

CAPITAL UNIVERSITY OF SCIENCE AND
TECHNOLOGY, ISLAMABAD



**Impact Of Service Robots And
Cognitive Image On Tourists Experience
Expectation To Form Visit Intention**

by

Naimah Khan

A thesis submitted in partial fulfillment for the
degree of Master of Science

in the

**Faculty of Management & Social Sciences
Department of Management Sciences**

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This thesis is dedicated to my Mother, husband and my daughter for their patience and support. Also, to my supervisor for his guidance, wisdom and knowledge to support me throughout the process



CERTIFICATE OF APPROVAL

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Abstract

Service robots have led the tourism and hospitality industry to serve its customer with more creative and better ways and arouse their interest in the destinations by intriguing their imagination. This has led to a paradigm shift in the hospitality and tourism industry. Tourist interest in selecting a certain place to visit is more dependent upon his or her expectations from the place and satisfaction of certain expectation goals. Expectations play an important role in tourists selection of a destination and visit intention formation. This study has been conducted to examine tourists experience expectation formation through cognitive image and service automation represented by service robots. This is a scenario based study and the data has been collected through purposive sampling technique. The data has been analysed through SmartPLS v 3.2.8. The results hold that the tourists experience expectations are built through proper identification and communication of stimuli. Moreover, different types of experiences do not generate same results. Output shows that tourists opt for tourist destinations on the basis of their expected experiences.

Keywords: Cognitive Image, Service Robots, Tourist Experience and Expectations, Perceived Anthropomorphism.

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Abbreviations

CI	Cognitive Image
DIVACT	Diverse Activities
ENVT	Environment
SE	Service Robots
TEEE	Tourists Experience Expectations
TOUINF	Tourists Site Infrastructure
VNIT	Visit Intention

Chapter 1

Introduction

Service automation has led the tourism and hospitality industry to serve its customer with more creative and better ways as well as arouse their interest in the destinations by intriguing their imagination. This has led to a paradigm shift in the hospitality and tourism industry. Tourist interest in selecting a certain place to visit is more dependent upon his or her expectations from the place and satisfaction of certain expectation goals.

1.1 Background of the Study

Expectations play an important role in shaping an individuals behaviours towards its their object of interest (C. Wang, Qu, & Hsu, 2016). Expectations signify the prediction of an occurrence, place or event in the mind of the consumer. It highlights the results anticipated by the consumer of the product or the service transaction in the future (Higgs, Polonsky, & Hollick, 2005). Consumers base their satisfaction judgement mostly on expectations built by marketers through expected performance of the services or product (Fodness & Murray, 1999) and heritage sites (Poria, Reichel, & Biran, 2006). Tourists expectations are perceptions formed by predetermined travel results and mostly consumers take on traveling to gratify more than one expectation (Andereck, McGehee, Lee, & Clemmons, 2012). International tourism has grown during the last three decades (Aliman, Hashim,

Wahid, & Harudin, 2014). This growth in tourism has attracted the interest of researchers to understand the phenomenon and also of marketers, agencies and governments (Cranshaw, Schwartz, Hong, & Sadeh, 2012). Private sector companies, agencies and government are equally interested in developing and maintaining the tourists sites and accommodation in Pakistan (Dawn.com, accessed, May 7, 2019). Various types of robots have been introduced in the market for instance service robots, entertainment robots, industrial robots. These robots have also been equipped to service and perform various tasks related to home that is automatic vacuums, dish cleaners etc (Dautenhahn, 2007). These service robots also perform medical help for elderly and disabled people and support their activities (Shibata & Wada, 2011). The bearing of enjoyment on the usefulness towards building expectations has not been studied so far in relation to each other. Mun and Hwang (2003), have stated that using of internet based and data based information had a significant impact on perceived ease of use and perceived usefulness. According to Park and Del Pobil (2013) service will have more utility by incorporating service robots with enjoyable features to be used in the industry. If they also exhibit some form of human qualities like showing care through wording or being helpful in generating information regarding site directions, airplane boarding etc. will be another added feature in automation and service robots. These human like features have been incorporated in the service robots in order to improve their working and their ability to engage persons in meaningful interactions (Moussawi & Koufaris, 2019).

The hospitality industry has been facing many challenges, which have real consequences, like the main problem faced by them is labour shortages, increase in tourists and international travelers and large amount of consumer data. In many countries, shortage of skilled workers is another big challenge for the industry (Ahmed, 2017). Tourism and hospitality industry is developing at a very high speed all over the world. Travel and hospitality industry has not only outperformed the global economic growth but also outpaced several major sectors in 2016 around the world (Costa, Carvalho, & Rodrigues, 2017). From the last many decades, the industry has capitalized billions of dollars in destinations often laying

the foundation for broader economic development. Due to globalization, the world has become smaller and as almost every corner of the globe is more accessible for many, tourism is already a vital sector for development across all continents (Liu & Keh, 2015).

Within the tourism context, satisfaction can result from the expectations, emotions, (Sheng & Chen, 2013) attitudes of the tourist (Bowen & Chen, 2001; Snchez, Callarisa, Rodriguez, & Moliner, 2006; Voss, Parasuraman, & Grewal, 1998), the perceptions of performance and attributes of the destination or company involve (Guiry, Scott, & Vequist, 2013) (Wang & Hsu, 2010). Use of Service robots is a novel and new idea which has fewer research studies based in Pakistan. Service robots generate curiosity and excitement in the tourist and can evoke positive tourist experience expectations (Ivanov, Webster, & Garenko, 2018; Murphy, Hoffacker, & Gretzel, 2017; Tung & Law, 2017; Tussyadiah & Park, 2018). Emerging hospitality and tourism robotic applications include service robots as waiters in Southeast Asia, bellboys in the USA and staff in a Japanese hotel, and industrial robots that clean, flip hamburgers or make drinks (Belk, 2016; Pan, Okada, Uchiyama, & Suzuki, 2015; Van Doorn et al., 2017).

Anthropomorphic service robots also focus on users perceptions of robots human-likeness based on facial features and mental capacities. Humanoid aspect of service robots relates to the users attribution of human capacities to a non-human agent. Objects are generally perceived to be human-like when they possess features or characteristics that reflect emotions, cognition, or intention (Aggarwal & McGill, 2007). In Pakistan, government is also taking keen interest in developing the tourist sites in various cities. This fact has also contributed in this study as the tourists, who visit various destinations, do so due to certain motivations. These motivations include unique experiences, service quality and entertainment. Although, using and incorporating robots in the tourism industry is getting common in the rest of the world but in Pakistan it is still limited to auto teller machines and order through mobile or computer apps, either at the store or in digital devices.

1.2 Problem Statement

1.2.1 Theoretical Problem Statement

Tourism and hospitality marketing companies goal in this evolving technological era is increase in their tourist base. To achieve this objective the companies try to incorporate creative strategies and unique propositions in their marketing packages. These unique propositions are creative ways served as stimuli for the tourists. But as a paradigm shift can be seen in tourism and hospitality industry in global arena more of unique insights are needed.

There are still researchers working on the stimuli that actually develop the experience expectations of the tourists. Pervious research (Chan & Tung, 2019; Ivanov, Gretzel, Berezina, Sigala, & Webster, 2019; Murphy, Gretzel, & Pesonen, 2019; Wang & Hsu, 2010) claims only a partial understanding of the factors affecting service robot and human interaction. Experience expectation formation in relation to automation through service robots and cognitive imaging draw attention to the need for further research. Much of the earlier research has been focused on whole destination image and consumer experiences (Gomezelj, 2016). Tourists experience expectations formation hasnt been studied in relation to humanoid service robots, environment, diverse activates and tourists site infrastructure (cognitive image). These factors influence tourists expectations and provide stimuli for an intention formation. Perception and expectation of the service have not been explored in relation to formation of visit intention.

According to Bowen and Morosan (2018), as there is a paradigm shift in the tourism and hospitality industry due to the use of service robots, this requires a new form of techniques to convince the tourists to adopt and indulge in system engagement. This requires the marketers, government agencies and the whole tourism sector to connect themselves with the customers and create strong bonds with them through the diffusion of innovation and ease of use of technology. So, the question that needs to answer is whether the customer will be influenced by varied experiences as stimuli to form visit intention by building up of expected experiences.

1.2.2 Contextual Problem Statement

All of the researches have been focused on western and countries with more developed tourism destinations. In Pakistan, tourism industry is in its infantile stage, incorporating right strategies at this time will render better results in terms of tourism inflow, engagement and loyalty through expectation building. This research will focus on how do cognitive image and service robot human like characteristics can enhance and form the tourists experience expectations towards increase in use of tourism services especially in Pakistan.

1.3 Research Gap

1.3.1 Theoretical Gap

Literature suggests that personality of a service robot and the way it interacts with the humans is unexplored area (Maeng & Aggarwal, 2017) and various brands can use perceived enjoyment of experiencing technology in the application field to improve the service extended to the customers (Murphy et al., 2019). Furthermore, personality is an important aspect of the design for service robots (Ricci, Rokach, & Shapira, 2011). As tourism and hospitality area is extremely diverse so service robots can be studied in different nationalities and across different cultures (Murphy et al., 2019). Sheng and Chen (2013), suggested that the future studies can probe situational factors that impact the tourists experience expectation building. These factors such as environment, tourists site infrastructure and diverse activities (cognitive image) can influence the tourists pleasant feelings expectations. This also includes the impact of perception of pleasant feelings on visit expectations of tourists (Sheng & Chen, 2013). This is also noted by Ivanov et al., (2019) in their meta-analysis on robotics, tourism and hospitality.

1.3.2 Contextual Gap

Ivanov et al., (2019), in their meta-analysis on robots, tourism and hospitality, have suggested that the future research can focus on national and cultural difference in peoples attitudes towards the use of service robots in tourism. Ivanov et al., (2018), pointed out that the acceptance of robots is impacted by different nationalities and cultures. This study aims to study the use of service robots in the hospitality and tourism industry as suggested by the literature (Ivanov et al., 2018; Ivanov et al., 2019).

1.3.3 Methodological Gap

Better results and more accurate analysis can be performed by using various new data analysis tools. Ivanov et al. (2019) suggested in their meta-analysis on robotics tourism and hospitality that structural equation modeling be used to highlight the use, acceptance and engagement of robots with the tourists. SEM will be used to analysis data in the current study.

1.4 Research Questions

Research Question 1

What is the impact of service robots (enjoyment perception) on tourists experience expectations formation to visit a certain place?

Research Question 2

How the relationship between environment, diverse activities, tourist site infrastructure, service robots and tourists experience expectations influence the tourists intention to visit a tourists destination?

Research Question 3

Whether or not there is a positive relation between environments, diverse activities, tourist site infrastructure and tourist experience expectations?

Research Question 4

What is the direct relationship between tourist experience expectation and intention to use the hotel facility?

Research Question 5

How positively or negatively the environment, diverse activities, tourist site infrastructure relationship with tourists experience expectation impacts the use intention of a tourist?

Research Question 6

If environment, diverse activities and tourist site infrastructure has a direct impact on visit intention of a tourist?

1.5 Research Objectives

Research Objective 1

To ascertain, that the service robots impact on tourists experience expectations formation and visit intention.

Research Objective 2

To empirically establish that there is positive relationship between environments, diverse activities, tourist site infrastructure and tourist experience expectations.

Research Objective 3

To empirically establish that there is positive relationship between tourist site infrastructure and tourist experience expectations.

Research Objective 4

To empirically establish that there is positive relationship between diverse activities and tourist experience expectations.

Research Objective 5

To ascertain whether there is a direct relationship between tourists experience expectation and intention to visit automated hotel facility.

Research Objective 6

To investigate that the relationship between environment and tourists experience expectations positively impact the tourists intention to visit tourists destination.

Research Objective 7

To investigate that the relationship between environment and tourists experience expectations positively impact the tourists intention to visit tourists destination.

Research Objective 8

To investigate that the relationship between service robots and tourists experience expectations positively impact the tourists intention to visit tourists destination.

Research Objective 9

To investigate that the relationship between tourist site infrastructure and tourists experience expectations positively impact the tourists intention to visit tourists destination.

1.6 Underpinning Theory

Current study will be explained with the help of the stimulus response model presented by Russell and Mehrabian (1974). This model is selected for this study as according to Stimulus organism response model environmental stimuli (directly or indirectly) impacts an individuals emotional and cognitive state and an attitude is formed. This emotional state in turn mediates the relationship between environment and human action (Russell & Mehrabian, 1974). The stimulation from the environment develops and forms an individuals cognition and gives the emotional response of either approach or avoidance towards an object of interest (Sangjae Lee, Jeon, & Kim, 2011). In this study, the stimuli from physical environment (infrastructure, presence of good quality hotels, services, night life and automation through robots) is considered as the stimuli (S) and thus considered to impact response (R) of the tourist in the form of visit intention formation. Tourist experience expectation formation is considered as the organism (O) in this study.

Previous literature (Lee et al., 2011; Mazaheri, Richard, & Laroche, 2010; Mummalaneni, 2005; Thang & Tan, 2003) have considered only the arousal dimensions with respect to the shopping environment. There is sufficient evidence that response as a behavioural outcome can be considered in these types of studies (Jang & Namkung, 2009).

Another reason for using stimulus response model in this study is that according to Russell and Mehrabian (1974), S-O-R model can be conceptualized for both service and retail environments. In the previous literature on stimulus response a linkage between store environment and the emotional estate has been established by Bagozzi, Gopinath, and Nyer (1999) and Baker, Levy, and Grewal (1992).

1.7 Significance of the Study

1.7.1 Theoretical Significance

According to previous literature there is a mounting research present on the human robot interactions (HRIs). These researches put emphasis on human centered experiences but these studies are more focused on engineering side of the robot and human interaction (Cao et al., 2019; Shin, Oh, & Lee, 2019; Wojciechowska, Frey, Sass, Shafir, & Cauchard, 2019). Even in Pakistan, fewer studies has been conducted on the student with mostly technical perspective (Hassannia, Barenji, Li, & Alipour, 2019; Malik, Munir, & Ali, 2019). Moreover, the research is focused on architecture and design of the robot and considering a very short term interaction between the human and robots (Kim & Banchs, 2014). Still, according to Ivanov et al., (2019) there must be distinct experiences arising from human robot interactions and can be highly relevant to advancing tourism experience research. In the light of this gap, the research paper seeks to; a). Review what have been done in the robotics literature, covering the environment, diverse activities, tourist site infrastructure and service robot acceptance that is relevant for HRI; and b). Identify important factors that form tourists experience expectations towards a destination.

1.7.2 Contextual Significance

Although, many studies have been conducted on human robot interaction around the world (Chen & Chen, 2010; Cutler & Carmichael, 2010; Gnoth, 1997; Gomezelj, 2016; Ivanov et al., 2018; Ivanov et al., 2019) but there are less than fewer in Pakistan (Hassannia et al., 2019; Malik et al., 2019). The significance of this study is the context in which it is studied that is Asia and particularly Pakistan. There has been substantial amount of research on hospitality and tourism industry, due to tourists attraction (Bowen & Morosan, 2018; Gomezelj, 2016; Sheng & Chen, 2013). This study will help Pakistans hotel and tourists industry as government is taking steps to develop the tourists sites. It will also help marketers in Pakistan to understand the motivational factors, enjoyment generation and excitement preferences that form tourists intention towards tourism for Pakistans tourists destinations.

1.8 Operationalization of Variables

1.8.1 Tourists Experience Expectations (TEEE)

Tourist expected experience can be defined as the perceived experience of the place which has the relaxing, friendly, entertaining, filled with local culture environment. Also, this shows lots of street life, legendary characters, servicing robots, automation and towns constructed by robots.

1.8.2 Service Robots (SR)

It can be defined as machines which gives lots of pleasure, positive feeling and enjoyment while using.

1.8.3 Cognitive Image (CI)

Image of the destination based upon beliefs, ideas and impressions of the place (Chen & Hsu, 2000; Phillips & Jang, 2007).

1.8.4 Environment (ENV)

Environment is defined as the accommodation with clean, safe, with inexpensive goods available, pleasant weather and attractive scenery.

1.8.5 Diverse Activities (DIVACT)

Diverse activities are perceived to have a variety of entertainment opportunities, night life and shopping facilities.

1.8.6 Tourist Site Infrastructure (TOUINF)

Tourist site infrastructure can be defined with good transportation, cultural and historic sites, airline schedules and variety of suitable accommodation.

1.8.7 Visit Intention (VINT)

Visit intention is defined as the intention towards staying at an automated hotel.

1.9 Organization of Study

Chapter one is about the introduction of the variables and the gap. Variables will be defined in this chapter. Theoretical and contextual problems and gaps will also be defined in this chapter. Chapter two will contain the literature review and the critical analysis of the previous studies present. Hypotheses and theoretical framework will also be discussed in this chapter. Third chapter will contain the methodology that will be used to collect and analyses the data. Chapter four is very important as it will contain the data analysis and discussion. Chapter five will be the conclusion of the thesis.

Chapter 2

Literature Review

2.1 Introduction

In the recent years (last two decades) there has been a paradigm shift in the area of tourism and hospitality. With the advent of service robots and automation many tasks have been shifted towards robots then done by the human work force. Furthermore, the cost of automation is decreasing, awareness and service quality in the tourism and hospitality has been increasing (Ivanov et al., 2018). This has prompted the tourists to demand better treatment and service. In research arena, as discussed by many scholars, on service robots work-ability and credibility as a new and improved tool for marketers (Ivanov et al., 2019; Murphy et al., 2019; Murphy, Hofacker et al., 2017). It stands out as a better option in relation to tourism and hospitality. World over acceptance of these technologies by the consumers have played a very important role in the technologies drive their use and ultimately, success in facilitating marketing goals. According to Ivanov and Webster (2017), one of the latest innovative technologies that are influencing the main stream tourism and hospitality sector are service robots. According to the World Travel and tourism Council (WTTC) tourism revenues for Pakistan in the year 2018 were around \$19.4 billion. It made up to 6.5 percent of the GDP in Pakistan. According to Dawn News (April, 2018), Government of Pakistan is making efforts to promote Pakistans tourists sites as much as possible. Automation

and service quality has played a very significant role in promoting tourism in Pakistan. This shows a substantial paradigm shift all over the world and also in Pakistan. Effort of this kind expresses an interest in the development of the tourism sites by Pakistans government. Furthermore, the tourists all over the world have used automation in one way or other. To cater to these tourists it is thus essential to develop tourists sites and fine tune the facilities and services present. It can only be achieved through more convenience, attractive sites and less waste of time. To create expectations in the mind of customers it is thus essential to portray the tourists' sites as best and with extra advantages like automation with the presence of service robots etc.

2.2 Service Sector With Special Reference To Tourism & Hospitality

Paradigm shift in all over the world has brought about changes in service sector and brought it into spot light. Due to increase in the recognition of need for vacation the service sector in its entire domain has experienced change (Bogliacino & Pianta, 2013). These incurring changes have put pressure in the service industry to improve and generate various new ideas in order to capture customers attention and loyalty. Service has become the source of competitive advantage in the service industry (Gomezelj, 2016). Introduction of the innovation is not the only important but execution and maintenance of that service is also important. Along with these services the infrastructure of the tourist site, the physical features and the cultural aspects are also important. Performance of service sector in the best possible way and the continuous improvement has more weight in this incessantly changing environment (Kyrgidou & Spyropoulou, 2013; Ngo & O'cass, 2013). Not much work has been done on the topic innovation in tourism and hospitality. Only articles found are of Carlborg, Kindstrm, and Kowalkowski (2014) on service innovation.

2.3 Service Robots

The impact of perceived enjoyment in terms of using service robots has been discussed in previous literature but with reference to attitude and beliefs (Park & Del Pobil, 2013). Davis, Bagozzi, and Warshaw (1992), studies used the concept of the effects of perceived enjoyment in their studies concerning the workplace. They also found that the perceived enjoyment increases the motivation to use the service. The term robot has been recognized and used in 1920s but their recognition as a useful machines for humans and for the industry is more worked and researched for in this time (Belk, 2016) and its importance in revolutionizing the various aspects of industries in general and of tourism and hospitality in specific is getting undeniable and earning the much needed attention. Although, different researchers and standards (Jacobs, Reiser, Hgele, & Verl, 2012; MOON, RHIM, CHO, & VIRK, 2010; Vasic & Billard, 2013) have defined Service robots in many ways but the most common definition that can be taken from ISO standards for service robots (ISO 8373:2012) states that “the service robots are useful machine that operates and service in the form of automated or semi-automated form for the wellbeing of the human and also of the equipment, of course manufacturing services are not included”. (Virk, Moon, & Gelin, 2008).

Rapid growth has been seen in tourism industry all over the world. This influx of tourists in tourism industry requires innovative designs to attract the customers. One of those ideas includes introduction of automation in tourism industry and the use of humanoid robots in those hotels (Gomezelj, 2016). With the advent of new ideas in the tourism in hospitality industry the researchers and marketers have been in search of new techniques and ways to attract tourists. In order to create uniqueness strategy for business and sustainability has been formulated and carved with the help various disciplines including operations, marketing, supply chain, human resources, information technology, research process, new product development and supply chain etc. Major focus of this study is service robots that are being used in the tourism and hospitality industry. These are personal service robots and have the most interaction with consumers and have the most relevance

as they have the most impact on the service provision of tourism and hospitality industry (Tung & Law, 2017; Tussyadiah & Park, 2018).

To understand the significance of service robots in the tourism and hospitality industry, it is thus imperative to comprehend the use of service robots in previous literature. First publication that dealt with the service robots as a concept in the service industry was published by Schraft and Wanner in 1993. It was paper regarding a service robot that can clean an aeroplane. Developing hospitality and tourism robotic services includes waiters that can serve drinks in hotels in Asia, humanoid front life representatives in Japan (Belk, 2016) and many other robots that can perform the duty of watchman, information processors and disseminators (Pan et al., 2015) in recognizable languages and also cooks that can flip burgers in USA (Van Doorn et al., 2017).

2.3.1 Research Studies with Context to Pakistan Related to Service Robots

Apart from these studies few of the research papers could be traced to Pakistan as well but they do not have a specific perspective to personal and service robots. Their main focus is industrial automation. The paper by Iqbal and Khan (2017) has expressed the role of potential source of renewable energy in powering robots in their paper in perspective of developing country like Pakistan. In another paper by Memon, Mangi and Jamro (2013), major focus is drawn towards the collision avoidance and alarm system security in the industrial robots. Asif, Sabeel, and Mujeeb-ur Rahman (2015) have worked on the design and development of the service robots for the restaurants to improve their transmission. In the book written by Moetesum and Siddiqi (2018) the authors have discussed about the artificial intelligence, humanoid aspect and deployment of emotional features and also physical embodiment of the robots. They explained it through uncanny valley theory. Various researchers have given their point of view and analyzed research outcomes to reach the desired results in order to help form a better understanding

of the human robot interaction. Furthermore, another important aspect is people going for different and novel experiences.

2.3.2 Impact Of Service Robots On Tourists Experience Expectations

Use of Service robots is a novel and new idea which has fewer research studies based in Pakistan. Service robots generate curiosity and excitement in the tourist and can evoke positive tourist experience expectations (Ivanov et al., 2018; Murphy, Hofacker, et al., 2017; Tung & Law, 2017; Tussyadiah & Park, 2018). Emerging hospitality and tourism robotic applications include service robots as waiters in southeast Asia, bellboys in the USA and staff in a Japanese hotel, and industrial robots that clean, flip hamburgers or make drinks (Belk, 2016; Pan et al., 2015; Van Doorn et al., 2017).

Various types of robots have been introduced in the market for instance service robots, entertainment robots, industrial robots. These robots have also been equipped to service and perform various tasks related to home that is automatic vacuums, dish cleaners etc. (Dautenhahn, 2007). These service robots also perform medical help for elderly and disabled people and support their activities. The bearing of enjoyment on the usefulness towards building expectations has not been studied so far in relation to each other. Mun and Hwang (2003), stated that using of internet based and data based information had a significant impact on perceived ease of use and perceived usefulness. According to Park and Del Pobil (2013), service will have more utility by incorporating service robots with enjoyable features to be used in the industry. If they also exhibit some form of human qualities like showing care through wording or being helpful in generating information regarding site directions, airplane boarding etc. will be another added feature in automation and service robots. These human like features have been incorporated in the service robots in order to improve their working and their ability to engage persons in meaningful interactions (Moussawi & Koufaris, 2019).

H₁: Service robots have a significant relationship with tourists experience expectations

2.3.3 Service Robots & Visit Intention

Perceived enjoyment is an important factor while using the technology (Pinxteren, Wetzels, Rger, Pluymaekers, & Wetzels, 2019). Researchers have observed this phenomenon and used it to understand the factors that motivate any consumer to use technology and thus form use intention (Morgan, 2017). This use intention hence stimulates a tourist to form any visit intention the he or she seeks in terms of tourism and hospitality (DHaro et al., 2015; Sangjae Lee et al., 2011). Using robots in the service sector co creates the unique experiences for the customers (Tung & Law, 2017). However, by examine through literature and physical evidence the robotic technology is still novel and limited in the fields of tourism and hospitality (Yu, 2019). Fewer studies are focused on the perceived enjoyment and use of service robots (Lee et al., 2011; Mun & Hwang, 2003; Park & Del Pobil, 2013) and non on perceived enjoyment of using robots and visit intention formation for tourists. Thus this research study will focus on perceived enjoyment from service robots and visit intention.

H₂: Service robots impacts significantly on visit intention of tourists.

2.4 Tourists Experience Expectations

Expectation is a powerful motivational force which generates desire that enables a person to find best ways to fulfill it (Skinner & Theodossopoulos, 2011). Furthermore, Skinner (2011) suggested that expectations are also essential and fundamental to tourist fueling of imagination and ultimately the tourists experience. Expectations in tourism derive social change, economic activity and reorganization in the set values to accommodate the tourists hopes and ultimately the movement to destination. Expectations play an important role in determining the tourists experiences that can be both failure or success (Franklin, 2003). Tourists experiences

have been explored by many researchers and hence various point of views. Either its the view of Cohen (2008) that analysis the tourist experience from sociological point of view or of Mossberg (2007) which is more towards the marketing aspect of tourists experience expectation or of Larsen (2007) that is more towards the psychology of the tourists visiting the destinations. Tourist experiences expectations are always evolving and have dynamic nature because technology is upgrading at a rapid rate continuously and also the companies are designing new and unique experiences and exposure to the information technology has led to dynamic nature of tourist experiences (Ek, Larsen, Hornskov, & Mansfeldt, 2008).

Tourist whole journey of experiences can be divided into three stages; firstly, interactions of tourists with travel systems before the trip and secondly, process during the trip and thirdly, interactions after the trip (Larsen, 2007). In this research study the main focus is on tourists experience expectations formation of tourists to make them visit the tourist destination. According to Sheng and Chen (2013) “tourists experience expectations are the output between tourist and tourism systems before the trip”. Another point of view from C. Wang et al. (2016) is about the “tourists expectations being the preconceived perception of travel outcomes and most of the travelers participate in the leisure travel activities to satisfy more than one expectation”. It is thus imperative to understand the travelers / tourist preconceived notions in order to create best possible travel management programs and ways to market unique aspects of the destination (Fallon, 2008).

Various recent research studies (Kim, Ritchie, & McCormick, 2012; Lee et al., 2011) have put forward the framework for acknowledging the expectations as a tool to judge the product and service but the ways and factors that help in making those expectations are not studied expect for a few and that too not from the robotic aspects (Wang et al., 2016). In Pakistan, automation is still at its infantile stage especially in hospitality and tourism sector. Therefore, this area needs more research to develop more unique experiences with the help of technological advances available in this era.

2.4.1 Environment, Diverse Activities, Tourists Site And Infrastructure (Cognitive Image)

Growing trend of traveling for pleasure has increased the interest of countries in tourism and hospitality sector. This has made companies to start putting more of their energies in making strong and unique experiences (Stylos, Vassiliadis, Bellou, & Andronikidis, 2016). Tourists sites, environment and diverse activities are central to the tourism industry (Jiang, Zhang, & Yan, 2018; Del Bosque, San Martn, 2009; Zhang, Wu, & Buhalis, 2018). The common ground of destination image serves as the main and important base for the researchers (Stylidis, Belhassen, & Shani, 2017). Destination image is the sum of beliefs, ideas and impressions that a person has of a destination (Stylos et al., 2016). There are two major approaches that evaluate the destination image; first is three dimensional continuum approach related to more specific criteria and second is related to the three components (Jiang et al., 2018). Researchers mostly use the second approach (Zhang, Fu, Cai, & Lu, 2014). Destination image is composed of three type of images; effective image, cognitive image and cognitive image (Stylos et al., 2016). It is therefore very important to know that both cognitive and effective image are part of mental responses and thus forms the interactive system (Tasci & Gartner, 2007). For the current study only cognitive image has been selected. According to Beerli and Martin (2004), cognitive image is the thinking and knowledge about a certain object of interest. Also Del Bosque and San Martn (2008), strengthened the Beerlis point of view about cognitive image by indicating that it refers to the sum of all the beliefs and knowledge reflecting evaluations of the perceived attributes of the destination. In addition to these definitions Pike (2009) is of the view that the as cognitive image is formed due to the sum of beliefs and knowledge of a person about certain place, previous visit may or may not impact the decision making of the tourist.

Cognitive image as a whole or any of its components may impact the tourists experiences expectations to visit a certain place. The components of cognitive image that induce a person to visits a certain location includes environment (natural

environment), diverse activities (night life, festivals and entertainment facilities, shopping etc.) and tourist infrastructure (Site, historical places, natural places) (Stylidis et al., 2017). There is a lack of homogeneity among the various scales available for measuring cognitive image (Lee, Lee, & Lee, 2005; Zeng, Chiu, Lee, Kang, & Park, 2015). For better understanding the dimensions mentioned by Phillips and Jang (2007) has been incorporated due to their relevance to the current topic of cognitive image, tourists experience expectations and visit intention. The dimensions are diverse activities, environment and tourist site infrastructure. All three dimensions have Cronbachs Alpha above than 0.7 which indicates desired level of consistency among measurement items. According to the measurement model designed by Phillips and Jang (2007) all the factors have positive relationship with tourist visit intention. In his study he has shown that higher the cognitive image higher is the intention of the tourist to visit a certain destination. Also the successful formation of image that impacts the tourists cognition plays an important role in forming positive tourist expectations (Lee et al., 2005; Lee, Chua, & Han, 2017). According to Beerli and Martin (2004) image definitely impacts the tourists expectations and behaviour. In Sheng and Chen (2013) opinion the tourist experience expectation are associated with the personal experience expectations for future trips. This in turn can be formed by different influencers like environment, diverse activities, tourist site infrastructure and many others. This aspect of tourists experience expectations havent been researched so far and are the main theme of this study.

H₃: Environment significantly impacts the tourists experience expectations.

H₄: Diverse activities has a significant influence on tourists experience expectations.

H₅: Tourists site infrastructure significantly impact the tourists experience expectations.

2.5 The Direct Impact Of Tourists Experience Expectations, The Environment, Tourists Site Infrastructure & Diverse Activities On Visit Intention

2.5.1 Tourists Experience Expectations & Visit Intention

Most of the major studies in the past have been focused on western tourists and sites (Sheng & Chen, 2013; Wang & Hsu, 2010). But recently, as the tourists are getting diverse in nature (Larsen, 2007; Mossberg, 2007) more studies are emerging based on tourists from Asia, Africa etc. (Ivanov et al., 2018; Lu, Chi, & Liu, 2015). Tourists experience are accumulated psychological phenomenon (Sheng & Chen, 2013) and must be analysed for the various influencers and the stimulation that impact them. Visit intention is formed after the tourists interest is intrigued about a certain destination. There are multiple factors contributing these expectations ranging from tourists infrastructure to technological advances (Wirtz et al., 2018).

H₆: Tourists experience expectations significantly impacts the visit intention formation of a tourist.

2.5.2 Direct Impact Of Environment, Diverse Activities And Tourists Infrastructure On Visit Intention

In the current study, the direct impact of environment, diverse activities and tourist site infrastructure is not analyzed as it has already been analyzed by Phillips and Jang (2007) in their paper “destination image and visit intention: examining the moderating role of motivation” and Tan and Wu (2016) in their paper “An investigation of the relationships among destination familiarity, destination image and future visit intention” .

2.6 Mediation Role Between Tourists Experience Expectations, The Environment, Tourists Site Infrastructure & Diverse Activities, Service Robots

2.6.1 Tourists Experience Expectations, Service Robots & Visit Intention

Swiftly developing technology has changed the overall horizon of service industry due to its better, smaller, smarter, and economical versions of service robots which has changed the service scenario in tourism and hospitality industry (Wirtz et al., 2018). Perceived enjoyment in case of service robots will enhance the intention to use them in hotels by the tourists (Chang, Eckman, & Yan, 2011). Expectations play an important role in decision making of the tourists. Tourists experience expectations may get higher due to expectancy of interactions with the robots in the tourists destinations (Neuhofer, Buhalis, & Ladkin, 2012). Furthermore, due to a shift in the service marketing paradigm, between service providers and the customers, the dynamics of the market as a whole have been changed. This changed era has called for meaningful experiences with freedom to choose from the destination. Thus it is imperative for the tourism and hospitality industry to induct new technology to give customers better and improved unique experiences to create visit intention (Neuhofer & Buhalis, 2012). Several type of stimulation occur before the tourists makes up his or her mind before visiting a certain place they may be technological in nature, so service robots create that unique experience that stimulates a person to visit a certain destination (Sheng & Chen, 2013).

H_{7a}: Tourist experience expectation mediate positively between visit intention and service robots.

2.6.2 Tourists Experience Expectations, Environment, And Visit Intention

Environment of the tourist site is an important factor that impacts the expectation formation of the tourists (Wang & Hsu, 2010). Wang and Hsu (2010) also emphasized that the environment of a destination that is related to the cognitive image is influenced by the presence of safe and clean living facilities. Other factors that influence the expectation in relation to environment are variety of fauna and flora, natural parks, beautiful sites as discussed by Del Bosque and San Martn (2008). Chebat and Michon (2003) and Lee et al., (2005) have both followed on the model presented by Mehrabian and Rusell and thus stated that the environmental stimuli impacts the emotional state (experience expectations) of the tourists and thus creates a behavioural response (visit intention) in them.

H_{7b}: Tourist experience expectation mediates significantly between visit intention and environment.

2.6.3 Tourists Experience Expectations, Diverse Activities And Visit Intention

Tourism destinations are facing fierce competition due to new strategies and challenges that are growing rapidly (Chi & Qu, 2008). Emotions such as expectation development are necessary and important in the field of tourism as they further impact on the response of the tourists like visit intention (Del Bosque & Martn, 2008; Zeng et al., 2015). Creating an attractive image through various stimuli available creates a positive image in the minds of consumers. These factors, according to Wang and Hsu (2010), create demand by touching the emotions and expectations of the consumers. One of such stimuli is diverse activities. Diverse activities include the shopping site, night life various entertainment activities (Phillips & Jang, 2007). In Beerli and Martin (2004) point of view, the visit intention and intensity varies with tourists experiences and expectations. When the tourists are exposed various dimensions of image as stimuli (diverse activities) they tend to

form various behavioural patterns and visit intention is one of them. So, in the light of above discussion it can be safely deduced that the tourists experience expectations mediates significantly between the diverse activities and visit intention of a tourist. If the expectations are formed due to the external stimuli (diverse activities) the result will be behavioural change (Visit intention) or response.

H_{7c}: Tourist experience expectation mediates significantly between visit intention and tourist site infrastructure.

2.6.4 Tourists Experience Expectations, The Tourists' Site Infrastructure And Visit Intention

According to Phillips and Jang (2007), the tourist site infrastructure encompasses the flight schedules to the destinations which are easy to follow, transport within city and the historical and cultural sites. These stimuli impact the expectations of the tourists and in turn behavioural responses are generated (visit intention) (Liu, Li, & Kim, 2017). These items are selected on the bases of current study as previous literature do not present any homogeneous items to operationalize cognitive image (Lee et al., 2005). Zhang et al., (2018), theorized the components of destination image which also included the tourists site infrastructure. The study is about knowing the stimuli that impact the expected expectations of the tourists. These stimuli that includes the tourist site infrastructure are also measured by Phillips and Jang (2007). If the tourist is familiar with the destination through knowledge, image and experience he or she will choose to visit the destination (Tan & Wu, 2016). For the current study it can be hypothesised that the tourists experience expectations can mediate positively between tourist site infrastructure and visit intention.

H_{7d}: Tourist experience expectation significantly mediates the relationship between tourist site infrastructure and visit intention.

2.7 Research Model

Below mentioned is the theoretical framework of the current study

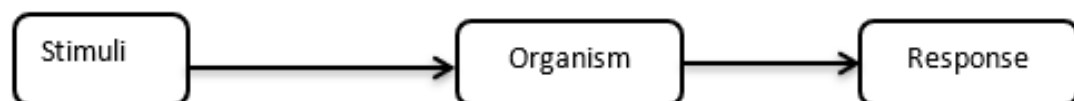
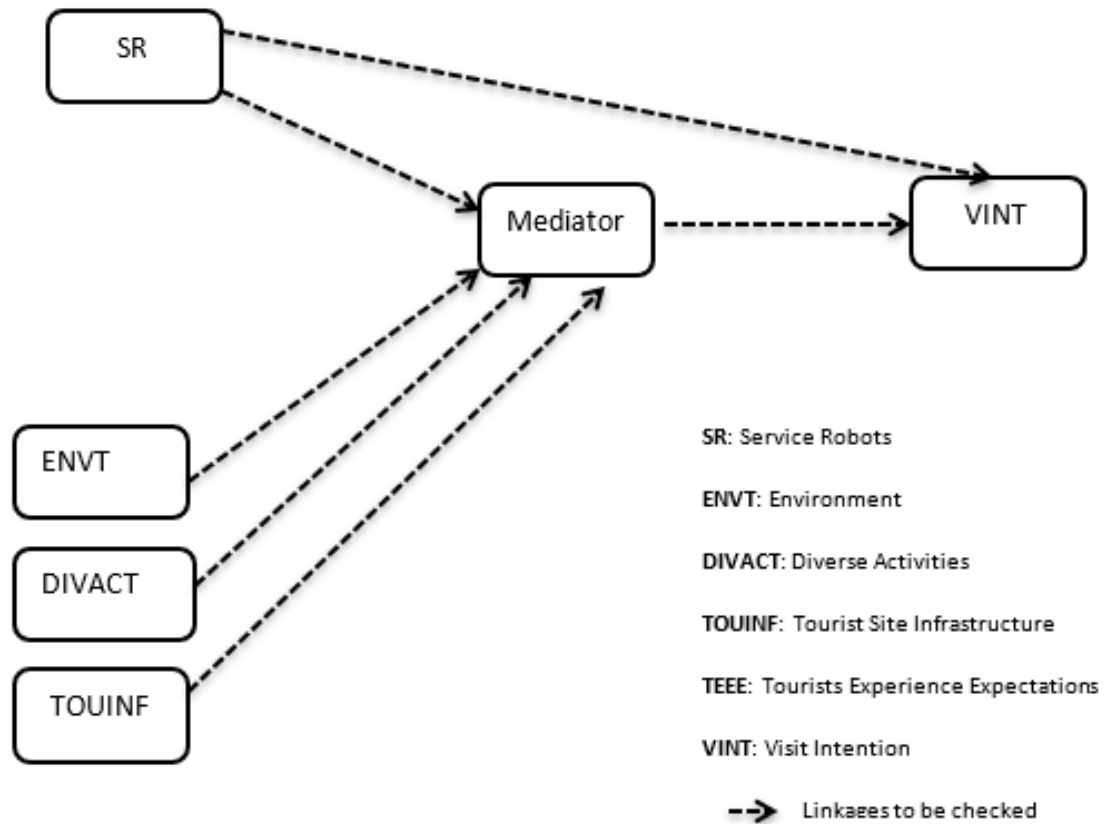


FIGURE 2.1: Theoretical Framework Based On SOR Model

2.7.1 Summary Of Hypothesised Relationship

Below mentioned table is summary of hypothesised relationship of the current study

TABLE 2.1: Hypothesized Relationship According To Theoretical Model

Hypotheses	Relationship
H1	SR → TEEE
H2	SR → VINT
H3	ENV → TEEE
H4	DIV ACT → TEEE
H5	TOU INF → TEEE
H6	TEEE → VINT
H7a	SR → TEEE → VINT
H7b	ENVT → TEEE → VINT
H7c	DIVACT → TEEE → VINT
H7d	TOUINF → TEEE → VINT

2.8 Summary Of Chapter

This chapter develops the model concept by linking it to the previous literature. Tourists experience expectations are impacted by many stimuli. Few of them that were not checked previously are considered in this literature. Tourists experience expectations also serves the role of mediator between service robots, environment, diverse activities, tourist site infrastructure and the visit intention. Direct relationship of cognitive image components; environment, diverse services and tourists site infrastructure has been checked before as is evident from previous literature. Very few non-specific studies have been identified from Pakistan regarding service robots. Much work is needed in the dimension of expectation building in tourist and hospitality industry. Stimulus, organism and response model is very suitable as it depicts the relationship between the variables thus suggested in the study.

Chapter 3

Research Methodology

Research methodology for this study will be explained with the help of Saunders onion. Current research will focus on the use of robotics and the impact of cognitive imaging in the field of tourism and hospitality. Research methodology is an important part of any study which defines and explains the why and “how” aspect of the research. Methodology also clarifies the logic behind the use of certain techniques and methods for data collection and analysis. Methodology basically explains the pathway for the research in hand. Tourism and hospitality industry is evolving and constantly developing. This evolution has brought maturity and creativity not only to academic literature but also to practice which is shared by marketers, agents and relevant dimensions of present market.

The development of tourism and hospitality sector can be realized by considering the economic progress that this sector has brought for many countries and the academic journals that have been increased from one in 1980s to more than 280 in 2017 (Shani & Uriely, 2017). Academic research plays an important role in the development of the industry by introducing new dimensions to the research. The multidisciplinary research in this area has also played a very important role but it is relatively limited. A new school of thought and new knowledge domain has occurred due to creative idea testing in the tourism and hospitality (Nunkoo, 2018). Research methodology helps in solving the problem at hand through step by step guidelines. This research will follow the bellow mentioned path;

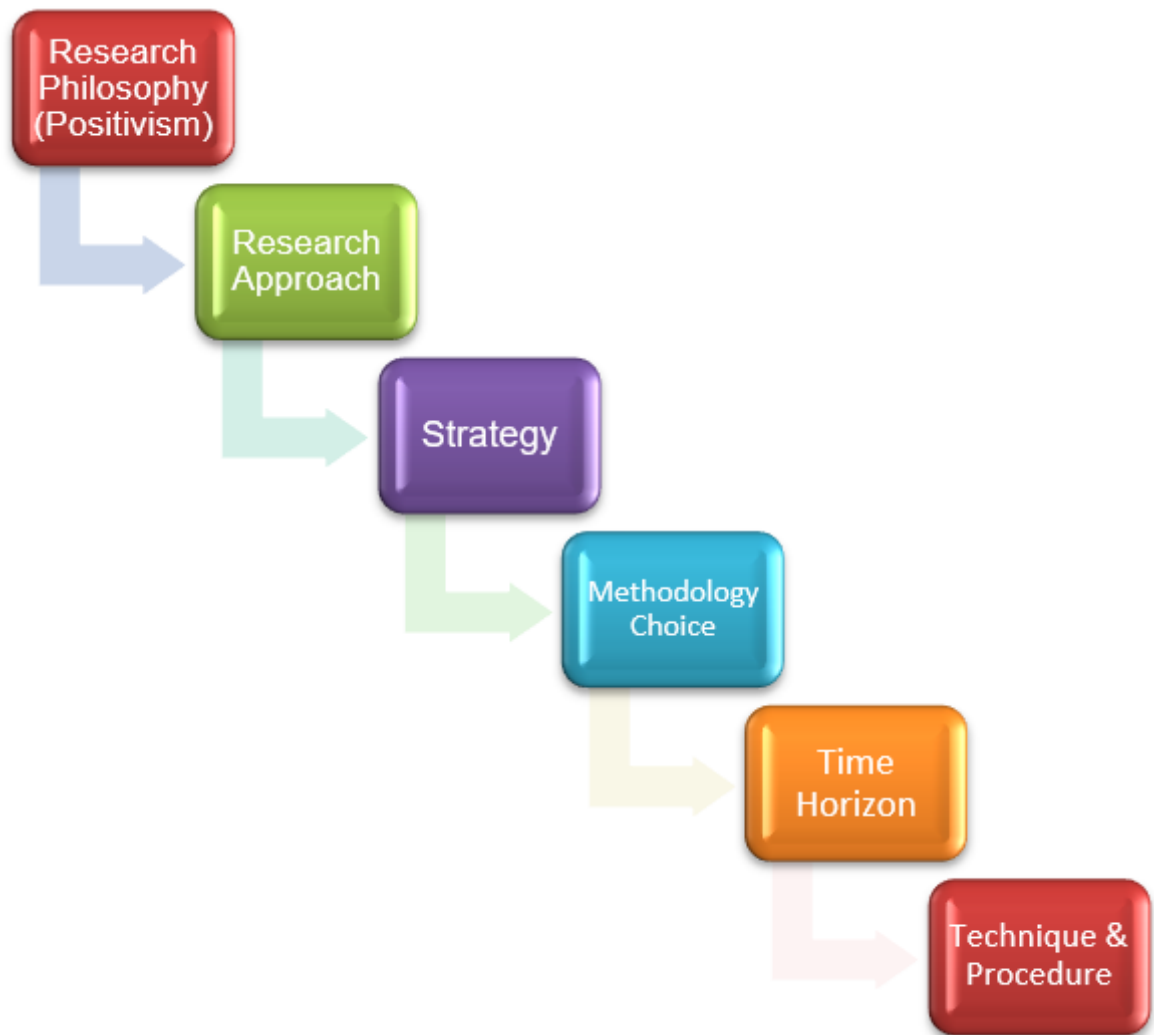


FIGURE 3.1: Research Methodology Followed By Current Research

3.1 Research Philosophy

Research philosophy points to the view point of the researcher. Researcher adopts the research philosophy according to his or her point and the way the researcher wants to understand any phenomenon in general. Furthermore, the research strategy selected and the methods adopted by the researcher also depend upon the research philosophy selected by the researcher (Thornhill, Saunders, & Lewis, 2009). It is therefore governed by the knowledge that has been acquired by the researcher and the process followed to adopt these viewpoints.

For studying the tourists expectations and the impact of service robots and cognitive image on it positivist philosophy will be used which is part of the ontology

school of thought. In ontology cause and effect between the variables is studied. As in this study, stimulus Organism Response model has been used so positivist approach deals with this type of study. Hypotheses have also been drawn concerning the theoretical model of the study. Furthermore, following this approach critical literature analysis of the previous work of researchers have also been discussed within the relevant field. This has helped establish a relationship between the predictor and predicted variables, i.e. service robots, cognitive image, tourists experience expectations and visit intention.

3.2 Research Approach

Research approach is an important step in the whole research process. The current study that is related to tourists experience expectations being impacted by the use of the service robots and cognitive image formed by customers imagination. In this type of study which forms questions to be answered, mostly, deductive approach is used. Current research also has questions about the variables so to answer these queries deductive approach instead of inductive approach has been used.

Deductive approach also helped in the ultimate aim of the current research which is related to data collection and analysis of the data collected. It has helped in analysing and validating the relationships between the variables that are service robots, tourists experience expectation and cognitive image. Another reason for using deductive approach is that it will lead to quantitative research. As, data collection is involved in current research, so deductive approach is the best in this type of research to understand the relationship between variables by putting them through statistical methods. Inductive research approach is not being used in here because no new theory has been proposed.

3.3 Research Strategy

Research strategy is the game plan of the research. It helps in reaching the research goal by guiding through the tactical ways of data collection. Researcher gathers

data and analyze it according to the research questions (Thornhill et al., 2009). Each of the strategy has its own benefits and drawbacks. Research strategy should be selected with utmost care and fore thought.

Current research is based on quantitative techniques which adhere to collection of data through developing a questionnaire based on certain scales. The researcher has acknowledged while collecting the data that scenario building through showing the actual service robot in the research to the respondents is important before collecting data. Data has been collected through the survey based strategy. Only interaction with the respondents was about the service robot and the way robot works, its features and the ease it will create for the customers.

Survey technique is mostly used by the researchers when data is collected for the quantitative approach. This strategy answers the questions of “where”, how much and “how many” types of impacts the respondent feels due to presence of the impacting variable. This is also most common strategy used by most of the business researchers. It is convenient for both exploratory and descriptive research (Thornhill et al., 2009).

3.4 Choice Of Method

Choice of methodology plays an important role in overall research. By this stage the research path gets quite clear. Every step is based on the selection of method that will be employed to collect data from the respondents. Method or methods are selected on the basis of type of research. If the research only tries to develop new theories and not just answer questions then the research path taken will be different from the research path taken for the data based research (Thornhill et al., 2009).

In mono method either qualitative or quantitative method is used to analyze and validate the theory. While in mixed method both qualitative and quantitative methods are used. Multi method allows the use of qualitative as well as quantitative techniques and the focus stays on one type of method and the view point do not change over time (Thornhill et al., 2009).

Current research is based on collection of data and use of survey forms both on-line and printed questionnaires. Thus impact of quantitative approach in relation to positivist paradigm in validating relationships to tourism and hospitality is undeniable (Nunkoo, Gursoy, & Ramkissoon, 2013). Quantitative approach is based on the process of inquiry which in turn leads to theory testing through variables and data collected (Dolnicar, Coltman, & Sharma, 2015).

It was quantitative research that used primary quantitative data to investigate the relationship and impact of independent, mediator and dependent variables. The quantitative research is effective for several reasons. First, it enables the generalization of some aspects of research findings. Second, it helps in gathering data of a significant sample size for a range of different categories and finally, the statistical tests and analyses assist in validation of research findings (Giddy & Webb, 2017).

3.5 Time Horizon

Time horizon in any study is a very important factor to be considered. Time horizon is selected according to the type of study. If the study requires a snapshot of the whole research then a different type of time horizon will be selected than the one that requires for the researcher to collect data from the respondents in time lags or intervals (Thornhill et al., 2009).

As cross-sectional data collection method help in collecting data in constrained time and over same cross-sections the data received is the snapshot of the research in hand. Therefore, in the current research on tourists experience expectations and the impact of service robot and cognitive image on them the best approach is cross-sectional data. It gives the researcher an overview of the situation.

The research questionnaires were given to the respondents at the same time therefore; the data collected depicted their views in that point in time. For this the students were shown a robot and a video showing the process of using a service robot s and the views of the respondents were then taken on the survey questionnaire. This showed their responses in the same time period.

3.6 Techniques & Procedures

Techniques and procedure show the actual analytical side of the research. For these sampling techniques, sample size, sample procedure, instrumentation, instrumentation design and measurement are determined. Highlighting techniques and procedure of actually collecting data is an important part of the research onion. Saunders research onion is a very systematic way to achieve the desired goals and then deduce the results. Important aspects of this layer are the sample technique, sample size, instrumentation and Scales adaption. Another important aspect of techniques and procedure is the way the data collected is analysed against the theoretical framework and the hypotheses thus formed are then validated.

i Sampling Technique

Sampling techniques helps in selecting the right respondents for the research. The broad categories the sampling techniques are divided into are;

- Probability Sampling (Representative Sampling)
- Non- Probability Sampling (Judgmental Sampling)

In probability sampling every respondent has an equal chance of selection from the known population. Probability sampling is mostly associated with the survey and experimental research (Thornhill et al., 2009). Current study is also based on the purposive data collection (non-probability) and the snowball survey technique (Probability), so this is the best technique for carrying on research. The non- probability sampling is mostly used for the qualitative research.

In such cases, strategies such as experiment (limited), survey, case study or grounded theory is used. As for this study snow ball technique will be used for online survey, as in Pakistan there are less automated hotels present and we need consumer who either lived in hotels or have some prior hotel knowledge to collect data from. In the current study snowball sampling and purposive sampling have being used to collect data for the analysis.

ii **Universe & Population**

Population refers to the total number of items or respondents that are selected for the research and forecasted to give desired results (Thornhill et al., 2009). Population can be finite or infinite. Finite population is easier to get to and reach to desired results. However, it is difficult to gather information from infinite number of respondents. Selection of population is dependent upon the type of study.

In the current study the population is finite and a representative sample is taken from the whole population of Pakistan. This is mostly due to the time constraint and the cost of traveling to the destinations to get the information. Keeping in view the limitations for the research the theoretical concept of the infinite population as an approximation of the large population has been selected. In current study, the respondents from Islamabad have been considered as the infinite population and a sample of the respondents residing in Islamabad has been selected.

iii **Sampling Unit**

Tourists, who have already visited the hotels in the Northern areas of Pakistan, are selected and also those customers who have experienced the automated hotels and robots in some form (either at front desk, cleaning vacuums or automated information dissemination) have been selected. Moreover, people having close contact with the customers and tourists agents have been selected.

iv **Sample Size**

Taking whole of the Pakistan as sample would have not been possible due to time constraint and the cost involved in collecting the data. To make the sample more approachable and collected it in prescribed time and cost a sample of the whole population is taken. This representative sample is from Islamabad. As Islamabad is the capital city of Pakistan and has people from all over the country so it serves as the best option to collect data. As this study is based on the path modeling and SEM, according to Kline (2005),

the sample size should be at least 100 to 200. Similarly, Joe F Hair, Sarstedt, Ringle, and Mena (2012), suggested a sample size of around 200 respondents. A sample of “256 respondents” has been taken from the total population of Islamabad. The sample is calculated by employing G*POWER calculator.

3.7 Instrumentation

Survey method has been selected as the mode for data collection for this study. Social media and other similar computer-mediated technologies have now been considered as the valuable sources of data collection. Social media groups provide a more important source of data collection. These groups have consequential impact on the data collection. Survey sent and posted on the social media render real results and has far reaching impact. The sample that has been collected from applying G* Power calculator rendered a value of 91. It is calculated at the effect size of 0.15, standard error probability as 0.5 and number of predictor arrows as 2. Although, the minimum sample size as predicted by the G*Power calculator was 91, a sample of 256 has been collected.

For current research, survey forms have been posted on these forums as well as they have been given to respondents to fill out in an environment by showing them service robot. In-order to have the reliable results the questionnaire has been developed by using a nine-step procedure developed by Churchill and Iacobucci (2006). First step being the information sought that is driven by the definition of the constructs. Second, type of questionnaire and method, third, checking the individual question. Fourth, form of response, for this study is a Likert scales ranging from strongly agree to strongly disagree. Fifth, questionnaire wording is simple for common person to understand. Sixth, logical flow of the questions has been maintained. Seventh, the physical features of the questionnaire have been considered. Eighth, questionnaire is re-examined for any mistakes and ninth being pre-tested by the respondents to check any errors.

TABLE 3.1: Respondents Responses From Questionnaire

Questionnaire Sent	Responses Received	Response Rate	Suitable Responses
150 (Tourists in Northern areas by showing them videos of the service robots)	100	95%	95
200 (Shown videos and service robot CUST university)	165	63%	105
200 (sent to online users with video and pictures of service robots)	100	56%	56

3.8 Scales

3.8.1 Scale For Service Robots

Scale for service robots, containing four items has been adapted for the current and is based on the items developed by Koufaris (2003). The responses for these items have been collected through a five point Likert scale in which 1 represent strongly agree and 5 shows strongly disagree. The scale includes following items; “Using the Robot gave me lots of pleasure”, “I enjoyed using the robot Using robot is positive” and “The actual process of using robot is pleasant.

3.8.2 Scale For Cognitive Image

Scale for Cognitive Image, containing 5 items and three dimensions, adapted from Philips and Jang (2007). This scale has three dimensions and has been used to gather data. Items have been changed and adapted according to the current study. Five point Likert scale has been used to collect responses ranging from 1 as strongly agreed to 5 strongly disagreed. Items for scale is mentioned below;

i Environment

“The tourist site accommodation is perceived to be clean, The tourist accommodation is perceived to be safe”.

ii **Diverse Activities**

“The tourist site is perceived to have a variety of entertainment opportunities”, “The tourist site is perceived to have a variety of night life” and “The tourist site is perceived to provide plenty of shopping facilities.

iii **Tourism Infrastructure**

“The tourist site is perceived to have good public and private transportation available”, “The tourist site is perceived to have plenty of interesting cultural and historic site”, “The tourist site is perceived to have convenient airline schedules available to the destination city” and “The tourist site is perceived to have a variety of suitable accommodation”.

3.8.3 Scale Of Tourists Experience Expectations

Scale for Tourists experience expectations, containing 10 items, has been adapted from Sheng and Chen (2013). The Five point Likert scale has been used to collect responses ranging from 1 as strongly agreed to 5 strongly disagreed. Items for scale have been mentioned as;

“During the trip, I expect to be relaxed, such as taking my time walking or visiting friendly environments”, “During the trip, I expect to find some interesting contrasts and changes, such as seasonal changes, characteristics of cities and country side and unique activities”, “such as being served by robots, During the trip”, “I expect to experience familiar cultures or entertainment”, “such as visiting childrens play area or folk stories”, “During the trip, I expect to experience physical objects with local cultural characteristics and varied images”, “During the trip, I expect to be identified, such as traveling with companions with similar interests”, “During the trip, I expect to be close to the legend of my memories, or see a legendary character or scene”.

3.8.4 Scale For Visit Intentions

Scale for Visit intention has been adapted from the studies of Han, et al., 2010, Liu & Goodhue, 2012; Loiacono & Watson, 2007. The scale has three items. The Five point Likert scale has been used to collect responses ranging from 1 as strongly agreed to 5 strongly disagreed. Items for scale have been mentioned as “I am willing to stay at an automated hotel while traveling to northern areas of Pakistan”, “I plan to stay at an automated hotel when traveling with family”, “I will make an effort to stay at an automated hotel while traveling to a tourist destination”. Scales used for the data collection are mentioned below;

TABLE 3.2: Table Of Scales

No.	Variables	No. of Items	Researchers
1	Service robots (Perceived Enjoyment)	4	Perceived enjoyment was an index composed of four items adapted from the studies of Igbaria, Iivari, and Maragahh (1995)
2	Environment	5	Phillips and Jang (2007)
3	Diverse Activities	3	Phillips and Jang (2007)
4	Tourists site infrastructure	4	Phillips and Jang (2007)
5	Tourist experience expectation	10	Sheng and Chen (2013)
6	Visit intention	3	Han, et al. 2010, B. Q. Liu & Goodhue, 2012; Loiacono & Watson, 2007)

3.9 Data Analysis Procedure And Statistical Tools Used

3.9.1 Analysis Tool

Analytical tool for data examination and prediction can be selected according to the type of study and its objectives. As, this study is based on cause and effect

relationship, most suitable software was used, that is Smart PLS. It evaluated the relationship between exogenous and endogenous variables by exploring the theory. Partial least squares modeling are used, when it is required to predict relationship among the constructs. This tool considers non-parametric values and that's why it is considered as strong analytical tool. It was also required by this study to compare the parametric and non-parametric values. Also, to predict the outlier values and normality and skewness software should be introduced. Hence, SPSS was also used to calculate the desired results.

3.9.2 Statistical Procedure

Statistical procedure included the two dimensions;

i Measurement Model

Model is measured through Cronbachs Alpha, Composite reliability, convergent and discriminant validity.

- Cronbachs Alpha and composite reliability: these were used to predict reliability of the model variables.
- Convergent and discriminant validity: as the name suggests these validates are used to understand the variance in the model of the variables. Convergent validity was determined by factor loading and average variance extracted.

ii Structural model

- Mediation Analysis
- Moderation Analysis
- Relationship between constructs using multivariate system through graphical depiction also known as path coefficients

Mentioned below are the statistical techniques that have been used in the current study;

TABLE 3.3: Data Analysis Techniques Used In This Study

Objective	Data Analysis & Techniques
Normality test for data	Normal Curve Distribution
Data reliability test	Cronbach Alpha
Outliner test	Skewness and Kurtosis
Hypotheses testing	Correlation analysis Pearson correlation Coefficient Chi Square test
Key drivers of overall success rate	(R ² and Beta coefficient)
Data trend, Mean, standard Deviation	Descriptive Statistics
Software used	SPSS, Smart PLS (V.3.2.8)

3.10 Demographics Analysis

Demographics were analysed to understand the number of both genders who participated in the data collection procedure. These respondents were further analysed for their educational background and their exposure to hotels. It was also of interest to know the age group of the respondents who were more interested in staying in hotels and taking on novel experiences. Notable demographics for this study were gender, education, age and their exposure to hotel stay. Following table shows the age groups with the percentages;

3.10.1 Age Group

Age group is an important factor as it helps in understanding the group which will be more prone to new and novel experiences, as this study was carried out to understand the usage of service robots by the consumers.

3.10.2 Gender

As, this research is on the interest and intention that the customers and tourists show towards visiting a certain place, it is thus highly imperative to know extent

TABLE 3.4: Age Group

Age	Frequency	Percentage	Cumulative %age
25-35	154	60.90%	60.90%
36-45	77	30.40%	91.30%
46-55	16	6.30%	97%
56 and above	6	2.40%	100%
Missing	3	-	-
Total	256	100%	-

of exposure of novel and exciting experiences in the form of automation to the both the genders. For customers to form their expectations on the basis of novel and exciting experiences it is thus important to know which gender is more inclined towards visiting tourists site containing different type of exciting activities. According to the data collected the male are more inclined towards novel experience perhaps due to exposure and means to reach such destinations. The study found 58.9% males and 41.1% females were interested in taking this survey. The percentages and frequencies are mention below;

TABLE 3.5: Gender

Gender	Frequency	Percentage	Cumulative %age
Male	149	58.90%	58.90%
Female	104	41.10%	100.00%
Missing	3	-	-
Total	256	100.00%	-

3.10.3 Education

Education is an important component of ones personality. Education depicts knowledge as well as the exposure that a person receives during his or her life time. Based on this exposure the person decides upon the level of novel and exciting experience he or she wants in life or expects from different situations. As, this research study is about use of service robots in the hotel and restaurant environment and as tour guides in tourism, the level of exposure and knowledge both will

help the customer in understanding the importance of use of varied experiences and their importance in the hotel and tourism industry.

TABLE 3.6: Education

Education	Frequency	Percentage	Cumulative %age
Bachelor	46	18.30%	18.30%
Masters	167	66.30%	84.50%
Doctorate	17	6.70%	91.30%
Others	22	8.70%	100.00%
Missing	4	-	-
Total	256	100.00%	-

3.10.4 Respondents Experience Of a Hotel (Host)

To understand the difference between the previous experience and the novel experience expectation by the tourists it is thus important to know their knowledge of living in the hotel. The respondents who have already had an experience of living hotel were more than people who have never stayed in hotel. It helps in understating their acceptance or rejection for any new experience or technology introduced during the course of their stay. Percentage as shown in the table for respondents who have stayed in hotel is 77.3% which is fairly adequate for the current study as more respondents will be able to understand the automation and service robots introduction in the tourism and hotel industry.

TABLE 3.7: Respondents Stayed In Hotel

HOST	Frequency	Percentage	Cumulative %age
Yes	197	77.30%	77.30%
No	58	22.70%	100.00%
Missing	1	-	-
Total	256	100.00%	-

3.11 Research Ethics

Ethics in every field and walk of life are important but in research it is more so because opinions of others are involved. This research was based on the personal opinions and first hand data collected from the respondents. Hence, taking care of their identity and not disclosing it is important. Identities of the respondents are disclosed and neither their opinions have been manipulated.

3.12 Chapter Summary

Research methodology refers to the procedure followed in this study to collect, analyze and interpret the data. This research has been conducted by following Saunders research onion because it has clear division of all the steps that can followed to acquire data from the respondents.

Chapter 4

Data Analysis & Results

This chapter, analysis and results, aims to study the impact of service robots and cognitive image further characterised by environment, diverse activities and tourism infrastructure on tourists experience expectations. Various tools and techniques have been used to reach the results and verification of the hypothesis. All the significant steps have been followed from reviewing to arranging data for significant decision making based upon results. Coded data has been entered into the statistical package of social sciences (SPSS) and then analysed in SmartPls (v.3.2.8). Different tools have been used to acquire the desired results.

4.1 Reason For SmartPLS

In this study, Partial least squares structural equation modeling (PLS-SEM) has been used to analyze the data. PLS-SEM has been considered for data analysis as it is a variance based method that estimates path models using latent variables (Becker, Ringle, & Sarstedt, 2018). When the data analysis of key target construct is required to explain the key sources, PLS-SEM proves to be more accurate tool for understanding effect (Venkatesh, Morris, Davis, & Davis, 2003). This tools ability to calculate all the constructs and items at one place and one time is a very important aspect and that is the reason for its increase use in business information system, tourism research and various other fields like accounting (Hair,

Risher, Sarstedt, & Ringle, 2019). SEM has become a very strong and widely used statistical technique throughout the world of research. It is because of its ability to test complex models with latent variables being studied at the observational level and testing of the relationships of these variables to check the acceptability of the hypotheses (Bagozzi & Yi, 2012; Hair et al., 2012). Due to its ability to check the model at the theoretical level it has gained popularity in tourism and hospitality industry as well (Nunkoo, Ramkissoon, & Gursoy, 2013).

4.2 Procedure

In the current research Smart PLs (v.3.2.8) has been used to run the theoretical model and study the impact of service robots, environment, diverse activities and tourist site infrastructure on tourists experience expectations to form visit intention. First, the measurement model was examined (Reliability and validity). Second, the effect size (f^2) and Q^2 i.e. the predictive relevance were tested by examining the structural model. Procedure followed to analyze data included the descriptive statistics along with the missing value analysis, ranges and maximum, minimum values.

4.3 Descriptive Statistics

Descriptive statistics are important to ensure that the data is normally distributed and free from outlier values. Standard deviation is important as it shows the dispersion for the values from the mean value whereas the mean value shows the middle value for the data. Descriptive statistics of the items and constructs are given below. Table 4.1 shows the descriptive statistics for demographics. Table 4.2 consists of sample size, missing values, mean, minimum values, maximum values, standard deviation, Kurtosis and skewness of the data. In the given Table 4.2, most of the values are closer to the mean value but ENV5 (2.98), TEEE1 (1.994) shows deviation from the normal standard. Thus rest of the table shows values closer to the acceptable range and did not create any problems in the parametric

assessment. The results shows data is mostly normally distributed expect for few outliers.

TABLE 4.1: Descriptive Statistics

Demographics	Sample	Missing	SD	Mean	Min	Max
Gender	256	3	0.493	1.41	1	2
Age	256	4	0.773	2.06	1	4
Education	256	3	0.722	1.5	1	4
Hotel stay	256	1	0.42	1.23	1	2

Table 4.1 shows the descriptive statistics for demographics. Most of the data for Kurtosis is within range i.e. it lays below 3. As for Skewness, if the skewness is greater than 1 or is less than -1 shows highly skewed data. Data is positively skewed as most of values are above +1.

Table 4.2 consists of sample size, missing values, mean, minimum values, maximum values, standard deviation, Kurtosis and skewness of the data. In the given Table 4.2, most of the values are closer to the mean value but ENV5 (2.98), TEEE1 (1.994) shows deviation from the normal standard. Thus rest of the table shows values closer to the acceptable range and did not create any problems in the parametric assessment. The results shows data is mostly normally distributed expect for few outliers.

4.4 Measurement Model

Outer model is the measurement model. Measurement model helps in determining the construct validity and reliability. In order to understand and analyze the validity and reliability of the construct it is important to calculate Cronbachs alpha, Convergent reliability (CV), Composite reliability (CR) and Discriminant Validity (DV). All these are mentioned in the given below tables.

TABLE 4.2: Descriptive Statistics For Items

Variable	Sample	Missing	Mean	SD	Min	Max
Env1	256	1	4.247	1.001	1	5
Env2	256	1	4.275	0.943	1	5
Env3	256	1	3.867	1.051	1	5
Env4	256	1	4.349	0.816	2	5
Env5	256	1	4.463	0.81	1	5
DivAc1	256	1	4.047	1.02	1	5
DivAc2	256	1	3.549	1.248	1	5
DivAc3	256	1	3.69	1.176	1	5
TouInf1	256	1	4.086	0.99	1	5
TouInf2	256	1	3.996	0.96	1	5
TouInf3	256	1	3.812	1.068	1	5
TouInf4	256	1	4.153	0.976	1	5
SerRob1	256	1	3.145	1.21	1	5
SerRob2	256	1	3.212	1.189	1	5
SerRob3	256	1	3.333	1.142	1	5
SerRob4	256	1	3.361	1.186	1	5
TEEE1	256	1	4.357	0.778	1	5
TEEE2	256	1	4.067	0.937	1	5
TEEE3	256	1	3.851	0.925	1	5
TEEE4	256	1	4.039	0.771	2	5
TEEE5	256	1	3.835	0.918	1	5
TEEE6	256	1	3.949	0.934	1	5
TEEE7	256	4	3.794	0.95	1	5
TEEE8	256	1	4.012	0.874	1	5
TEEE9	256	1	3.498	1.151	1	5
TEEE10	256	1	3.773	1.146	1	5
Vint1	256	1	3.545	1.174	1	5
Vint2	256	1	3.482	1.197	1	5
Vint3	256	1	3.51	1.243	1	5

4.4.1 Constructs Reliability

In order to determine the relationship between construct and the indicators, measurement model is used also known as outer model. It examines the reliability and validity of the constructs and their items. In this model, reliability will be determined through composite reliability and Cronbachs Alpha. Reliability of environment and tourist experience expectation was less than the minimum requirement therefore; ENV3, TEEE1, TEEE2, TEEE3 and TEEE4 were deleted in order to achieve the minimum requirement for the reliability of the constructs

(Joseph F Hair et al., 2019). Validity and reliability of the constructs and items is mentioned below;

Table 4.3 shows the constructs and items reliability through Cronbachs Alpha, outer loadings, composite reliability and Average variance. According to Chin (2010), the benchmark for the Cronbachs alpha and composite reliability is results greater than 0.7. The Cronbachs alpha for diverse activities is 0.792, environment is 0.824, tourists site infrastructure is 0.829, Service robots is 0.931, tourists experience expectations is 0.832 and visit intention is 0.911. The outer loadings from the data show an agreeable result for indicator reliability.

4.4.2 Construct Validity

In order to measure the convergent validity the average values extracted must be greater than 0.5 (Bagozzi & Yi, 2012). Average variance is the measure of convergent validity and was also found to be in range as show in in Table 4.3, i.e. environment 0.656, diverse activities is 0.706, tourists site infrastructure it was 0.660, service robots is 0.829, tourists experience expectations is 0.541 and visit intention is 0.850. The outer loadings should be above 0.7 to satisfy the indicator reliability (Bagozzi & Yi, 2012). To ensure the validity and effectiveness of the data, convergent and discriminant validity is measured (Iacobucci, 2009). It also shows the degree to which one factor correlates negatively or positively with other factors of the same construct.

Discriminant validity shows the degree to which one construct is different from the other construct and it is validated by the pragmatic value. In order to measure the discriminant validity, for the current research, the data was analysed through three criteria Fornell and Larcker (1981), Cross loadings and Heterotrait-Monotrait Ratio (HTMT). Fornell and Larker criterion states that the measurement models have discriminant validity if the square root of average variance extracted is greater than the correlations of the construct with the other entire construct.

For discriminant validity the diagonal value of the square root of average variance was compared to the off diagonal values of correlation. Table 4.4 shows that

TABLE 4.3: Constructs Reliability

Measures	Outer Loadings	Cronbachs Alpha	Composite Reliability	AVE
Environment	-	0.82	0.88	0.66
Env1	0.84	-	-	-
Env2	0.82	-	-	-
Env4	0.83	-	-	-
Env5	0.76	-	-	-
Diverse Activities	-	-	-	-
DivAc1	0.81	-	-	-
DivAc2	0.86	-	-	-
DivAc3	0.85	-	-	-
Tourist Site Infras- tructure		0.83	0.89	0.66
Toulnf1	0.86	-	-	-
Toulnf2	0.78	-	-	-
Toulnf3	0.75	-	-	-
Toulnf4	0.86	-	-	-
Service Robot	-	0.93	0.95	0.83
SerRob1	0.93	-	-	-
SerRob2	0.91	-	-	-
SerRob3	0.91	-	-	-
SerRob4	0.90	-	-	-
Tourist Experience Expectation	-	0.83	0.88	0.54
TEEE5	0.69	-	-	-
TEEE6	0.66	-	-	-
TEEE7	0.73	-	-	-
TEEE8	0.66	-	-	-
TEEE9	0.83	-	-	-
TEEE10	0.82	-	-	-
Visit Intention	-	0.91	0.94	0.85
Vint1	0.90	-	-	-
Vint2	0.95	-	-	-
Vint3	0.92	-	-	-

the square root of Average variance has greater value as compared to the correlations of the constructs when matched with each other. For diverse activities it was 0.84, environment 0.81, service robots its 0.911, tourists experience expectations its 0.736, tourist site infrastructure 0.812 and visit its 0.922.

TABLE 4.4: Fornell & Larker Criterion

	DA	SR	TEE	TSI	VI	ENV
DA	0.84	-	-	-	-	-
SR	0.37	0.91	-	-	-	-
TEE	0.52	0.49	0.74	-	-	-
TSI	0.67	0.32	0.54	0.81	-	-
VI	0.47	0.61	0.63	0.41	0.92	-
ENV	0.47	0.18	0.39	0.61	0.29	0.81

Where *DA* = Diverse Activities, *SR* = Service Robots, *TEE* = Tourists' Experience & Expectations, *TSI* = Tourist site Infrastructure, *VI* = Visit Intention, *ENV* = Environment

Below mentioned Table 4.5 shows the Heterotrait-Monotrait ratio of the discriminant validity. HTMT is the average of the Heterotrait-monotrait correlations relative to the average of the Heterotrait-monotrait ratio correlations. If the value of the HTMT is higher than this threshold, there is a lack of discriminant validity. Some researchers are of the view that 0.8 (Kline, 2011) is the threshold while others of the view of its value being 0.90 (Teo et al., 2008). A confidence interval of value 1 indicates a lack of discriminant validity.

4.5 Structural Model & Hypotheses Testing

Structural model shows the relationships of the constructs with each other and is also known as the inner model. For the desired analysis that is the path coefficients, effect size (F^2), percentage of the explained variance (R^2), Predictive relevance (Q^2) are examined by running PLS Algorithm and bootstrapping. Bootstrapping procedure was conducted by taking replications up to 5000 (Haier et al., 2014).

TABLE 4.5: Htmt Heterotrait-Monotrait Ratio

	DA	SR	TEE	TSI	VI	ENV
DA	-	-	-	-	-	-
SR	0.43	-	-	-	-	-
TEE	0.63	0.53	-	-	-	-
TSI	0.84	0.36	0.64	-	-	-
VI	0.55	0.66	0.67	0.46	-	-
ENV	0.60	0.21	0.48	0.74	0.33	-

Where DA = Diverse Activities, SR = Service Robots, TEE = Tourists' Experience & Expectations, TSI = Tourist site Infrastructure, VI = Visit Intention, ENV = Environment

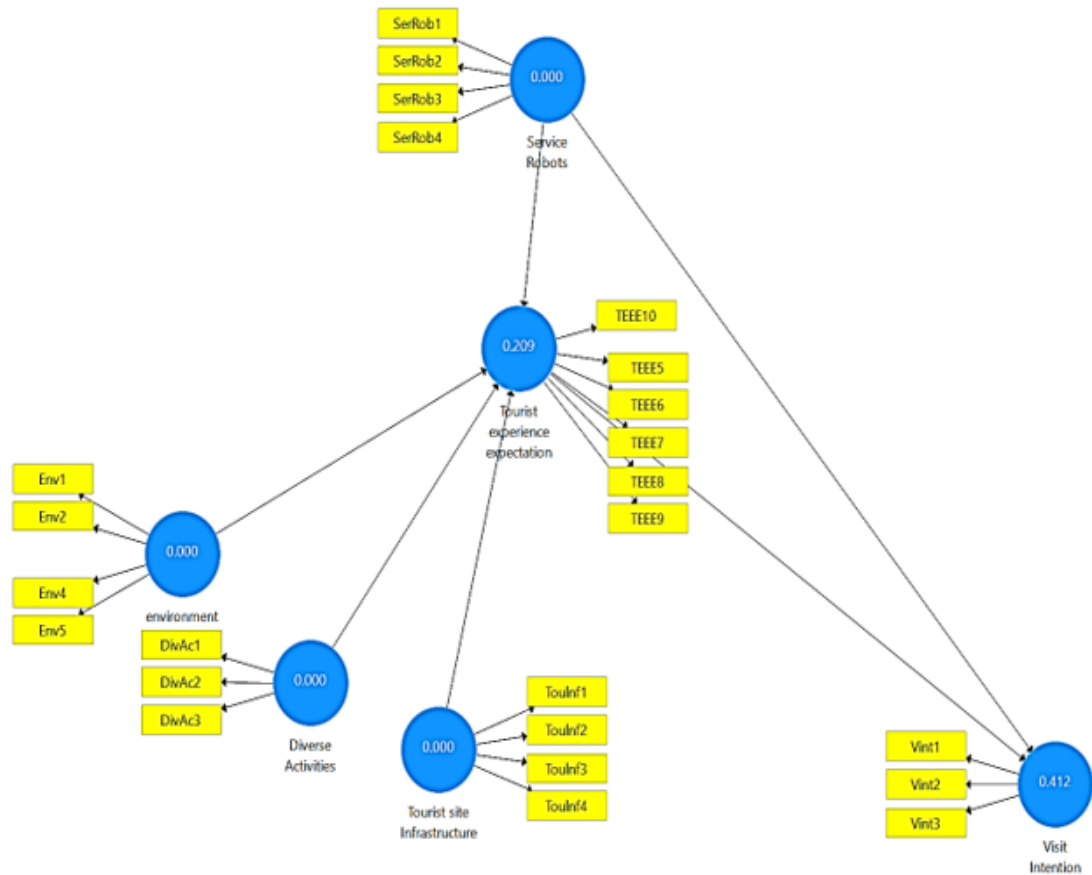


FIGURE 4.1: SmartPLS Depiction Of The Theoretical Model

4.5.1 R^2 Or Extent Of Variance Of Endogenous Variables

Above mentioned image in Figure 4.1 is the figurative depiction of the theoretical model for this research. Firstly, for the assessment of the structural model R^2 value is calculated and it shows the explanatory value of the model. The value of R^2 lies between 0 and 1. Higher predictive accuracy is shown by higher R^2 value. Interpretation of the R^2 is similar to the linear regression model (Jackson, 2008). Basically, R^2 is measure of extent of variance of the endogenous variable that is described by exogenous variable. According to researchers (Cohen, 1975), if the R^2 is below 0.13 then it is a weak impact, if it is between 0.13 and 0.26 then the effect is moderate and if the value exceeds the 0.26 range the construct has substantial impact. The analysis shows that the value for tourist experience expectation is 0.432 and visit intention shows a value of 0.515. These values indicate that R^2 is substantial for both endogenous variables that is tourist experience expectations and visit intention. This suggests that the model has substantial explanatory power as shown on below mentioned Table 4.6.

TABLE 4.6: Explanatory Power Of The Model

Endogenous variables	R Square	R Square Adjusted
Tourist Experience Expectation	0.43	0.42
Visit Intention	0.52	0.51

4.5.2 Predictive Relevance (Q^2)

For the quality of the model Cross Validated Redundancy was also measured. Predictive relevance shows that the assumed results are closer or not the real results. Predictive relevance or Q^2 is strong if the analysed value is above 0. Blindfolding technique is applied by using Smartpls to measure the predictive impact i.e. Q^2 . The predictive relevance of tourists experience expectation has 0.209 and visit intention has 0.412. In the current model the predictive relevance of both tourists experience expectations and visit intention is strong as shown in Table 4.7.

TABLE 4.7: Predictive Relevance (Q^2)

Endogenous variables	$Q^2 (= 1 - \frac{SSE}{SSQ})$
Tourist experience expectation	0.21
Visit Intention	0.41

4.5.3 Effect Size (F^2)

The effect size (F^2) is measured by calculating it through PLS algorithm in Smart-pls. Endogenous variables are affected by many predictors. F^2 i.e. the effect size measures the magnitude of the particular phenomenon. Basically, F^2 shows the extent to which the predicting variable i.e. the exogenous variable predicts the endogenous i.e. dependent variable in a particular model (Wong, 2013). In the light of criteria mentioned in various researches if F^2 is 0.02 it shows a small effect, 0.15 shows medium impact and 0.35 shows a larger impact. The results for current model in Table 4.8 shows that the service robots have a significant impact both on tourists experience expectations and visit intention i.e. 0.158 and 0.248 respectively, diverse activities has an impact of 0.032, Environment 0.007 (which is a weak impact), tourists site infrastructure 0.051 and tourists experience expectations has an impact of 0.289 on visit intention.

TABLE 4.8: Effect Size (F^2)

	TEE	VI
DA	0.03	-
ENV	0.01	-
SR	0.16	0.25
TEE	-	0.29
TSI	0.05	-

Where *DA* = Diverse Activities, *SR* = Service Robots, *TEE* = Tourists' Experience & Expectations, *TSI* = Tourist site Infrastructure, *VI* = Visit Intention, *ENV* = Environment

4.6 Path Coefficients (B) & t-Value

TABLE 4.9: Path Coefficients (B) & t-Value

Hyp.	Relationships	Path coefficients (B)	SD	t-Value	p-Values	CI-LL 2.5%	CI-UP 97.5%	Supported/not supported
H1	SR → TEEE	0.33	0.06	5.68	0.00**	0.21	0.43	Supported
H2	SR → VINT	0.40	0.06	6.96	0.00**	0.29	0.52	Supported
H3	ENV → TEEE	0.08	0.07	1.25	0.21	-0.05	0.21	Not Supported
H4	DIV ACT → TEEE	0.19	0.08	2.28	0.023*	0.02	0.35	Supported
H5	TOU INF → TEEE	0.26	0.08	3.34	0.001***	0.11	0.41	Supported
H6	TEEE → VINT	0.43	0.06	7.87	0.00**	0.32	0.53	Supported

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Path coefficients are calculated in order to determine the relationships among constructs within the model according to the hypotheses for the model and research at hand (Bagozzi & Yi, 2012). To evaluate the values the data is bootstrapped by taking a sample of 5000 subgroups as suggested by various researchers (Preacher & Hayes, 2004). Table 4.9 shows the path coefficients for the baseline model. Direct relationships as shown by statistics such as path coefficients, t- value, p-values, and standard deviation and evaluated by their upper and lower limit shows that most of the direct relationships are significant and are supported by the values. Only the direct relationship of environment with tourists experience expectation is not positive which further shows that the novelty seeking behaviour is not necessarily dependent upon the environment.

4.7 Mediation Analysis

Mediation was carried out by following bootstrapping technique in smartpls. For the procedure 5000 sub-samples were taken and procedure was followed by applying Sobel test. This technique analyses & test the below mentioned hypotheses

H_{7a}: Tourist experience expectation mediate positively between visit intention and service robots.

H_{7b}: Tourist experience expectation mediates positively between visit intention and environment.

H_{7c}: There is a significant mediating impact of tourist experience expectations on diverse activities and visit intention.

H_{7d}: Tourist experience expectation significantly mediates the relationship between tourist site infrastructure and visit intention.

To demonstrate the mediating effect, table 4.10 shows the t-value, p-value and confidence interval.

TABLE 4.10: Results Showing Mediating Role Of Tourists Experience Expectation

Hypo	Variable Bootstrap- ping Effect	Indirect Effects (B)	t- value	p- value	CI- LL 2.5%	CI-UL 97.5%	Supported/Not Supported
H7a	SR → TEEE → VINT	0.14	4.70	0.00	0.09	0.20	Supported
H7b	ENVV → TEEE → VINT	0.04	1.21	0.23	-0.02	0.10	Not supported
H7c	DIVACT → TEEE → VINT	0.08	2.04	0.04	0.01	0.17	Supported
H7d	TOUINF → TEEE → VINT	0.11	3.23	0.00	0.05	0.18	Supported

As shown in the above mentioned Table 4.10, Tourist experience expectation mediates the relationship between Service robots and visit intention, diverse activities and visit intention and finally between tourists site infrastructure and visit intention thus proving the hypotheses H7a, H7c, H7d as significant. Tourist experience expectation does not mediate relationship between the environment and visit intention not supporting the hypothesis H7b as is clear from the analysis showing a p-value of 0.227 and a beta value of 0.035.

4.8 Summary Of Supported & Not-Supported Hypotheses

TABLE 4.11: Summary Of Supported & Not-Supported Hypotheses

Hypotheses	Statement	Supported/Not Supported
H_1	Service robots have a significant relationship with tourists experience expectations	Supported
H_2	Service robots impacts significantly on visit intention of tourists	Supported
H_3	Environment significantly impacts the tourists experience expectations	Not supported
H_4	Diverse activities has a significant influence on tourists experience expectations	Supported
H_5	Tourists site infrastructure significantly impact the tourists experience expectations	Supported
H_6	Tourists experience expectations significantly impacts the visit intention formation of a tourist	Supported
H_{7a}	Tourist experience expectation mediate positively between visit intention and service robots	Supported
H_{7b}	Tourist experience expectation mediates significantly between visit intention and environment	Not supported
H_{7c}	There is a significant mediating impact of tourist experience expectations on diverse activities and visit intention	Supported
H_{7d}	Tourist experience expectation significantly mediates the relationship between tourist site infrastructure and visit intention	Supported

4.9 Summary Of Chapter

To analyze data Smartpls software is used as it helps in measuring the whole model at the same time. It helps in parametric and non-parametric tests to reach the best analyses of the data. The analytical values show reliable and valid data. Cronbach alpha and composite reliability is greater than 0.7. Other loadings and tests show significant values and stable data with supporting almost all the hypotheses except for one i.e. the environment impact on tourists experience expectations.

Chapter 5

Discussion and Conclusion

Tourists and hospitality is rapidly growing industry in Pakistan and in global perspective. It is thus imperative to understand the factors that impact the tourists experience expectations. It will help in making tourism and hospitality experience a memorable one and visit intention will also be positively formed as a consequence. To achieve the objectives of the study a survey was developed and distributed via various mediums in order to gain insight and collect data for the research. Hypotheses were developed on the basis of previous literature to check the model reliability and work-ability. As the use of service robots in tourists destinations and hospitality industry is a new and novel concept in Pakistan and its results are important as they determine the expectations of the tourists. When these expectations will be met, a visit intention will be very likely. For that purpose, in this study four different dimensions have been used to see understand various stimuli. Detailed discussion on the results is done below.

5.1 Measurement Model Discussion

Measurement model that is the outer model was measured by taking into consideration the Cronbachs alpha and composite reliability which is above the threshold of 0.7 for all the variables in the model showing strong model reliability. ITEMS showing lesser reliability were deleted to get a more reliable model. Similarly, for

average variance threshold was used to measure the discriminant validity of the model which should be above 0.5. For validity, higher Fornell and Larker diagonal values than off diagonal values shows a valid model. Also the HTMT test performed showed values less than the threshold mentioned by most of the researchers (Henseler, Ringle, & Sarstedt, 2015). Overall the model shows strong reliability and validity of the constructs.

5.2 Structural Model Discussion

Structural model validate the relationships of the variables, their effect size, variance, predictive relevance and bootstrapping to understand the significance of the model and also the t-values for the variables. These analyses will highlight the relationships in the hypotheses and validate their inner structure.

5.2.1 Service Robots Have A Significant Relationship With Tourists Experience Expectations & Visit Intention (RO1)

By the introduction of Service robots in the tourism and hospitality industry the whole scenario of the industry is changing globally. This study was carried out to check whether the service robots can give the unique experience and form a valid stimulus for the tourists experience expectations. As, can be referred back to literature (Mun & Hwang, 2003) information and technology based perceived enjoyment and can create positive impact on the perceived use. According to Ivanov et al. (2018) excitement and curiosity generated by the use of service robots can evoke positive experience and expectations. The result shows a path coefficient greater than 0.2 and an effect size of 0.158 and 0.248 on tourists experience expectations and visit intention respectively. This shows a positive relationship between use of service robots for tourists, their expected expectation (Ivanov et al., 2018; Murphy, Gretzel, & Hofacker, 2017) and forming of visit intention (DHaro et al., 2015). This has its basis in perceived enjoyment while using the technology

(Pinxteren et al., 2019) and gives an entirely different experience as compared to experience derived from scenic view. Previous literature and measurement values both support first hypothesis i.e “(H1) Service robots have a significant relationship with tourists experience expectations” and second hypothesis “(H2) Service robots impacts significantly on visit intention of tourists”.

5.2.2 Impact Of Diverse Activities, The Environment & Tourists’ Site Infrastructure On Tourists’ Experience Expectations (RO2, RO3, RO4)

Through previous literature it has been established that the image of a destination that is cognitive image consisting especially of environment, diverse activities and tourist site infrastructure impacts the expectations and behaviour of a tourist (C.-K. Lee et al., 2005; Lee et al., 2017). Similarly, Sheng and Chen (2013) have argued that the tourists experience expectations are formed through personal experience expectations and result in future visit intention. The influencers, environment, diverse activities and tourists site infrastructure, as discussed by Phillips and Jang (2007) as important for forming future visit intention. This can also be discussed from empirical point of view as environment is a different experience as compared to service robot, diverse activities and tourist site infrastructure.

The empirical results for hypothesis “(H3) Environment significantly impacts the tourists experience expectations” shows an impact size of .007 on tourists experience expectation which is not significant, a path coefficient of 0.08, a p-value of 0.211. These empirical values show a non-supportive empirical evidence for environment as this a multi-stimuli study and all have different domains so they may or may not impact the tourists experience expectations in the same way.

“(H4) Diverse activities have a significant influence on tourists experience expectations. Diverse activities are basically composed of shopping, night life etc. which is again different experience in itself. Empirical data shows an effect size of 0.032 on tourists experience expectations, a path coefficient of 0.189, a p value of 0.02,

thus validating the hypothesis in the positive way. Hypothesis H4 is supported empirically and theoretically through literature and measurement model”.

“(H5)” Tourists site infrastructure significantly impact the tourists experience expectations. Tourists site infrastructure shows an effect size of 0.051 on tourists experience expectations, a path coefficient of 0.259, a p value of 0.001. This shows a significant positive impact on tourists experience expectations as is evident from literature discussed above and the empirical values calculated in the measurement model by various measurement model tests.

5.2.3 Direct Impact Of Tourists Experience Expectations On Visit Intention (RO 5)

Literature points out that the tourists experience expectations can form the visit intention of the tourists (Wirtz et al., 2018). As, the tourists experience expectations are accumulated psychological phenomenon and when impact through right stimuli it can form positive visit intention (Sheng & Chen, 2013). The same results have been validated by the empirical measurement. TEEE has an effect size of 0.289, p value of 0, path coefficient of 0.432. This shows a strong, positive, direct relationship of tourists experience expectations and visit intentions thus supporting the hypotheses “(H6)” Tourists experience expectations significantly impacts the visit intention formation of a tourist.

5.3 Mediation

Tourists experience expectation variable is also a mediator between service robots, environment, diverse activities, tourists site infrastructure and visit intention (Tan & Wu, 2016; Wang & Hsu, 2010; Wirtz et al., 2018; Zeng et al., 2015). The mediation is hypothesised through hypotheses H7a to H7d.

5.3.1 Mediation Between Tourists Experience Expectations, The Environment, Diverse Activities, Tourists' Site Infrastructure & Service Robots (RO6, RO7, RO8, RO9)

The empirical results for mediation impact of tourists experience expectations, service robots and visit intention can be seen by p value of 0, beta value of 0.14 and lower limit 0.085 and upper limit 0.2 thus supporting the hypotheses “(H7a)” Tourist experience expectation mediate positively between visit intention and service robots. This is also evident from the literature view as according to Chang et al., (2011) perceived enjoyment that tourist receive from thinking about using technology based services can impact visit intention by enhancing the tourists experience expectations (Neuhofner & Buhalis, 2012).

Although, the environmental stimulus is a powerful variable to develop visit intention via tourists experience expectations (Wang & Hsu, 2010) but along with many type of stimuli impacting simultaneously on the cognition of tourists can result in some being identified as new and unique thus important and some can be seen as more trivial. The empirical results for “(H7b)” Tourist experience expectation mediates significantly between visit intention and environment shows that the p-value of relationship is 0.227, beta value of 0.035, lower limit being 0.021 and upper limit being 0.095. These results shows that Tourists experience expectation do not play a mediating role between environment and visit intention thus not supporting the hypothesis.

The empirical results shows a p value of 0.041, beta value of 0.081, lower limit of 0.009 and upper limit of 0.165 thus supporting the hypothesis “(H7c)” There is a significant mediating impact of tourist experience expectations on diverse activities and visit intention. According to literature the diverse activities that consist of night life, shopping facilities and various entertainment activities impacts the cognition of the tourists forming an intention to visit (Phillips & Jang, 2007). In the opinion of Wang and Hsu (2010) these factor creates emotional expectations and thus create a demand for the service.

Tourists site infrastructure is yet another type of stimulus that impacts the visit intention through expectation formation. It consists of the historical and cultural sites, transport schedules within city and out of it (Phillips & Jang, 2007). Behavioural responses are generated through formation of image in the minds of the tourists through psychological methods and enhancing the stimuli in such a way that the tourists get enough excited to visit a certain place. “(H7d)” Tourist experience expectation significantly mediates the relationship between tourist site infrastructure and visit intention. The empirical evidence from the model supports the hypothesis H7d as it has a beta value of 0.111, p value of 0.001, lower limit of 0.046 and upper limit of confidence interval as 0.181.

It shows in Pakistan the tourists can be impacted by the cognitive image factors (tourists site infrastructure, and diverse activities) and shows a positive relationship for forming the tourists experience expectations and that in turn will lead to visit intention. In the domain of novel experiences tourists in Pakistan are also willing for novel and unique experiences through perceived enjoyment by using technology thus again forming visit intentions. Environmental Stimulus also plays an important role but along with so many other stimuli is not distinguished enough to impact the tourists experience expectations.

5.4 Theoretical Implications

The aim of this study was to examine the effect of various stimuli (service robots, environment, and diverse activities and tourists site infrastructure) on tourists experience expectations. All these variables mentioned above represent the new linkages that are being proposed and observed in this study. For these relationships were empirically tested and the results were notified that show consistency with the literature.

This study presented a detailed knowledge of the technological and environmental factors affecting the expectations of the tourist and at the same time analysing the moderating role of perceived anthropomorphism on the expectation formation. This paper also explored and thus contributed in identifying the activities that the

tourists deem as acceptable in case of service robots. Humanoid service robots are taking over the tourism and hospitality industry at a fast pace that has changed the scenario of the service sector.

These theoretical contributions that have been made through this paper will also the researchers to find and work on new dimensions related to technological based products with humanoid aspect. Furthermore, this study has a major contribution in theoretical terms that concerns the Pakistans market. This study has 256 responses received on the basis for service robots, diverse activities, environment, and tourists experience expectations forming visit intention.

5.5 Managerial Implications

Current study has several managerial implications for the researchers as well as marketers. They include the identification of stimuli that can form visit intention of the tourist by stimulating there cognition. These in return will form visit intention for the destination. These stimuli will the ones that will motivate the customers to visit the certain destination. Most importantly the thesis discusses various types of factors affecting the customers cognition. Varied factors leave different type of impressions on the cognition of a customer (Cohen, 2008). Service robot is different as compare to environment or diverse activities and will motivate a customer in a unique way (Ivanov, Gretzel, Berezina, Sigala, & Webster, 2019). Customers may or mot not be interested in experiencing the technological aspects in a visit to a tourist destination.

Marketers, traveling agencies and government agencies can run and introduce various marketing campaigns that elaborate the positive aspects of tourism by using these variables. Simulations of the destinations and videos of the services robots working in the hotels can be shown to future customers to attract them to visit these places.

In Pakistan, tourists can be attracted by developing systems that can give insight about the technological changes taking place and their benefits if they are

integrated in the hotel and tourism sectors. It is evident from the literature (Aggarwal & McGill, 2007; Ivanov et al., 2019; Ivanov, 2018), many hotels in western and other Asian countries show that the perceived enjoyment of using humanoid robots attracts customers to visit destinations especially on front desks.

Government in Pakistan is also taking keen interest in developing the Northern areas of Pakistan. This will increase the tourists interest in Pakistans tourists destinations. Pakistan has been endowed with beautiful scenery and resources if they are market in the best possible way to the tourists it can add positively to the GDP of the country.

5.6 Limitations & Future Directions

There are few limitations concerning this study. First being the fact that there is a time constraint and so the cross-sectional study has been opted. If there have been more time and resources the data could have been collected for longitudinal study which will give more insight in the factors affecting expectation formation of a tourist. Views of the customers and the impression related to various factors changes with more exposure and time. If the study had been longitudinal more data could have been collected at different stages of the study to form a more elaborate and in-depth analysis.

In current research only few stimuli namely service robots, diverse activities, environment and tourists site infrastructure have been used in the study. More varied activities can be identified that can help form the experience expectations of the tourist. Secondly, other respondents can be identified for this study that may help in understanding the impact of the variables on the expectations. Other cities can be sued to collect the data for the study which will give a broad spectrum for more authentic results.

5.7 Conclusion

Tourism and hospitality industry is an important evolving sector with the advent of innovation, novel experience seeking tendencies of the tourists and technology based enhancers and stimuli. At this stage of development, every country is taking its share in the development of various creative stimuli to attract the tourists. This has also been on the rise due to people getting engaged in various types of tourism. Their expectations evolve as the exposure, information and technology is maturing. People need different things to satisfy their experience expectations like medical reasons and service robots or just scenic beauty. Current study is a survey based research for which cross-sectional data is collected from various respondents selected on the basis of convenient and snow ball sampling methods. The questionnaire was developed on the basis of steps suggested by Churchill and Iacobucci (2006) was used to collect data. The survey forms related to various variables were served to the respondents both online and real time. The data collected was analysed using Smartpls v.3.2.8. Smartpls is the best tool where more variables and complex models are present. It is a variance based software that estimates path models using latent variables (Becker et al., 2018). SEM based tools are best firstly, for analysing primary data and secondly because of its ability to deal with the measurement error. This is important as it allows finer diagnostics for the improvement of the model which is not possible with regression model as it is unable to separate the measurement error and from the error attribution to a lack of for the model and both are treated in a similar way and grouped into 1-R2.

Furthermore, the various relationships drawn with the help of hypotheses supported by literature are examined through the measurement model (Cronbachs alpha, composite reliability, convergent validity and discriminant validity) and structural model (mediation, effect size F2, predictive relevance Q2 and extent of the endogenous variables R2). These measurements are done in order to validate the relationship between the tourist experience expectations, service robots, diverse activities, environment, tourists site infrastructure and visit intention. To understand the results it is thus imperative to discuss the hypotheses.

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Appendix A

Questionnaire

As a research degree student, at Capital University of Science & Technology Islamabad, am collecting data on the expectations and experiences of the customers regarding the tourist destination and automated services. Currently, I am pursuing research on impact of tourists expectation on visit intention formation. This research is important for tourist to enhance their social interaction and entertainment experience. Therefore, your participation is important in this survey. This survey takes approximately 10-12 minutes. All information provided will remain confidential and will be used only for research purpose. Please choose the most appropriate option which defines you best. Your time and participation will be highly appreciated.

Regards,

Naimah Khan MS Student, C.U.S.T.

First Scenario

This is a scenario based questionnaire. Kindly, consider a scenario in which you have visited a tourism site in northern areas of Pakistan. Keeping in view the quality of service, prompt responses, tourists site environment, historical background of the place and entertainment activities in that particular area please fill out the questionnaire below.

Second Scenario

Kindly consider, if the hotels in these tourists sites are automated (with front desk robots, automatic vacuum cleaning etc) will you have more inclination to visit these places? (Those robots will also exhibit human like qualities like smile, caring sentences etc.)



Section: 1 (Demographics)

On the answer key, please do not fill out any personal information (e.g. name, id number)

1. Age

- 25 - 35
- 36 - 45
- 46 - 55
- 56 and Above

2. Gender

- Male
- Female

3. Education:

4. Have you stayed in Hotel before?

- Yes
- No

Section: 2 (Cognitive Image)

In the following section, evaluate your answer regarding how do you imagine the destinations cognitive image (Perception of the destination) would be helpful in forming your expectations about a place? Where (1) being low to (5) being high.

i Environment

Questions	1	2	3	4	5
The tourist site accommodation is perceived to be clean					
The tourist accommodation is perceived to be safe					
The tourist site to have Inexpensive services and goods available					
Tourist site perceived to have pleasant weather					
Tourist site perceived to have attractive scenery					

ii Diverse Activities

Questions	1	2	3	4	5
The tourist site is perceived to have a variety of entertainment opportunities					
The tourist site is perceived to have a variety of night life					
The tourist site is perceived to provide plenty of shopping facilities					

iii Tourism Infrastructure

Questions	1	2	3	4	5
The tourist site is perceived to have good public and private transportation available					
The tourist site is perceived to have plenty of interesting cultural and historic site					
The tourist site is perceived to have convenient airline schedules available to the destination city					
The tourist site is perceived to have a variety of suitable accommodation					

Service Robot

In the following section, evaluate your answer regarding how do you imagine the presence of a service robot in the hotel or at the front-line will increase your perceived enjoyment? Where (1) being low to (5) being high.

Perceived Enjoyment

Questions	1	2	3	4	5
Perception of using the Robot (automated services) gave me lots of pleasure					
Perception of using the robot (automated services) gave me enjoyment					
Perception of using robot in tourist accommodation is positive					
Perception of the actual process of using robot is pleasant					

Perceived Anthropomorphism

In the following section, evaluate your answer by imaging if it will pleasant for you, if a service robot or automated personal assistant, in your hotel or as tourism guide, which shows human capabilities? Where (1) being low and (5) being high.

Questions	1	2	3	4	5
Perceiving that the personal intelligent agent is able to speak like human is more favorable					
Perceiving that the personal intelligent agent can be happy is acceptable					
Perceiving that the personal intelligent agent can be friendly is helpful					
Perceiving that the personal intelligent agent can be respectful is favorable					

Tourists Expected Expectations

In this section, evaluate your answer by responding to the type of expectations you might have from your visit to the tourist destination? Where (1) being the low and (5) being the high.

i Expectations Of Easiness & Fun

Questions	1	2	3	4	5
During the trip, I expect to be relaxed, such as taking my time walking or visiting friendly environments					
During the trip, I expect to find some interesting contrasts and changes, such as seasonal changes, characteristics of cities and country side and unique activities, such as being served by robots					

ii Expectations Of Cultural Entertainment

Questions	1	2	3	4	5
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During the trip, I expect to experience familiar cultures or entertainment, such as visiting childrens play area or folk stories

During the trip, I expect to experience physical objects with local cultural characteristics and varied images

iii Expectations Of Personal Identification

Questions	1	2	3	4	5
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During the trip, I expect to be able to approach core characters related to topic, such as having a conversation or taking pictures with the main characters after watching performance

During the trip, I expect to be identified, such as traveling with companions with similar interests

iv Expectations Of Historical Reminiscences

Questions	1	2	3	4	5
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During the trip, I expect to be close to the legend of my memories, or see a legendary character or scene

During the trip, I expect to experience some historic content or feelings, such as seeing environments of the time, set as old towns and streets

v Expectations Of Escapism

Questions	1	2	3	4	5
During the trip, I expect to have fantasy experiences, such as robots servicing the hotel					
During the trip, I expect to enjoy the fulfillment of hopes or visions, such as visiting an unpolluted environment or an ideal new town constructed by robots					

Visit Intention

In this section, evaluate your answer by responding to whether you would want to visit a hotel with service robots? Where (1) being low and (5) being highest.

Questions	1	2	3	4	5
I am willing to stay at an automated hotel while travelling to northern areas of Pakistan					
I plan to stay at an automated hotel when travelling with family					
I will make an effort to stay at an automated hotel while travelling to a tourist destination					

Appendix B

