypotheses rejected |
|---|---|---|---|---|---|---|---|---|
| SE | <--- | SI | 0.658 | 0.089 | 7.387 | *** | H1 | |
| PU | <--- | SI | 0.61 | 0.094 | 6.463 | *** | H3 | |
| CS | <--- | SI | 0.209 | 0.108 | 1.926 | 0.054 | | H2 |
| CS | <--- | PU | 0.134 | 0.066 | 2.043 | 0.041 | H5 | |
| CS | <--- | SE | 0.453 | 0.1 | 4.543 | *** | H4 | |

***: P < 0.01

Table 4.16 shows that the p values of the variables are all less than 0.05. The normalized weights all show positive numbers, so the variables represented as intermediate variables (SE, PU) have a positive effect on the dependent variables (CS). Hypotheses H1, H3, H4, H5, H6 have been supported. Besides, the SEM analysis results in Table 4.16 also show that the correlation is not significant between the two variables SI and CS (P = 0.054 > 0.05). Therefore, we have rejected the H2 hypotheses:

H2: Social influence positively affects customer satisfaction when using 360-degree virtual tour to book hotels in Can Tho. The results of Table 4.16 indicate that social influence does not directly affect customer satisfaction or that social influence indirectly affects customer satisfaction through service environment and perceived usefulness of 360- degree virtual tour of hotels in Can Tho.

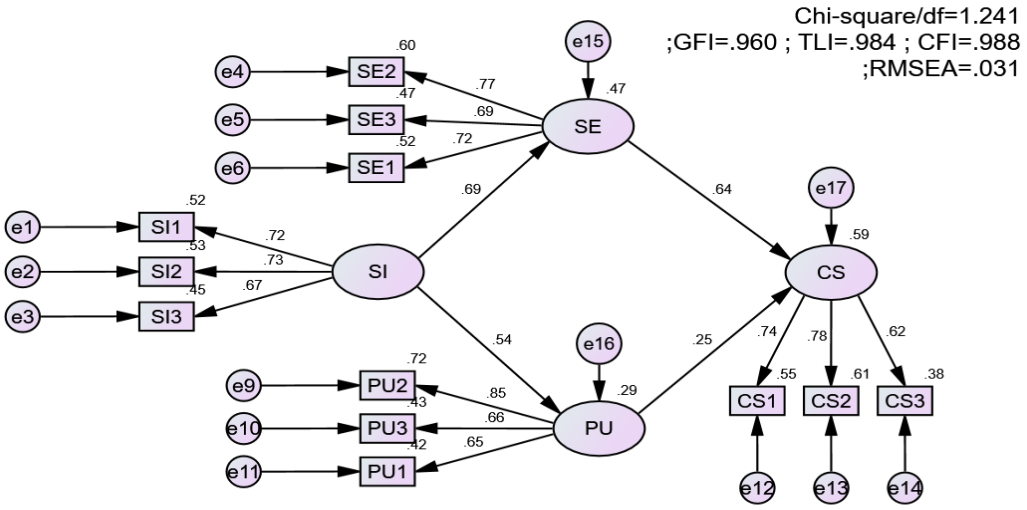


**Figure 4.12: Results of the standardized SEM model (2nd)**

From Figure 4.12, the results of the SEM model show that Chi-square/df = 1.241 ≤ 3; GFI = 0.960 ≥ 0.95; TLI = 0.984 ≥ 0.95; CFI = 0.988 ≥ 0.95; RMSEA = 0.031 ≤ 0.06 (Hu & Bentler, 1999). The analysis results of Figure 4.12 show that the correlation relationship between the variables is appropriate.

**Table 4.17: Result of the Squared Multiple Correlation**

| | Estimate |
|---|---|
| PU | .294 |
| SE | .471 |
| CS | .595 |

From Figure 4.12 and Table 4.17, the analysis results show that service environment (SE) and perceived usefulness (PU) explain 59.5% of the variation in customer satisfaction (CS) and their influence on customer satisfaction (CS) is 0.64 (SE) and 0.25 (PU), respectively. In which, service environment (SE) has a stronger impact on customer satisfaction (CS) than perceived usefulness (PU) and has a positive effect on customer satisfaction (CS). If SE increases by 1 unit, CS increases to 0.64 units, which will greatly affect customer satisfaction when using a 360-degree virtual tour of hotels in Can Tho.

For the independent variable social influence (SI), it explains 47.1% of the variation of service environment (SE) and for perceived usefulness (PU), social influence (SI) explains relatively little with 29.4% variation of perceived usefulness (PU). In which, service environment (SE) and perceived usefulness (PU) are affected by social influence (SI) with impact levels of 0.69 and 0.54 respectively. In other words, When SI increases by 1 unit, SE increases by 0.69 units and PU increases by 0.54 units. Therefore, from the results of the SEM model study, it is shown that the level of impact of social influence (SI) on service environment (SE) and perceived usefulness (PU) is quite high, leading to social influence (SI) having the potential to indirectly affect customer satisfaction through service environment (SE) and perceived usefulness (PU).

## 4.6 Implications of raw finding

As previously said, the major goal of this thesis is to evaluate client satisfaction when approaching hotels in Can Tho utilizing a 360-degree virtual tour. In order to confirm the level of customer satisfaction when implementing new technology, this study adds to the

body of general literature on the hotel industry by conducting surveys of customers using precise, succinct and accurate factors like service environment, social influence, perceived usefulness and feedback from satisfaction. Numerous studies of a similar nature have already been conducted and tested outside of Can Tho City in other states and provinces. The study of technology in conjunction with the hotel industry in Can Tho is one of the few research papers, nonetheless, that not many people are aware of. This offers us a fresh viewpoint on research that is comprehensive and thorough, utilizing many new features in the objective evaluation of consumers regarding the hotel business as a whole through relatively new technology in Can Tho city.

In the context of the countrywide survey, the selection of this topic title by our research team represents a novel advancement and a watershed moment for hotel research in Can Tho city. This thesis adds to the body of knowledge that is very useful for speeding up the process of finding hotels and for making the experience more pleasant. Contributing to the creation of better methods for promoting the hotel industry's growth, addressing flaws and aiding investors to lower the danger of absenteeism and increasing knowledge of the direction that contemporary trends in products are taking in the eyes of customers. Our study subject is practical in the sense that it may be quickly and conveniently used to gather potential consumer information. Through surveying and evaluating objectively from customers in the process of experiencing hotels in Can Tho, this will help customers feel their importance to the hotel industry.

# CHAPTER 5

# CONCLUSION AND RECOMMENDATIONS

**Overview**

*In this last chapter, our group will provide the findings of the analysis and the data gathered to answer the research questions raised in Chapter 1. This thesis concludes with a discussion of the study's limitations and some recommendations for future research on customer satisfaction while employing Virtual tours 360 degrees in hotels.*

## 5.1 Discussion

### 5.1.1 Research Question 1: What is the current usage status of 360-degree virtual tours in hotels in Can Tho City?

In Can Tho's hotel market, there are approximately 600 accommodation establishments offering over 11,000 rooms. However, only 4 hotels have implemented 360-degree virtual tours, indicating that not all hotels have adopted this technology. Among these hotels, Sheraton Hotel is the most popular choice for virtual tours, accounting for 43.2% of the total selections. Azerai and Victoria Hotels also attract significant interest, accounting for 39.6% and 34% of the total selections, respectively. This demonstrates that virtual tours have garnered considerable attention and engagement from potential customers. With a positive and robust trend, 360-degree virtual tours are becoming increasingly popular in Can Tho's hotels. Implementing virtual tours can be a valuable tool to enhance customer interaction, attract potential customers, and improve overall customer satisfaction in a competitive hotel market.

The survey on the participants' hometowns shows that they come from 34 provinces and cities across Vietnam, divided into three regions: Northern Vietnam, Central Vietnam, and Southern Vietnam. The highest interest in virtual reality tours is observed among individuals from the Southern region, indicating a particular fascination with virtual exploration. This may be due to the fact that the Southern region, especially Can Tho city, boasts numerous attractive tourist destinations. Additionally, the proximity and convenience of traveling to Can Tho make it an appealing destination, and its well-developed tourism industry sparks curiosity among locals, encouraging them to explore further through virtual reality experiences at the city's hotels. Moreover, the Northern region also shows significant interest in 360-degree virtual tours. Can Tho, being a developing tourist destination (Vietnam vi ve

dep bat tan, 2019), attracts many tourists from the Northern region due to its serene waterways and unique Mekong Delta landscape (Can tho du lich mien song nuoc, 2023). Furthermore, the cost of traveling to Can Tho is often lower compared to other tourist areas, which further stimulates the interest of Northern tourists in this city. Additionally, the implementation of 360-degree virtual tour technology in the hotel reservation system in Can Tho has provided added conveniences for tourists. Before making a reservation, travelers can easily explore and experience the hotel rooms and spaces through virtual reality, making them more confident and excited about their trip to Can Tho. However, the Central region displays the lowest interest among the surveyed regions. This could be attributed to factors such as a smaller sample size or potential geographical, economic, or social aspects influencing their interest in virtual experiences, as popular tourist destinations are more concentrated in the Central region.

Regarding 360-degree virtual tours in hotels in Can Tho, analyzing the age groups of survey participants provides an overview of the interest and acceptance of this technology among different customer segments. The majority of survey participants belong to the age group from 24 to 35, comprising over 75% of the total sample. This age group consists of young and middle-aged individuals who are inclined to experiment with new technologies and embrace unique experiences eMarketer (2018) and Young (2016). The age group from 36 to 40 accounts for 12.4% of the total sample. This group represents middle-aged individuals who typically have average age and familial and work responsibilities. Their participation may be relatively lower due to time and resource constraints, but some within this group still show interest in technology and are willing to participate in surveys about 360-degree virtual tours. The age group from 41 to 45 only makes up 1.2% of the total sample, indicating the least involvement from middle-aged and older individuals. For this group, participating in surveys may not be a priority or align with their personal schedules and interests. However, some individuals within this age range might explore and embrace new technology if they perceive the benefits and conveniences that 360-degree virtual tours can bring to their vacations and travels. In summary, analyzing the age-based interest in 360-degree virtual tours in Can Tho's hotels shows significant interest from young and middle-aged individuals eMarketer (2018) and Young (2016), while middle-aged and older individuals exhibit a lower tendency to participate. This provides crucial information for developing strategies and offering travel experiences that cater to the diverse needs of customers.

### 5.1.2 Research Question 2: What factors affect customer satisfaction utilizing a virtual tour 360 degrees at a hotel in Can Tho City?

Research topic on factors of customer satisfaction with Can Tho city hotels' use of 360-degree virtual tours. The primary objective is to validate the degree of customer satisfaction and the analysis of the data obtained following the surveying and collection of 250 samples. Besides, we will assess the authenticity of this research paper and display the elements that favorably influence customer satisfaction for the 360-degree virtual tour that the team has provided.

The results of the variables in the study, including service environment (SE), perceived usefulness (PU), social influence (SI), and customer satisfaction (CS). To observe and evaluate the factors that increase customer satisfaction when using a 360-degree virtual tour of the Can Tho hotel. The team used KMO and Bartlett's Test, Total Variance Explained, and the Rotated Component Matrix to evaluate whether the EFA results, the CFA model, and the SAM model were consistent with the study. After running out specific data, the results of specific variables are as follows:

**H1 and H3: The social influence of 360-degree virtual tours has a positive influence on service environment and perceived usefulness.**

According to KMO results and the sig coefficient, social influence (SI) has a favorable impact on service environment variables (SE) and perceived usefulness variables (PU). These two factors are perfectly matched and, at the same time, produce a result greater than 50% can join EFA. The service environment (SE) and perceived usefulness (PU) variables also have a substantial impact on customer satisfaction, according to the CFA model and the SEM model. The service environment (SE) has a stronger influence than perceived (PU). According to previous research by Jung et al. (2015) and Lai (2015), the importance of service quality and virtual reality contexts for customer satisfaction. Besides, Kim & Ko (2019) have also demonstrated that as the experience improves, customer satisfaction also increases.

**H2: Social influence positively affects customer satisfaction.**

For the social influence (SI) variable with KMO, sig, and outcome greater than 50%, these data show concordance and participation in EFA. In addition, CFA and SEM showed that social influence (SI) has an effect on customer satisfaction, but not directly but indirectly through variables. But when the index of the variable increases, it means that the social

influence (SI) also increases, thereby also affecting customer satisfaction. The earlier study by Bonn et al. (2016) found a correlation between social perception and customer satisfaction with 360-degree virtual reality tours. According to tom Dieck et al. (2018) argue that social influence often leads to an intention to use and purchase, which in turn affects consumer satisfaction. Bonn et al., (2016), a 360-degree virtual reality tour has a favorable impact on social and cognitive perception.

**H4 and H5: Service environment and perceived usefulness positively affects customer satisfaction.**

The variable customer satisfaction (CS) represents the fit and participation in EFA with the coefficient KMO and sig completely true to the condition. In addition, CFA and SEM also show that the customer satisfaction variable has reliability, indicating its appropriateness. In addition, service environment (SE) and perceived usefulness (PU) have a good impact on the customer satisfaction variable (CS), which is also positively affected by those two variables. According to research by Zviran (2005) and Huang (2018), perceived usefulness and satisfaction are strongly associated and have a positive influence on one another. Guttentag (2010) and Kim & Biocca (1997) state that the 360-degree virtual reality technology used in the hotel will enhance the customer experience through access and help customers see the virtual technology of the service easier, thereby improving customer satisfaction.

The above information is proven in a study on the variables that determine customer satisfaction when using a 360-degree virtual tour at the hotel. Research with 250 samples of all ages, genders, income levels, and pay levels for each trip. In addition, the information and data are analyzed clearly and specifically through SPSS to clearly show that the scale has high reliability. Clearly show the appropriate variables for the factors affecting customer satisfaction when using a 360-degree virtual tour at a hotel in Can Tho.

### 5.1.3 Research Question 3: What solutions are proposed to improve customer utilizing a virtual tour 360 degrees at a hotel in Can Tho City?

In the data analysis of Chapter 4, it was shown that three variables have an impact on customer satisfaction (CS), which are social influence (SI), perceived usefulness (PU) and service environment (SE). Therefore, it is vital to improve the variables through the variable social influence (SI), perceived usefulness (PU) and service environment (SE) in order to increase customer satisfaction when employing a 360-degree virtual tour.

The first factor is the service environment (SE) as a result, you should put greater emphasis on service in order to increase customer satisfaction. Enhance services by improving content, information and images in 360-degree virtual tours and by learning how to convey information well through lifelike, sharp, high-resolution images. In addition, bring many practical experiences about products, services and internal and external utilities so that customers can experience them without going directly to that location. Create futuristic experiences electronically so you can feel more of the 360-degree virtual tour before going to the actual experience.

Next is the social influence variable (SI), which is also the one that, when combined with a 360-degree virtual tour, has an impact on customer satisfaction. To enhance and improve social influence, the focus must be on the behavior that leads to the intention to use the service. Because social influence is an influence on an individual's perception, acceptance and behavior when under the influence of the surrounding environment. As a consequence, as more people use it, the trend of adopting virtual tours in 360 degrees will grow. Customers will then experience better, quicker and more convenient hotel services, leading to improved customer satisfaction.

Last but not least, perceived usefulness (PU) has the smallest effect but nevertheless helps make a 360-degree virtual tour more useful by making it easier for users to utilize, approach and form connections. Additionally, it is simple to obtain information, plan a trip more quickly, save a lot of money on travel expenses and take up little time, all of which increase customer satisfaction. When a 360-degree virtual tour is used at the hotel, all of these will have a positive effect and boost customer satisfaction.

## 5.2 Recommendation

Based on the final results obtained by the research team, the team has some recommendations for hotel businesses in the future which are shown in the following contents:

First, the factors that affect customer satisfaction for hotels in Can Tho are proposed. In the process of researching before, when applying virtual reality technology in general to the service industry such as hotels, it is necessary to pay attention to the accessibility from technology to customers in a positive and convenient and utility above all. When customers have some problems with their experience, make sure they can respond about technology or quality in general and the business side must have a customer care team and respond to those

feedback promptly, without delay. At the same time, it is necessary to set up a variety of languages in the 360-degree virtual tour, such as English, Vietnamese and Chinese to suit each customer's habits and culture.

Second, change the business form of hotels. The application of virtual tour 360 degree is a new breakthrough to integrate into the 5.0 technology platform along with other countries around the globe. This is not only a breakthrough, but it also brings many benefits to the hotel business such as attracting and retaining customers because of its novelty, speed and convenience for customers' own purposes. Being able to reduce quality and increase revenue is one of the strategies in business. However, wishing to receive more satisfaction from customers, the hotel tries to improve the quality of the actual service and the content, images and textures included in the 360-degree virtual tour technology. Create and simplify both hotel processes and virtual tours based on 5.0 technology. Moreover, currently in Can Tho city, there are not many hotels using this 360-degree virtual tour technology because the standard of living here is still stable and not high compared to other cities, investing in a new model in the hotel industry is quite risky for some businesses. However, there are still at least 4 hotels in Can Tho that have been applying this technology. Propagating the usefulness and constantly improving and developing is an important thing that businesses need to do to attract customer satisfaction.

In addition to the above, the research team also found that when hotels use technology, businesses need to pay attention to customer segments such as their origin. If they come from cities that specialize in tourism or abroad, their satisfaction may be low when experiencing here. Besides the origin, their personalities are similar, but with the effort to improve the service and present the hotel's image well through the new technology, the satisfaction will be significantly improved. Ultimately, it's about adding new theories to the corpus of hospitality and virtual reality in general. The factors affecting customer satisfaction mentioned in the article are not new to academic researchers. However, for the combination of hospitality and the virtual reality environment (360-degree virtual tour in particular), there have not been many research papers on this issue along with not many suitable theories for it.

In order to support customers to access 5.0 technology in Can Tho city, businesses choose beautiful and prominent corners at the hotel as the main filming angle such as the inner area including bedrooms, meeting rooms, restaurants and hotels. The outside area includes a swimming pool, outdoor check-in area... with natural light and sound effects for a lively

experience. In addition, businesses need to post new hotel technology on communication channels such as general social networks, travel communities, hotel websites or review groups. Promote and encourage customers to come experience with special attraction strategies such as vouchers, incentive programs. From the recommendations that the team makes, businesses can improve service value, change the way to attract new customers, and retain a strong impression for old customers.

## 5.3 Limitation and further research

During the research process, our team encountered some shortcomings and limitations in all aspects such as data collection, digital data analysis and analysis execution. First, the group's research thesis was carried out in Can Tho city with a nationwide scale, leading to the group's limitations in terms of geography, time and budget. So the team decided to conduct an online survey through social networking sites. Because of that limitation, the team could not directly survey the experts to get more information useful for the thesis. Second, during the sample collection process, the group could not directly conduct the survey with the survey subjects. The group's responses received data that were not logical and matched with each other, which contributed to the research team's problems in the data run. As a result, the team had to repeat the survey several times and adjust the survey method to be able to reach the group's target audience. Besides, the group is quite limited in terms of time. After finishing the first data collection, the group still had a little time to finish the thesis. When running the data for the first time, the results are unstable and unsatisfactory. The team then had to remove the poor quality survey samples, edit the survey questionnaires accordingly and repeat the survey many times to get better new data in a short period of time. Finally, the research team encountered financial barriers when there was no support from external sponsors and barriers in social relationships, so the research team could only do it through one main form, which is online. Members have difficulty in finding suitable survey subjects. Due to some risks and limitations, the results were not as expected before the implementation of the group. However, thanks to the efforts of the members, the study also gave a better result than before.

We believe this research will become popular and helpful in the future in contributing reliable and useful literature. There are several recommendations the team came up with after seeing the limitations. First, the expansion of the survey scale is advantageous because it will facilitate the diversity of data for the research article in the research treasure. Expanding the scope of research on virtual tour 360 degree in a larger scope, outside of Can

Tho city. Second, invest time and effort to cultivate and improve research theories and data analysis techniques so that the results are more positive. The future research team needs to increase the sample size to increase the representativeness of the research topic. At the same time, promptly remove bad samples to increase accuracy and reliability. Establish research time, reasonable division of research plan, supplement and edit. Third, choose topics that are likely to develop in the future, adapting to the times that customers tend to be most interested in. Finding, selecting, screening suitable models, sampling methods, setting up demographic factors and influencing variables suitable for each topic of the thesis. Finally, flexibly refer to previous related research papers or similar sources to produce complete research results.

## 5.4 Conclusion

The primary goal of this thesis is to identify the characteristics that influence customer satisfaction while using 360-degree virtual tours for hotel booking in Can Tho, Vietnam. According to the findings of the study, three aspects impact consumer satisfaction while utilizing 360 degree virtual tours in hotel booking: social influence, service environment and perceived utility. In which the service environment and perceived usefulness are two elements that have a direct impact on customer satisfaction, whereas social influence is an indirect component that must pass through two intermediary variables in order to have an impact on customer satisfaction. The obtained data and outcomes are more practical than theoretical in nature. It assists hotel businesses in improving the aspects that influence customer satisfaction. Businesses may thus retain target clients, boost customer numbers and become more competitive in the hospitality market.

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# APPENDIX

## APPENDIX 1: Questionnaire of factors affecting customer satisfaction when utilizing a virtual tour 360- degrees at hotels in Can Tho City

### GENERAL INFORMATION

**Q1: Have you used the 360-degree virtual tour before booking a hotel in Can Tho city?**

1: Yes

0: Not yet

**Q2. What is your gender?**

0: Male

1: Female

2: Other

**Q3. Where is your hometown?**

**….**

**Q4: At which hotels did you take the virtual reality tour? (Choose multiple answers)**

1. Victoria Hotel Can Tho City

2. Holiday One Hotel Can Tho City

3. Sheraton Hotel Can Tho City

4. Azerai Hotel Can Tho City

**Q5. How old are you?**

1: From 18 to 23 years old

2: From 24 to 29 years old

3: From 30 to 35 years old

4: From 36 to 40 years old

5: From 41 to 45 years old

**Q6. What is your education level?**

1: Intermediate

2: College, university

3: Postgraduate

**Q7. What is your marital status?**

1: Single

2: Dating

3: Married

**Q8. What is your current job?**

1: Students

2: Employees

3: Businessman

4: Freelance

Other…

**Q9. For what purpose did you book a room at Can Tho?**

1: Leisure

2: Travel for treatment

3: Business

Other: ...

**Q10. How do you know about Can Tho's virtual tour technology? (Choose multiple answers)**

1: Referred by friends

2: Websites about technology and electronic devices

3: Website of the hotel you are looking for

4: Social network (Facebook, TikTok, Zalo, etc.)

**Q11. How much is your monthly income?**

1: Under 5 million VND

2: From 5 million VND to less than 10 million VND

3: From 10 million VND to less than 20 million VND

4: Over 20 million VND

**Q12. In a year, how much money do you spend on hotel reservations?**

1: Under 5 million VND

2: From 5 million VND to less than 10 million VND

3: From 10 million VND to less than 20 million VND

4: Over 20 million VND

**Q13. When was the last time you booked a hotel room?**

1: About 1 month ago

2: About 6 months ago

3: About 1 year ago

**Q14. How many times have you booked a hotel room in Can Tho city?**

1: First time

2: From 2 to 5 times

3: From 6 to 10 times

4: Over 10 times

**Q15. How many star hotels do you usually stay in? (Choose multiple answers)**

1: Under 3 stars

2: 3 stars

3: 4 stars

4: 5 stars

**Q16. Do you prefer to choose a hotel that uses a 360-degree virtual tour over a hotel without a virtual reality tour?**

0: No

1: Yes

ASSESSMENT QUESTIONS

5-point likert scale

1: Strongly disagree

2: Disagree

3: No opinion

4: Agree

5: Strongly agree

| No. | | Questions | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|
| SERVICE ENVIRONMENT | | | | | | | |
| 1 | SE1 | When using the 360-degree virtual tour, the depth and breadth of the space make the destination feel more vivid. | | | | | |
| 2 | SE2 | When using the 360-degree virtual tour, the image quality makes the destination feel more vivid. | | | | | |
| 3 | SE3 | When using a 360-degree virtual reality tour, the sound is real and vivid, bringing me closer to the destination. | | | | | |
| 4 | SE4 | When I arrived at the hotel, I felt that the content about the facilities and surroundings of the 360-degree virtual tour was quite thorough and complete. | | | | | |
| 5 | SE5 | When I arrived at the hotel, I felt the information presented in a highly accurate 360-degree virtual tour. | | | | | |
| PERCEIVED USEFULNESS | | | | | | | |
| 6 | PU 1 | Thanks to the 360-degree virtual tour, I was able to easily find information about the hotel. | | | | | |
| 7 | PU 2 | Thanks to the 360-degree virtual tour, I have reduced the risks of choosing a hotel. | | | | | |
| 8 | PU 3 | Thanks to the information on the hotel's 360-degree virtual tour, I saved time and travel costs. | | | | | |
| SOCIAL INFLUENCE | | | | | | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 9 | SI1 | I have confidence in using the 360-degree virtual tour of the hotels in Can Tho. | | | | | |
| 10 | SI2 | The people around me use the 360-degree virtual tour, which affects my perspective and makes me want to use the 360-degree virtual tour. | | | | | |
| 11 | SI3 | 360-degree virtual tours are the current trend in technology, and using them helps me keep up with the times. | | | | | |
| CUSTOMER SATISFACTION | | | | | | | |
| 12 | CS 1 | I feel satisfied when using the 360-degree virtual reality tour at the hotel I booked. | | | | | |
| 13 | CS 2 | I feel satisfied with the virtual reality experiences of the 360-degree virtual tour and the actual stay at the hotel I booked. | | | | | |
| 14 | CS 3 | I feel satisfied with the usefulness of the 360-degree virtual tour. | | | | | |

**APPENDIX 2: Result of AMOS**

**Quality assessment table of observed variables**

| | | | Regression Weights | | | | Standardized Regression Weights |
|---|---|---|---|---|---|---|---|
| | | | Estimate | S.E. | C.R. | P | Estimate |
| SE2 | <--- | SE | 1 | | | | 0.78 |
| SE3 | <--- | SE | 0.975 | 0.099 | 9.814 | *** | 0.688 |
| SE1 | <--- | SE | 0.96 | 0.093 | 10.294 | *** | 0.729 |
| PU2 | <--- | PU | 1 | | | | 0.86 |
| PU3 | <--- | PU | 0.779 | 0.087 | 8.944 | *** | 0.657 |
| PU1 | <--- | PU | 0.721 | 0.082 | 8.805 | *** | 0.643 |
| SI1 | <--- | SI | 1 | | | | 0.721 |
| SI2 | <--- | SI | 0.997 | 0.106 | 9.431 | *** | 0.732 |
| SI3 | <--- | SI | 0.914 | 0.103 | 8.888 | *** | 0.671 |
| CS1 | <--- | CS | 1 | | | | 0.744 |
| CS2 | <--- | CS | 1.038 | 0.1 | 10.387 | *** | 0.784 |
| CS3 | <--- | CS | 0.7 | 0.081 | 8.594 | *** | 0.613 |

*** in AMOS is 0.000

**Results of testing the hypotheses in the theoretical model**

| | | | Estimate | S.E. | C.R. | P | Hypotheses accepted | Hypotheses rejected |
|---|---|---|---|---|---|---|---|---|
| SE | <-- | SI | 0.658 | 0.089 | 7.387 | *** | H1 | |
| PU | <-- | SI | 0.61 | 0.094 | 6.463 | *** | H3 | |
| CS | <-- | SI | 0.209 | 0.108 | 1.926 | 0.054 | | Rejected |
| CS | <-- | PU | 0.134 | 0.066 | 2.043 | 0.041 | H5 | |
| CS | <-- | SE | 0.453 | 0.1 | 4.543 | *** | H4 | |

***: P < 0.01

**Result of the Squared Multiple Correlation**

| | Estimate |
|---|---|
| PU | .294 |
| SE | .471 |
| CS | .595 |