Author:
Hu, Mengyun

Title:
Investigating the influence of Internet of Things (IoT) on tourists' subjective well-being
evidence from British and Chinese tourists in the context of city break

Investigating the influence of Internet of Things (IoT) on tourists' subjective well-being: evidence from British and Chinese tourists in the context of city break

By

Mengyun Hu

School of Management

UNIVERSITY OF BRISTOL

A dissertation submitted to the University of Bristol in accordance with the requirements for award of the degree of Doctor of Philosophy in the Faculty of Social Sciences and Law

September 2022

Words: 47639

ABSTRACT

In recent years, the Internet of Things (IoT) has grown to be an essential part of the development of tourism, with an increasing number of IoT solutions being applied in tourism-related industries such as hospitality and transportation. Despite increasing academic investigations of the role of IoT in the tourism industry from the traveller's perspective, most studies have focused on the traveller's behaviour, experiences, and satisfaction. It is not clear how IoT affects traveller subjective well-being which is a quintessential element of individual decision-making in particular tourism markets. Therefore, the purpose of this study was to propose a theoretically integrated approach to understanding the influences of IoT on traveller subjective well-being in the context of city breaks. In doing so, the present study explored the factors and the extent to which IoT affect city break traveller subjective well-being on the basis of task-technology fit theory, expectation confirmation model, and Hofstede's culture theory. A quantitative method was adopted in this study. Empirical data were collected from 2077 city break travellers, 1008 in the UK and 1069 in China. An integrated model was tested using the structural equation modelling (SEM) approach. The findings of the study revealed that the main factors that determine city break traveller subjective well-being towards the use of IoT are a combination of technological, emotional, personal, and contextual attributes. These findings contribute to the theoretical development of innovative technologies and traveller subjective well-being in general as well as enrich the literature regarding city break tourism. In addition, the study discusses some practical implications for the marketing of city break tourism with the use of IoT.

ACKNOWLEDGEMENT

Firstly, I wish to express my deep gratitude to my supervisors, Eleonora Pantano and Nikolaos Stylos. I am extremely lucky to have them as my PhD supervisors. I truly appreciate their tremendous support, which helped me to grow from a PhD baby to an independent researcher! This thesis could not have been completed without their careful guidance, strict requirements, and constant encouragement. Special thanks to my best supervisor Eleonora Pantano. Your encouragement and support not only in making my PhD experience not only in making my PhD life fruitful and stimulating but also in enhancing my confidence. Many thanks!

My sincere thanks go to the School of Management for providing me with the opportunity to carry out my research. Huge thanks to my examiners, Lucia Porcu and David M Evans, for their willingness to examine my thesis.

I also want to show my gratitude to my first and best friend I met in Bristol, XiaoLong Shui. Thank you for always being there for me through this four-year journey. I am grateful to you for standing by my side during my PhD. I would also like to thank my friend, Xiaoting. Thank you for taking care of my stomach over the last three years and working with me in this final period. My thesis would not have been completed on time without our special writing retreat. Some special words of gratitude go to my best friend Ying Huang and her Husband Yue Xu for their unconditional support. Thank you for all your help and support. I would also like to thank my good friend Sara Zhang, Fanny and Jeffery Lim. Thank you for your support and always being there. My gratitude is extended to all my PhD colleagues in Howard house. Special thanks to Chris, for sharing the position of PGR rep with me and sharing moments of excitement and anxiety.

I also thank myself for being brave and hard working. No pain no gain.

Last but not least, I want to thank my family for their love and encouragement. In particular, I would like to thank my mom and my young brother and Yin Chai Wang for providing me with a loving environment. Without their continuing support and understanding, I would not have been able to finish this thesis. I dedicate this thesis to them.

AUTHOR'S DECLARATION

I declare that the work in this dissertation was carried out in accordance with the requirements of the University's Regulations and Code of Practice for Research Degree Programmes and that it has not been submitted for any other academic award. Except where indicated by specific reference in the text, the work is the candidate's own work. Work done in collaboration with, or with the assistance of, others, is indicated as such. Any views expressed in the dissertation are those of the author.

SIGNED : [redacted] DATE: 26/08/2022

STATEMENT OF CONTRIBUTIONS

Part of Chapter 2 “Literature Review” was published in a book, tourism marketing in western Europe, with joint authorship of my PhD supervisors, as:

Hu, M, Pantano, E., & Stylos, N. (2021). How does Internet of Things (IoT) affect travel experience?. In *Tourism marketing in Western Europe* (pp. 9-25). Wallingford UK: CABI.

The statement of contributions of the authors is as follows and this declaration is jointly authorised by the signature of the parties below:

Name of Author	Contribution	Signature
Mengyun Hu	Conception, data collection, data analysis, data interpretation, writing, and revision.	[redacted]
Eleonora Pantano	Supervision and editing	[redacted]
Nikolaos Stylos	Supervision and editing	[redacted]

STATEMENT OF CONTRIBUTIONS

Part of Chapter 2 “Literature Review” and 4 “Results” were published in a Conference proceeding, 14th Annual Conference of the EuroMed Academy of Business, with joint authorship of my PhD supervisors, as:

Hu, M., Pantano, E. & Stylos, N. (2022). City breaks, tourism experience and subjective well-being: investigating the role of IoT in the new era. *In 14th Annual Conference of the EuroMed Academy of Business* (PP. 354-364). EuroMed Press.

The statement of contributions of the authors is as follows and this declaration is jointly authorised by the signature of the parties below:

Name of Author	Contribution	Signature
Mengyun Hu	Conception, data collection, data analysis, data interpretation, writing, and revision.	[redacted]
Eleonora Pantano	Supervision and editing	[redacted]
Nikolaos Stylos	Supervision and editing	[redacted]

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ABBREVIATIONS

IoT	Internet of Things
ECM	Expectation confirmation model
TTF	Task-technology fit
SWB	Subjective well-being
PVTE	Perceived value of travel experience
SPSS	Statistical Package for Social Sciences
AMOS	Analysis of Moment Structure
CFA	Confirmatory Factor Analysis
SEM	Structure Equation Modeling
EFA	Exploratory Factor Analysis

CHAPTER 1 INTRODUCTION

1.1 Research background

Recent advances in IoT technologies have enabled a range of transformations in the tourism industry (Pantano & Stylidis, 2021; Hassan, 2022) creating more immersive experiences for travellers while enhancing their overall satisfaction (Bec et al., 2021; Erdem & Şeker, 2022; Chen et al., 2022; Stylos et al., 2021). In recent years, the Internet of Things (IoT) has been identified as one of the most important emerging technologies offering organizations the chance to transform their current offerings (Cranmer et al., 2022; Baltuttis, Häckel & Jonas, 2022). IoT is increasingly being applied to various industries linked to tourism, such as hospitality, travel/transportation, and destination management (Tavitiyaman et al., 2021; Yang et al., 2021; Kim & Han, 2022; Ushakov et al., 2022). IoT is a system of internet-connected devices that are able to collect and exchange data in real time by using embedded sensors (Asghari et al., 2019). IoT functions via a combination of complementary smart technologies (Lin et al., 2017) which enable connectivity at any time, in any place, with any network or services, for anything and anyone (Celik et al., 2021). For companies, implementing IoT technologies is viewed as a means of gaining competitive advantages, pursuing new chances for innovation, and gaining a deeper understanding of their consumers, hence strengthening relationships with them (Krotov, 2017; Saarikko et al., 2017; Pappas et al., 2021). In other words, the IoT creates opportunities to expand service quality by offering greater access to accurate real-time information, which in turn helps to raise the efficiency, effectiveness, service, and maintenance of products and services (Cranmer et al., 2022). The capacity for IoT to facilitate limitless possibilities for the development of the tourism industry is clear and doable (Rust, 2020) through an ongoing understanding of traveller needs and preferences and responding accordingly in real-time (Buhalis et al., 2019). Seeking a better understanding of the extent to which IoT affects traveller experiences is vital to modern-day business success.

Given the above, it was not surprising that the tourism industry was one of the first industries to recognise the value of the IoT and to develop and implement IoT integration and solutions (Guo et al., 2022). A growing body of recent research in the tourism literature has sought to understand how IoT-enabled technologies can best be utilised for improving a traveller's favoured outcomes (Buhalis et al., 2019; Hu et al., 2021; Demirel et al., 2022; Rahman & Hassan, 2021; Wang et al., 2020). The application of IoT in the tourism industry has not only shaped the way tourism service providers reach out and engage with their consumers (Car et al., 2019; Verma & Shukla, 2019; Mercan et al., 2020; Ko, Kim & Jwa, 2022), but has also transformed the nature of the tourist experience (Pai et al., 2020; Jeong & Shin, 2020; Rahman & Hassan, 2021; Shin et al., 2022).

In particular, travellers frequently carry mobile phones for making decisions on-the-go, managing travel schedules, connecting with the social world, and searching for options during any available spare time (Egger et al., 2020). By taking advantage of the IoT, various effective and personalised travel services have been provided through mobile devices to assist travellers throughout their whole journey. For example, tourism destinations have provided IoT-based solutions such as mobile applications and sensors to help tourists interact with the environment around them, interpretation of cultural attractions, as well as information search and navigation (Tussyadiah et al., 2018). Moreover, smart hotel chains have been launched thanks to IoT technologies. For instance, Leyeju has launched nine smart hotels in China, as shown in Figure 1-1, which offer entirely touch-free and automated stays for guests (Dykins, 2022). This IoT integration allows guests to self-check-in and self-check-out, and even order housekeeping through the mobile application. Leyeju hotel uses IoT technology to gather data about how guests interact with their surroundings and use that information for ongoing enhancements to improve the guest experience.

Figure 1-1. IoT-based smart hotel

(Dykins, 2022)

Furthermore, the adoption of IoT technologies has been accelerated in the tourism industry most recently in dealing with the COVID-19 pandemic. For instance, García-Milon et al. (2021) explained that COVID-19 has left the travel and tourism industry very damaged so that new solutions are required for its survival. IoT adoption can be seen as one of the best solutions to help the industry move forward and achieve new levels of efficiency in the post-Covid-19 era (Siriwardhana et al., 2020). In particular, due to the fact that the nature of Covid 19 is highly contagious, it is impossible for activities that involve a high level of human interaction, such as travelling, to continue as they have done in the past (Wen et al., 2020). IoT can help ease traveller concerns regarding personal health and well-being by making tourism flows safer (Alhasan et al., 2020; Javaid & Khan, 2021; Alraja, 2022). For example, Hilton and Starwood hotels have applied IoT technologies to provide guests with self-check-in and keyless entry services by using their mobile applications (Kansakar et al., 2020). This will greatly lessen guest face-to-face contact in a post-Covid-19 world but will also maintain traveller health and well-being throughout extended travelling (Rahimizhian & Irani, 2021). Consequently, IoT is transforming the tourism industry by permanently reshaping nearly all ways of travel. Unconventional, novel tourism services and experiences are created and consumed in this process. Amidst this dramatic transformation, it is imperative to understand the extent, triggering factors, and influences of IoT usage on the tourism experience and a traveller's subjective well-being.

Researchers have widely acknowledged the importance of subjective well-being for years (Lyu et al., 2018; Holm et al., 2017; Su et al., 2016; Saayman et al., 2018; Yu et al., 2021; Zheng et al., 2022; Zins & Ponocny, 2022). For instance, tourism scholars have confirmed that a traveller's subjective well-being stems from key output variables influenced by personal goals (McCabe & Johnson, 2013; Saayman et al., 2018), and such variables and/or an array of variables can be formulated as part of individual decision-making in particular tourism markets (Hwag & Lyu, 2015; Stylos et al., 2017; Choi et al., 2022). Moreover, marketing researchers and practitioners have started to consider consumer SWB as a marker of success for their business in recent years (Ward et al., 2021). Researchers have called for more research on how technologies can improve a consumer's subjective well-being in relation to tourism (Gretzel & Stankov, 2021).

Furthermore, Lee et al. (2018) indicated that travellers' subjective well-being can be enhanced when their needs for travel services are satisfied. Previous studies concur that IoT-enabled technologies can be seen as essential tools to meet traveller needs and wants (Huang et al., 2017; Hu et al., 2021; Gretzel & Koo, 2021). To date, to the best of our knowledge, no study has empirically examined if and how IoT affect traveller subjective well-being (SWB) by meeting their specific needs while travelling. Instead, the existing tourism literature is replete with studies that have mainly focused on understanding the broader influences of IoT on travel experiences, and travel satisfaction (e.g., Saayman et al., 2018; Yu et al., 2021; McCabe & Johnson, 2013; Um & Chuang, 2021), and behavioural intention (e.g., Hailey et al., 2021; Pai et al., 2021; Tavitiyaman et al., 2021). In order to expand and enrich the understanding of IoT in the tourism industry, research is needed on travellers' subjective well-being.

Furthermore, as suggested by Wang et al. (2018), a traveller's post-adoption beliefs and subjective well-being towards the use of IoT while travelling may vary according to the type of trip and/or destination. Researchers are increasingly examining the impact of technologies on travel experiences associated with particular trips, such as cruise trips and urban heritage tourism (e.g., Lyu et al., 2018; Tom Dieck & Jung, 2018; Yi et al., 2021; Gaberli, 2022). However, the role of IoT in city break trips has yet to be researched. A 'city break' is a critical form of urban tourism (Charterina & Aparicio, 2015) and refers to a leisure trip between one and three nights duration to one city or town, without an overnight stay at any other destination during the journey (Dunne et al., 2011). In the UK, the city break is the most popular type of vacation, with more than half the population haven taken the city break holiday at least once(ABHA, 2022) as shown in Figure 1-2.

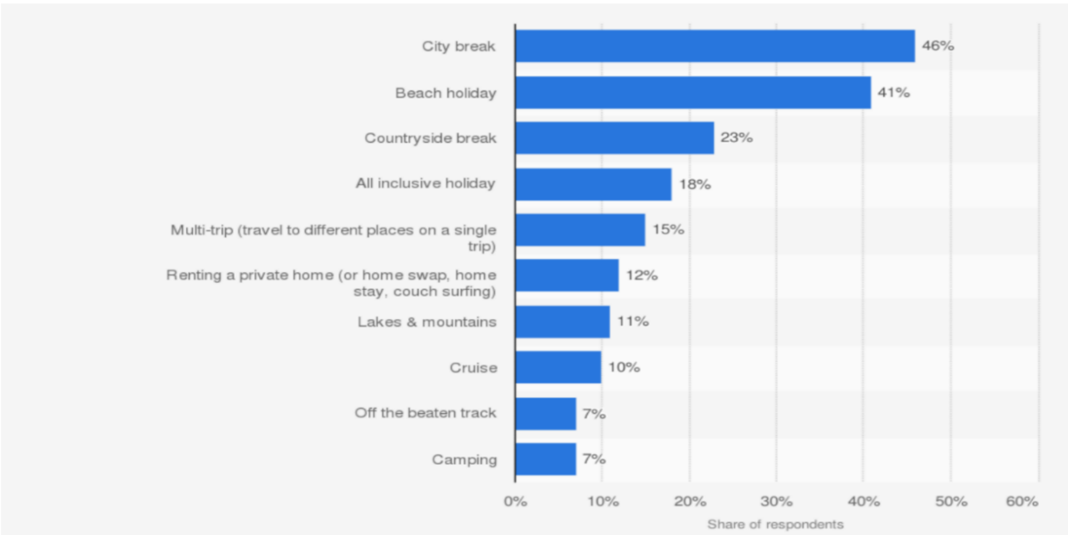

Figure 1-2. Leading types of holidays in the United Kingdom (UK) in 2020

(ABHA, 2022)

According to the extant literature, the substantial growth of city-based tourism was identified as a predictable and inevitable trend in the tourism industry (Postma et al., 2017). This trend was initially facilitated by the following: 1) the rapid expansion of low-cost airline traffic resulting in much more affordable travel costs thereby putting many new cities onto the tourist map; this resulted in a whole range of new city break destinations for potential travellers (Dunne et al., 2011); 2) the advancement of innovation technologies (IoT) has supported the marketing and promotion of cities and helped travellers make online reservations for lodging and transportation to improve travel convenience (Gretzel & Koo, 2021; Pratisto et al., 2022); and, 3) in the post-Covid 19 era, the domestic market has become the most promising way to resuscitate the tourism industry in the short run (Boto-García & Mayor, 2022). The development of city tourism has turned out to be one of the key strategies for the economic revival of the cities (Kowalczyk-Anioł et al., 2021). It is clear that city break tourism will become increasingly important in the development and revitalization of tourism.

The overall purpose of this study was to explain the role of IoT in affecting travellers' perceived value of travel experience and subjective well-being in the context of city breaks. Compared with other forms of vacation, city breaks necessitate more effective itineraries due to a shorter decision time and since city breakers need to consider their budgetary and time-space restrictions (Charterina & Aparicio, 2015). This indicates that city break travellers are more likely to welcome technology to assist them in fulfilling their specific travel needs. Given this background, the ubiquitous city break has been chosen as the research focus of this study.

1.2 Research, Motivation, and Scope of the Study

Understanding traveller perceptions and responses resulting from the use of IoT is critical to the development and validation of business strategies, especially in view of the current proliferation and impact within the tourism industry. To date, tourism marketing managers have employed many technological solutions such as autonomous agents and things (e.g., smart voice assistants; smart rooms) and anthropomorphic service robots in order to enhance guests' well-being by making their travel experiences enjoyable, personalised and friction-free as possible (Mizrachi & Gretzel 2020; Stankov et al. 2019; Stankov & Gretzel, 2021).

Nevertheless, according to Tien et al. (2021), the relationship between IoT and subjective well-being appears to be an under-explored topic in the current state of knowledge regarding tourism. Research has mainly focused on the development and application of IoT in the tourism industry (Wise & Heidari, 2019; Gaberli, 2022; Gao, 2021; Chen et al., 2021; Chen et al., 2022). However, while it is valuable to elicit the importance of IoT from the traveller's perspective (Hu et al., 2021; Gretzel & Stankov, 2021), there is a lack of a holistic framework demonstrating the influence of IoT on a traveller's subjective well-being in the context of city breaks. It also remains unclear the extent to which certain factors affect travellers' subjective well-being whenever they use IoT for city breaks. Furthermore, only limited empirical evidence has documented how tourism organisations have developed effective strategies for using IoT to enhance travellers' subjective well-being across countries (Chatterjee et al., 2021).

As mentioned earlier, this research study addressed this gap regarding the relationship between IoT and traveller SWB. Specifically, this thesis investigated the impact of IoT technologies on a traveller's subjective well-being in the context of city breaks in the UK and China. Towards this end, this study created a theoretical model that combined Task-Technology Fit (TTF) theory (Goodhue & Thompson, 1995) and the Expectation Confirmation Model (ECM) (Bhattacherjee, 2001). Also, this study included an examination of any moderating effects of culture on the linkages between TTF and subjective well-being as well as the linkages between perceived value of travel experience and subjective well-being.

The TTF model has been used to explore the relationships among tasks, technologies, utilisation, user satisfaction and individual performance outcomes and has been widely validated in previous information systems (IS) studies across different contexts. Over the past decade, TTF has been the most popular theory used to understand the link between technology usage and individual performance (Howard & Rose, 2018). Several other theoretical models have been proposed to understand individual beliefs and attitudes towards the use of newly emerged technologies in different service contexts. These have included the Theory of Reasoned Action (Fishbein, 1979) and the Technology Acceptance Model (Davis, 1989). While these models have provided rich insights into technology adoption, they have not taken into account specific considerations of the task environments, such as a particular trip or vacation (Wang et al., 2021). To address this shortcoming, TTF was selected as a more fitting framework applicable to this research study (Goodhue & Thomposon, 1995).

ECM explains individual post-adoption beliefs and continuance behaviour of technologies (Park, 2020). The ECM has theoretical relevance since this study investigates a traveller's beliefs after the initial use of IoT technologies in city breaks and the influences of these beliefs on their value perceptions of their travel experience and SWB. Whereas the traditional expectation confirmation theory (ECT) (Oliver, 1980) emphasised expectation in the pre-usage stage as an antecedent of confirmation, the ECM has the capacity to focus on causal relationships ranging from confirmation to expectation in the post-usage phase (Lin et al., 2012). Users might change their expectations after the use of the information system and this has been shown to be a strong predictor of information system (IS) continuance (Bhattacherjee, 2001). Thus, an integrated research model which includes the ECM can yield a more comprehensive understanding of traveller post-adoption perceptions with regard to IoT technologies.

Despite the popularity of both the TTF and ECM, previous studies usually combined these two models to provide a deep understanding of technology adoption (e.g., Al-Hattami, 2021; Cheng, 2019; Franque, Oliveira & Tam, 2022; Cheng, 2020). Take for example, Lu & Yang (2014) demonstrated that the combination of TTF and ECM provided deeper insights into the user's beliefs of a new technology than each single, stand-alone model. Also, Rahi et al. (2021) showed that an integrative model allowed a more complete account of the causal mechanism underlying the associations that were not attainable from a single model. Therefore, this study combined TTF and ECM in order to meet the specific research objectives.

Additionally, while previous studies demonstrated that the integration of TTF and ECM explained the antecedents and consequences of the impact of information technology on consumers' performance and behaviour (e.g., Cheng, 2019; Ouyang et al., 2017; Franque, Oliveira & Tam, 2022), here-to-fore, no research study has combined the TTF and ECM to explain the impact of technology on subjective well-being in the context of tourism. Furthermore, previous studies have suggested that cultural characteristics should be taken into consideration in cross-cultural studies as they provide the foundation for the comparison of standards used by travellers to evaluate prospective tourism products or services (Van Birgelen et al., 2002). Moreover, a recent study of Hidayat et al. (2021) calls for new research in understanding how to examine TTF in different countries. Thus, the integration of these two theories as well as cultural effects to explain the traveller's subjective well-being affected by IoT adoption in the UK and China should prove valuable.

1.3 Research aims and objectives

The main aim of this research study was to investigate the influence of IoT technologies on tourist subjective well-being in the context of city breaks. The following research objectives were formulated to achieve this research aim:

- To examine the relationships between the adoption of IoT and traveller subjective well-being in the context of city break.
- To examine the key factors affecting tourist perceived value of their travel experience and subjective well-being when using IoT in the context of city break.

- To examine the extent to which the factors associated with IoT influence city break traveller subjective well-being.

1.4 Research questions

Despite both IoT and subjective well-being having been studied in previous research, only limited attempts have been made to explore the impact of IoT on subjective well-being. Using the Task-Technology Fit (TTF) theory (Goodhue & Thompson, 1995), the Expectation Confirmation Model (ECM) (Bhattacherjee, 2001) and Hofstede's (2010) culture theory, this study proposes a theoretical model to explore travellers' subjective well-being in the context of IoT usage with a particular emphasis on the role of national culture as a moderator. As such, the following research questions have been proposed and will be answered in this research undertaking.

- What are the main factors determining city break travellers' subjective well-being with the use of IoT?
- To what extent does IoT enhance tourist subjective well-being in the context of city breaks?
- How does IoT affect travellers' subjective well-being in the context of city breaks?

1.5 Research Methodology

Research methodology refers to a systematic plan for addressing a research problem and related questions (Kothari, 2004). This section will describe the methodological decisions for this study, including the type of research, the data collection process, the sample, and the data analysis techniques.

1.5.1 Type of Research

Research philosophy. A philosophical stance can be classified into three perspectives: ontology, epistemology, and methodology (Guba & Lincoln, 1994). In terms of ontology, this research study reflected the philosophy of objectivism that social reality is external to the mind of a person. In terms of epistemology, the positivism approach best reflects this study, which focused on causality and sought to generate creditable and measurable results from city break travellers in order to understand the impact of IoT on subjective well-being.

Research purpose. The purpose of the research was determined by the nature of the guiding research questions and objectives. This thesis was a descriptive study that explained the subject matter with a meaningful depth of understanding that was accurate and precise. Accordingly, this study was a descriptive research study also because the overarching goal was to develop a more accurate and precise understanding of IoT's influence on tourist subjective well-being.

Research approach. According to Bell et al. (2018), there are three main approaches to developing a theory: deductive, inductive, and abductive. The deductive approach is also known as theory-testing, which links specific theory and targeted research. This approach proposes hypotheses on the basis of theories and undertakes rigorous testing to verify whether the theory or theories are confirmed, rejected, or modified (Bryman, 2015). In this thesis, we employed the deductive approach to explain causal relationships between variables with a highly structured model and numeric data.

Research strategy. A research strategy helps to answer research questions and to achieve the goal of the research project. The choice of a research strategy is informed by the research objectives and the types of research questions (Sekaran & Bougie, 2016). Various research strategies are commonly used in social science studies, including experiments, interviews, surveys, case studies, and action research. A survey was determined to be the appropriate strategy for this study. A survey is often a straightforward method for gathering primary data in terms of communication with a representative sample of a population (Zikmund, 2003). In this research, the data was collected from city break travellers in the UK and China using an online survey.

Methodological choice. This thesis adopted a quantitative methodological approach. A quantitative technique was deemed the most suitable one for this research study since its epistemological orientation is positivist in nature. Also, this technique is mainly used to investigate a proposed conceptual framework that has prior fixed associations such as the framework guiding this study (Saunders et al., 2016).

1.5.2 Data collection

A study such as this one, which used a quantitative technique to explore a set of eighteen hypotheses, necessarily involves the collection of a large amount of quantitative data and a large number of statistical assessments (Creswell, 2009). A survey was chosen as the most suitable methodology since it is fast, cost-efficient, and more convenient when gathering responses from a large number of survey participants (Collis & Hussey, 2014; Bryman & Bell, 2015). Due to the recent COVID-19 pandemic restrictions (e.g., lockdowns, the need for social distancing), participants were recruited online and invited to complete the survey.

The sampling frame was formed by China-based travellers who took city breaks in China and UK-based travellers who took city breaks in the UK; in both cases, travellers had to have taken at least once city break during the 12 months before the onset of Covid-19. These two countries were chosen because of their different cultural contexts. For example, China can be described as a collectivist society while the UK is more individualist (Hofstede, 2001). To ensure translation equivalence, the questionnaire was first developed in English, and the back-translation process suggested by Behr (2017) was utilised to identify any content or wording errors. The survey was conducted from 10th September to 10th October 2020 during the second wave of COVID-19. Regarding the sample size, G*power software has been applied for the sample size calculation. G*power software is a free power analysis program which has been commonly used for sample size calculation in social science research (Faul et al., 2009). The G*Power software suggested a minimum of 1017 survey responses (effect size=0.3; size=0.5; a=0.05; power=0.95; df=303; critical $\chi 2$=344.59) to increase the robustness of data analysis. Therefore, the number was doubled for a conservative sample size recommendation in order to minimize sampling error (SE). A total of 2077 questionnaires were collected.

1.5.3 Data Analysis

Structural equation modelling (SEM) was employed in this study because a large amount of data was collected. Also, this study explored predictors of traveller subjective well-being towards IoT adoptions in the context of city breaks across countries, making SEM an appropriate choice. The selection of the SEM method was also based on its proven ability to deal with the links among multiple independent and dependent variables (Nachtigall et al., 2003). SEM is also recognised for simplifying moderating analyses since it tests different moderating effects in only one analysis (Mackinnon, 2008).

In this study, the Statistical Package for Social Science (SPSS) version 26.0 was used for data analysis. Compared with other statistical analysis tools, SPSS was employed for the following reasons. First, SPSS provides an effective and quick way to handle data management and analyses. Second, SPSS offers a wide range of options and provides researchers with a number of statistical methods options based on their specific requirements and research contexts (Kirkpatrick, 2015). Finally, and most importantly, this statistical package offers all the calculations required in this study, including descriptive and reliability analysis, correlation techniques, confirmatory factor analysis (CFA), and SEM.

1.6 Significance of the Study

This research is the first to empirically demonstrate the influence of IoT technologies on travellers' subjective well-being. Although the importance of IoT has been widely recognized in tourism literature (e.g., Yang et al., 2021; Kim & Han, 2022; Ushakov et al., 2022), the impact of IoT on the travel experience and its favourable outcomes are rare in the tourism literature. Indeed, Gretzel & Stankov, (2021) recently called for research on the connections between technology and well-being in relation to tourism This thesis fills this research gap and answers the call to provide a deeper understanding of how IoT usage influences travellers' subjective well-being by identifying the factors that affect traveller well-being in the era of IoT. This study also extends prior tourism studies on innovation technologies (Buhalis, 2022; Stylos et al., 2021; Bethune et al., 2022) by examining traveller perceptions of IoT in travel with empirical evidence. In so doing, knowledge about the potential of applying IoT in tourism has been greatly enriched.

Moreover, this study advances the knowledge of perceived value by providing empirical findings of the direct impact of perceived value of travel experience on subjective well-being. In particular, this study forms the first attempt to empirically investigate travellers' perceived value of travel experience regarding the use of IoT on their subjective well-being in the context of city break. In the marketing literature, our findings extend previous research on the importance of perceived value on consumers' experience and satisfaction (e.g., Nam & Kannan, 2020; Lee, 2021; Solakis et al., 2022), and the continuance behaviour of technologies (Pizzi et al., 2020; Bertrandias et al., 2021), by showing a positive and significant association between the perceived value of travel experience and subjective well-being in the context of city breaks with empirical evidence.

This thesis also contributes to the city break research found in the extant tourism literature. A review of tourism research reveals that city break has received increasing attention from scholars in recent years (Charterina & Aparicio, 2015; Dunne et al., 2011; Balińska, 2020). Nonetheless, critical insights resulting from city break traveller perspectives about IoT usage remain scarce. The findings of this study provide unique insights into the role of IoT in the development of city break tourism by providing a comprehensive understanding of how to enhance the travel experience in the context of city breaks.

Another way this study contributes to the tourism and IS literature is by identifying the direct effect of task-technology fit on travellers' subjective well-being. To the best of our knowledge, our study is the first to investigate the impact of IoT adoption on users' subjective well-being in the context of city breaks based on task-technology theory. Our results show that travellers' perceived task-technology fit, directly and indirectly, affects travellers' subjective well-being levels during city breaks. Drawing upon recent studies considering individual performance and user behaviour as the main outcomes of TTF (e.g., Wang et al., 2021; Cheng, 2020; Franque et al., 2022; Tam & Oliveira, 2016; You et al., 2020; Al-Maatouk et al., 2020), our study adds new knowledge on the evaluation of technology adoption, by confirming that subjective well-being can be as another outcome of TTF in the context of tourism. This finding also contributes to IS literature by enhancing the applicability of task-technology fit theory.

Finally, this thesis contributes to the tourism literature by demonstrating the moderating effects of individualism and uncertainty avoidance. This study considered how national culture can moderate the relationship between IoT and SWB. Even though national culture has been considered an important factor in the context of technology use and tourism (Griffith & Rubera, 2014; Tam & Oliver, 2019; Chatterjee & Mandal, 2020; Zhou & Sotiriadis, 2021), the moderating role of specific national culture dimensions (e.g., individualism and uncertainty avoidance) in associations between technology use and traveller subjective well-being has rarely been investigated. This study extends the tourism literature on innovation to different national culture contexts (Akdeniz & Talay 2013; Griffith & Rubera 2014; Hailey et al., 2021), and empirically explains the differential roles of two specific national culture dimensions from their distinct relational perspectives. In particular, this study reveals that individualism has a negative moderating effect on the associations between task-technology fit and subjective well-being in the UK and China. The results also indicate that uncertainty avoidance was a statistically significant moderator and had a positive effect on the relationship between TTF and subjective well-being. These findings which will be detailed more thoroughly in the following chapters, can guide future research into the effects of digital technologies on traveller SWB in the UK and China or other similar cultural contexts.

1.7 Outline of the Final Thesis

This section briefly outlines what was analysed and discussed in each chapter for the final thesis (See Figure 1-3).

Chapter 1: This chapter serves as an introduction to the entire research project. The chapter begins with an introduction to the research background and motivation for this study. An explanation follows of how research objectives and research questions were identified. Continuing, the research's theoretical background is elaborated. Next, the research methodology is described with a clarification of the type of research and research methods for data collection and analysis. Finally, research contributions and the structure of the study are outlined.

Chapter 2: This chapter introduces the research context, presents the development of hypotheses, and explains the construction of research frameworks. First of all, this chapter examines the existing literature on the Internet of Things (IoT), focusing on the understanding of the definitions and characteristics of IoT, the application of IoT in the tourism industry, and the role of IoT in the travellers' perceived value of a travel experience. Next, this chapter reviews the literature on subjective well-being, focusing on the understanding of the relationship between tourism experience and subjective well-being as well as the relationship between IoT technologies and subjective well-being. Hypothesis development for this thesis is presented thereafter. Based on a review of the Task-Technology Fit theory, the expectation confirmation model, and Hofstede's culture theory, a new integrated model is created with eighteen hypotheses at the heart of this study.

Chapter 3: This chapter explains the research methodology in detail. It begins with the philosophical foundations of the current research, discussing the research paradigm of this study. Based on objectivism ontology and positivism epistemology research philosophy, the appropriate research design for the current research is presented, including the instrument development, sampling techniques, and pilot testing. It also explains the data collection processes, data analysis tools, sample selection, and the design of the questionnaire.

Chapter 4: This chapter tests the hypothesized research model and presents the results. First, this chapter presents the results of the pilot test used to assess the reliability of the variables. Next, the survey procedures, as well as the test for non-response bias were introduced. This chapter also summarises the demographic characteristics of respondents, as well as the descriptive statistics. Next, the exploratory factor analysis (EFA) is provided for the main constructs in the research model as well as moderating construct of the culture. Subsequently, this chapter provides the confirmation factor analysis (CFA), including goodness-pf-fit indices, convergent validity and discriminant validity using SPSS Amos (Analysis of Moment Structures) software 26.0. Finally, the research model was validated using structural equation modelling (SEM).

Chapter 5: This chapter mainly discusses and analyses the findings of this research. In particular, this chapter provides an overview of the data results presented in the previous chapter and describes the data evaluation that was rejected or supported the proposed hypotheses, with justifications from the relevant part of the literature review.

Chapter 6: This chapter provides an overall conclusion of the study. This chapter presents the empirical findings of this study. Next, is a discussion on the theoretical contributions to the existing literature in tourism and management as well as practical implications for managers. Moreover, the limitations of this thesis are discussed in order to provide more suggestions for future research.

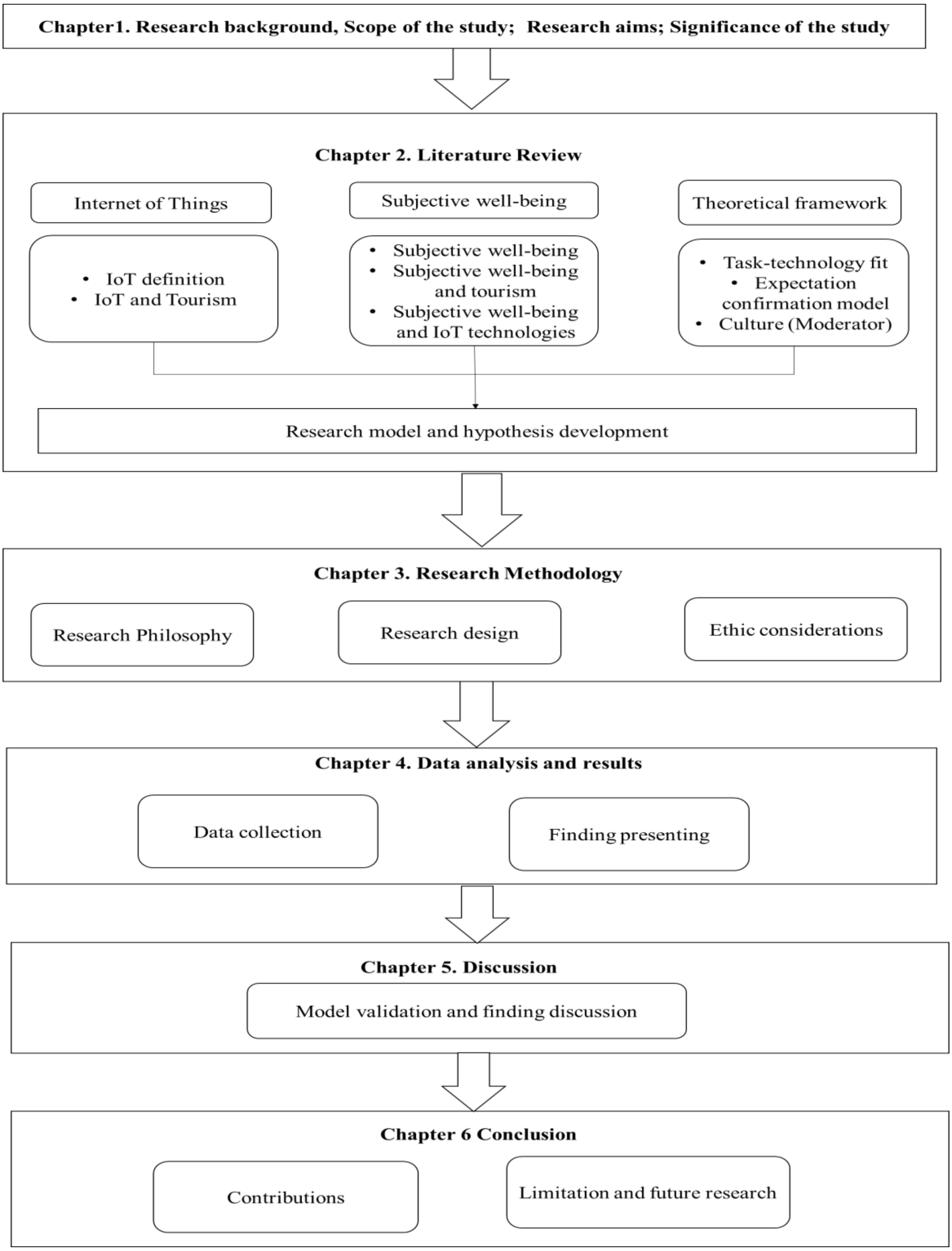

Figure 1-3. Structure of the final thesis

CHAPTER 2 LITERATURE REVIEW

2.1 Introduction

This chapter offers a critical review of existing literature regarding IoT, tourism, subjective well-being, and national culture. There are five sections in this chapter. Section 2.2 reviews IoT-related literature, focusing on the understanding of IoT technologies and IoT applications in the tourism industry, as well as the role of IoT in the travel experience and perceived value. Section 2.3 reviews the existing literature on tourism experience and subjective well-being associated with the use of IoT technologies. Section 2.4 explores the moderating effects of culture on the use of technologies. Section 2.5 presents the theoretical model, and the formulation of the hypotheses based on the task-technology fit (TTF) and expectation confirmation model (ECM), as well as Hofstede's cultural dimensions. Section 2.6 provides an overall conclusion.

2.2 Internet of Things

Kevin Ashton, the co-founder of the Auto-ID Center at the Massachusetts Institute of Technology (MIT), firstly proposed the concept of the Internet of Things (IoT) when introducing the idea of utilizing radio-frequency identification (RFID) tags in supply chains to connect physical goods to the internet (Ashton, 2009). As part of the 'Future Internet' (Atzori et al., 2010; Korte et al., 2021), the applications of IoT have attracted a considerable amount of attention from researchers and practitioners in recent years (e.g., Deng & Benslimane, 2022; Ajayi et al., 2022; Baltuttis et al., 2022; Hsu et al., 2022). IoT is expected to provide promising solutions to transform not only the nature of products and delivery of services (e.g., car-sharing; smartwatch), but also a wide range of process activities such as continuous process improvement or monitoring of progress (Baltuttis et al., 2022). While the value of IoT has been widely recognized by scholars and practitioners, the exact definition of IoT is still evolving and subject to various perspectives (Li et al., 2015; Korte et al., 2021; Palmaccio et al., 2021).

Three commonly accepted definitions found in the relevant literature can be summarised as follow: The first popular definition of IoT was proposed by the European Commission (Guillemin & Friess, 2009), who suggested that IoT is a dynamic worldwide network infrastructure that will be connected with and function as an extension of the future internet in which the 'things' will have their own identities, physical characteristics, digital personalities, and intelligent user interfaces. In other words, the IoT enables the ‘things’ to be connected with anything and anyone, at any time, anywhere, using any network or services (Guillemin & Friess, 2009). The word ‘things’ functions as a new extension of the existing human and application interactions, making it possible for people and objects to be linked and to communicate with one another in real-time over any pathway (Baldini et al., 2016). In terms of this definition, IoT is primarily driven by technological advances rather than by applications or user needs. The second common definition was suggested by Atzori et al. (2010), who stated that IoT is the result of the convergence of three different visions, including ‘things-oriented’, ‘semantic-oriented’ and ‘internet-oriented’ visions. These scholars viewed the IoT from the perspective of the ‘pervasive presence’ of uniquely addressed things around humans, each one is capable of interacting with the other objects and reacting to the physical environment in order to achieve common goals. The third and last one was defined by Internation Telecommunication Union ITU (ITU-T, Y. 2060, 2022), which means everything in the real and virtual world that can be recognised and incorporated into communication networks. From this viewpoint, IoT relies on the abilities of physical things to integrate, interact, communicate, and identify themselves.

The above definitions have a number of overlaps and a few common characteristics as summarised in Table 2-1 which include intelligence, connectivity, and interactivity. The ‘intelligence’ of everyday physical objects means any object that has been embedded with smart technologies and is able to act independently based on its contexts, circumstances, or environments (Georgios, Kerstin & Theofylaktos., 2019; Neuhofer et al., 2012; Alamri & Alamri, 2021). ‘Connectivity’ refers to the capabilities of connecting every object in the physical world at any time and anywhere by anyone and anything (Guillemin & Friess, 2009). ‘Interactivity’ refers to the capabilities of interaction and access for numerous devices, for example, smartphones, cameras, monitoring sensors, and much more (Lu et al., 2018). A comprehensive view of the IoT should consider specific, more user-based factors as well, including the operational context, relationships between personal devices and users, enabling technologies, and common goals.

Regarding the research context of this study, the IoT is considered as a touristic Internet of Things (IoT) referring to a system of connected intelligent ‘Things’ enabled by smart technologies which can be utilized to facilitate the development of intelligent services and applications, such as tracking, monitoring, and real-time information sharing, to meet a traveller’s contextual needs in dynamic tourism settings.

Table 2-1. IoT Characteristics

IoT Characteristic	**Description**
Intelligence	This means everyday physical objects have been embedded with smart technologies and can act independently based on their context, circumstances, or environment.
Connectivity	This refers to the ability to make every single "thing" in the world connected at any time and anywhere by anyone and anything.
Interactivity	This refers to the interaction and access capabilities of numerous devices, for example, smartphones, cameras, monitoring sensors, and much more.

2.2.1 IoT applications in the tourism industry

Over the past few decades, the rapid development of new technologies in the travel and tourism industry has changed the way in which tourism services and experiences are created and consumed (Li et al., 2021; Mubarak et al., 2021; Navío-Marco et al., 2018; Solakis et al., 2022; Lu et al., 2022). The Internet of Things (IoT), as an emerging technology, has fundamentally transformed tourism offerings during more recent years (Simanjuntak, 2022; Wang et al., 2020). In particular, a number of IoT solutions have been developed in various industries linked to tourism which have changed how services are provided to and received by travellers such as hospitality, travel/transportation, destination management, and intermediaries (Tavitiyaman et al., 2021; Yang et al., 2021; Kim & Han, 2022; Ushakov et al., 2022). There are many examples of IoT applications in these four sectors linked to tourism, and some of them are shown in

Sectors	IoT applications	Description
Destination management	National parks, heritage sites, museums, art galleries, etc.	These enhance visitors' experiences by providing relevant, up-to-date, detailed, and precise information (Benckendorff et al., 2019).
Hospitality	Smart hotel, recommendation system, Paperless Buffet Management system, etc.	These turn services into innovative services, making the guest experience more personalized and efficient (Yuksel et al., 2020)
Travel /Transportation	Intelligent transportation system (ITS)	This means that intelligent transportation management, networks, and computing techniques have been integrated with each other to make all transport faster, safer, more efficient, and user-friendly for tourists (Benckendorff et al., 2019).
	Shared mobility	This allows people to order services on their smart devices either in advance or at the time they need them (Weng et al., 2017), as well as to trace their vehicle and receive messages when it arrives (Benckendorff et al., 2019).
	Smart airport	This provides visitors with much of the functionality that once was provided by many different people, including

		updates on gates, flight arrival times, baggage carousel numbers, and recommendations about restaurants or shops (Rajapaksha & Jayasuriya, 2020).
Intermediaries	Digital travel distribution systems; online travel agencies, etc.	These transform distribution mechanisms and consumption patterns of travel offerings (Mohseni et al., 2018)

.

Table 2-2. IoT applications in tourism

Sectors	IoT applications	Description
Destination management	National parks, heritage sites, museums, art galleries, etc.	These enhance visitors' experiences by providing relevant, up-to-date, detailed, and precise information (Benckendorff et al., 2019).
Hospitality	Smart hotel, recommendation system, Paperless Buffet Management system, etc.	These turn services into innovative services, making the guest experience more personalized and efficient (Yuksel et al., 2020)
Travel /Transportation	Intelligent transportation system (ITS)	This means that intelligent transportation management, networks, and computing techniques have been integrated with each other to make all transport faster, safer, more efficient, and user-friendly for tourists (Benckendorff et al., 2019).
	Shared mobility	This allows people to order services on their smart devices either in advance or at the time they need them (Weng et al., 2017), as well as to trace their vehicle and receive messages when it arrives (Benckendorff et al., 2019).
	Smart airport	This provides visitors with much of the functionality that once was provided by many different people, including

		updates on gates, flight arrival times, baggage carousel numbers, and recommendations about restaurants or shops (Rajapaksha & Jayasuriya, 2020).
Intermediaries	Digital travel distribution systems; online travel agencies, etc.	These transform distribution mechanisms and consumption patterns of travel offerings (Mohseni et al., 2018)

2.2.1.1 IoT applications in destination management

Destination management can be seen as a vital process bringing together different stakeholders and authorities to work with a common goal to enable the viability and integrity of destinations (Kebete & Wondirad, 2019). IoT, as an innovative technology, plays an essential role in supporting destination management organisations (DMOs) to connect travel markets with travellers and to better understand today's traveller preferences and behaviours (Gelter et al., 2021). Thus, in recent years, an increasing number of destinations have adopted IoT technologies as strategic tools for destination management to support tourism experience-creation and to enhance efficiency and effectiveness (e.g., Cimbaljević et al., 2019; Johnson, 2022; Gretzel, 2022).

One of the most common IoT applications in destination management relates to attractions. For example, many national parks or theme parks, such as Disneyland Park and Happy Valley theme park have applied IoT-based smart systems with user-friendly smart devices/mobile applications to assist their visitors. The system enriches the visitor's experience that spans from pre-booking and fast-track pass to using mobile apps or smart wearables to get park access and receive personalised recommendations. Moreover, IoT has also been widely used in museums and art galleries to provide innovative services for visitors by enabling intelligent infrastructures (Li et al., 2021; Mubarak et al., 2021). In particular, by using IoT, some museums (e.g., San Franciso Museum of Modern Art; Chongqing China Three Gorges Museum) allow visitors to gather information about exhibitions and events via smart devices and mobile applications in order to access museum data and participate in interactive activities. Scholars suggest that the above-mentioned benefits may also be the case with other attractions and entertainment venues as well (Alletto et al., 2015; Spachos & Plataniotis, 2020; Wang et al., 2016).

The IoT has also been used for data analysis in destination management. Nowadays, an extremely large number of devices are connected to the Internet. Consequently, a huge amount of real-time and context-aware data can be automatically produced and analysed (Xu et al., 2014). IoT applications are expected to automatically collect and analyse data about destinations and travellers, which may lead to enhanced destination management (Emmer & Holešinská, 2020). In addition, DMOs can utilise such data to adjust their operations and strategies to promote their travel offerings, and thereby improve their competitiveness in the market (Ramos et al., 2021). IoT technologies also enable easy access to, and interaction with, context-aware information pertaining to transportation, attractions, tours, and hotels. Thus, IoT technologies facilitate traveller interactions with their surroundings and increase the quality of travel experiences of the destination (Benckendorff et al., 2019).

2.2.1.2 IoT applications in the hospitality industry

A superordinate goal of the hospitality industry is to ensure the highest possible level of customer satisfaction via highly personalised offerings (Berezan et al., 2015). Increasingly, IoT applications play an essential role in the achievement of this goal. More specifically, IoT helps service providers to improve operational efficiency and effectiveness with lower costs (Hsu et al., 2022) while on the other hand also ensures guest satisfaction by providing more personalised attention and experience (Amer & Alqhtani, 2019; Yang et al., 2021). All the while, there are newer IoT systems constantly being developed. For example, Yuksel et al. (2020) proposed an IoT-based paperless restaurant buffet management system that takes into account both customers' and employees' needs and preferences. This system illustrates how IoT enables restaurant owners and managers to forecast customer numbers as well as easily update menus and meal information, thus improving operational efficiency and service quality.

Moreover, many exciting IoT solutions have been applied in the hotel industry over the last decade in order to enhance guest experiences and levels of satisfaction (Amer & Alqhtani, 2019; Yang et al., 2021). For example, IoT is being used by Hilton to deliver Its 'Connected Room,' the industry's first completely mobile-centric hotel room system, which allows guests to customize and manage their stay via the Hilton Honors app (Hilton News Room, 2022). In China, Leyeju launched nine unmanned smart hotels in 2018 thanks to IoT technologies (Dykins, 2022). These hotels have transformed traveller experiences by offering a touch-free and automated stay that includes elements such as robots, facial recognition, automatic lighting, and air conditioning.

2.2.1.3 IoT applications in transportation

Transportation is an essential component of the tourism business; it is perhaps the most common means for tourists to get to their destinations (Marlina & Natalia, 2017). To date, IoT technologies have increasingly been applied to various aspects of the transportation industry. The net result has been a significant impact on such dimensions as intelligent transportation systems, shared mobility, and smart airports (Benckendorff et al., 2019; Ko, Kim & Li, 2021; Sumalee & Ho, 2017; Rajapaksha & Jayasuriya, 2020; Bellini et al., 2021).

Intelligent transportation systems integrated with IoT technologies during recent years have offered faster, safer, more efficient, and more user-friendly transport options for travellers (Benckendorff et al., 2019). Specifically, physical objects can be monitored in real time, and enormous data can be generated with sensors embedded throughout an intelligent transport system (Herrera-Quintero et al., 2018). For example, traffic data can be collected from physical devices, such as GPS, traffic lights, induction coils, and video cameras. This can assist in improving public transport service quality and in contributing to higher levels of tourist satisfaction (Patel et al., 2019).

Shared mobility services have experienced significant growth in the transportation industry as well by using IoT technologies over the last decade (Clewlow & Mishra, 2017; Shokouhyar et al., 2021; Turoń et al., 2021). Shared mobility services as part of a tourism package allow travellers to use more diverse forms of transportation than ever before, such as bike-sharing, scooter-sharing, and car-sharing (Stocker and Shaheen, 2018). In addition, many taxi service companies, such as Uber and Lyft, have adopted IoT technologies to develop user-centric mobile applications, which combine real-time and context-aware services with a payment system and even a review platform (Benckendorff et al., 2019). Such applications allow tourists to order taxis on their smartphones whenever needed (Weng et al., 2017) and then trace the vehicles and receive arrival notifications (Benckendorff et al., 2019). This, in turn, offers tourists more convenient, comfortable, and enjoyable travel experiences (Buhalis, 2019).

‘Smart-airport’ is becoming a buzzword in the era of IoT. A ‘connected airport’ is important for airport operations and passenger experience (Rajapaksha & Jayasuriya, 2020). Many airports, such as Beijing Daxing Airport and Singapore Changi Airport, have developed

IoT-based mobile applications that provide visitors with a number of functionalities including updates on gates, flight times, baggage carousel numbers, and personalised recommendations about nearby restaurants and shops. In addition, self-service IoT systems in airports have been developed that provide capabilities that facilitate a number of activities, including self and remote check-in, self and remote bag drop, self-boarding and e-Border passes. The use of smart applications in airports reduces passenger waiting time and assists operation teams in tracking passengers and allocating resources to ensure passenger activities run smoothly (Mrňa et al., 2021).

2.2.1.4 IoT Applications in Travel Intermediaries

Travel intermediaries are considered intensive users of information; they are indispensable organizations or companies that connect travel suppliers with travellers (Benckendorff et al., 2019). In the IoT era, tourism industry structures have been transformed due to segment fragmentation and the increasing information-intensive nature (Sharma, Sharma & Chaudhary, 2020). In particular, the spread of IoT technologies has changed consumption styles and distribution channels in the tourism sector. Travel service providers need to use smart technologies such as mobile applications, websites, social media platforms, and augmented reality (AR) applications to attract new customers (Mohseni et al., 2018), enhance service quality, and improve operational efficiency (Sharma et al., 2020). And, as mentioned earlier, the application of IoT in intermediaries enables the collection of data about tourist experiences and preferences. IoT allows travel intermediaries to develop more suitable tourism packages that will increase tourist loyalty and engagement according to Car et al. (2019). For example, many travel agencies and tour operators have developed IoT-based mobile applications such as Ctrip and Qunar that allow travellers to find, compare, and book tickets, hotel rooms, and rental cars and purchase other travel products. These mobile applications provide real-time, convenient services to travellers and collect associated information about their preferences and behaviours.

2.2.2 The role of IoT in the travel experience

Research has pointed out that travel can be seen as a linear process including three phases: pre-trip, during-trip, and post-trip (Kheiri & Nasihatkon, 2015; Neuhofer et al., 2015). Travel is a series of activities linked to these three phases, including information searching, travel planning, reservation making, visiting, dining, and reflection (Huang et al., 2017). Hence, from the chronological viewpoint, the travel experience is often referred to as an ‘activity-based’ process (Neuhofer et al., 2012).

Advances in IoT technologies have given rise to a wide range of smart devices and intelligent services in the tourism industry (Buhalis & Amaranggana, 2015; Buhalis, 2019; Gretzel et al., 2015; Ye, Ye & Law, 2020). Smart devices and intelligent services affect travel activities within all three stages of the travel process. During the preparation phase of a trip, IoT provides travellers with personalised information, giving them the ability to make wise and informed travel choices such as deciding upon the method of travel. It also ensures the effectiveness of transaction-oriented processes such as reservation making and payment taking and provides a cross-platform for travellers to communicate with service providers (Huang et al., 2017). During travel, IoT provides travellers with rich, real-time, and context-aware information due to its high levels of connectivity and accessibility. It keeps travellers informed about their current situation and assists them in making more effective decisions (Verma & Shukla, 2019). IoT applications also allow travellers to easily share their experiences with other people and with service providers at the post-trip stage. To better understand the impact of IoT on tourist demands, Benckendorff et al. (2019) proposed a Mobile Technology Ecosystem which incorporates some key IoT-enabled technologies such as radio-frequency identification (RFID), near-field communication (NFC), and global positioning systems (GPS), as well as a variety of sensing technologies.

The Mobile Technology Ecosystem has demonstrated that IoT technologies can help change tourist behaviour and demands by addressing various functional and informational needs. Travellers use their mobile devices for a variety of management functions, including time management, navigation, making dining reservations and accommodation bookings, and flight check-in and itinerary management. By taking advantage of IoT, tourists can simply use their mobile devices to receive rich information about location-based, customised, and interactive services (Buhalis & Amaranggana, 2015). The combination of everyday objects that transmit data and ubiquitous hand-held carrying sensing devices allows the co-creation of travel experiences in real time. Thus, the use of IoT technologies in travel can significantly affect the tourist experience by generating rich and real-time intelligence about tourist needs and wants and enabling service providers to respond to them quickly and accurately.

While only limited academic studies have investigated the influence of IoT on the travel experience (e.g., Hu et al., 2020), many scholars have demonstrated that smart technologies (e.g., geo-based technology, NFC, RFID, smartphones, and wearable devices) have significantly affected tourist experiences and satisfaction levels (Tussyadiah & Zach; 2012; Tussyadiah et al., 2018; Wang et al., 2020; Jeong & Shin, 2020; Buhalis et al., 2022). For instance, Gretzel et al. (2015) pointed out that IoT is considered to be one of the fundamental smart tourism technologies which are reshaping the way tourism services are conceived, provided, delivered, and received. Almobaideen et al. (2017) further indicated that IoT-enabled smart technologies offer a set of innovative services which make travel trips more efficient and safer, such as location-based suggestions including restaurants, souvenir shops, shopping malls, banks, and even a restroom can be provided during the trip. Furthermore, Li et al. (2017) argued that IoT-based smart tourism plays an essential role in reshaping the tourist experience because it offers travellers more personalised and all-encompassing tourism services that may well exceed their expectations.

Based on these findings and insights, it is reasonable to conclude that the role of IoT in the travel experience is significant and growing. This impact is due to the IoT's unique capabilities, such as: informing, which refers to the ability to source and access information while travelling; contextualising, which refers to the ability to offer contextual information based on the contextual sensors; personalising, which refers to the ability to combine contextual information with user-data to provide personalised services; remote controlling, which refers to the ability to control something from a distance; and, communicating, which refers to communications, such as social media or messaging. As shown in Table 2-3. The role of IoT in the travel phases, IoT-based travel applications can affect tourist travel activities throughout an entire trip.

Table 2-3. The role of IoT in the travel phases

IoT Capabilities	**Description**	**Travel applications/examples**	**Travel phases**
Personalising	The IoT can combine contextual information with user data to provide personalised service	Recommender system (Hotel, travel packages, flight tickets etc.) Location-based suggestions Personalised hotel rooms	Pre-trip, During-trip
Informing	Tourists are given the ability to source and	Attraction and Destination guides,	During-trip

	access information while travelling	Navigation	
Contextualising	The IoT can provide contextual information based on contextual sensors.	Push real-time notifications relative to location and context Live travel information (e.g., flight status, weather, safety, events and offers) Wearable devices (applied in the museum, theme parks, galleries etc.)	During-trip
Remote controlling	The IoT gives tourists the ability to control something from a distance,	Smart hotel (self-check-in/out, keyless entry, control the room from smart phone	During-trip
Communicating	The IoT creates greater opportunities to communicate using channels such as social media and messaging.	Mobile social media (WeChat, Facebook, TripAdvisor etc.)	Pre-trip During-trip Post-trip

2.2.3 IoT and perceived value of travel experience

Perceived value is considered one of the most essential factors affecting consumer post-purchase beliefs and behaviours (Gan & Wang, 2017; Hong et al., 2017; Dehghani et al., 2022; Ofori et L., 2021; Ashraf et al., 2021), as well as satisfaction and loyalty (Ashraf et al., 2018; Chen & Lin, 2019; El-Adly, 2019; Touni et al., 2022). A comprehensive review of the literature reveals that there are several definitions of perceived value with different scholars highlighting different aspects.

The broadest definition of perceived value was offered by Woodruff (1997), who stated that perceived value means a trade-off between benefits and sacrifices. A frequently cited definition of perceived value is that of Zeithaml (1988) who proposed four components: 1) low price; 2) what I expect in a product; 3) the quality I get for the price I pay, and (4) what I receive for what I give. Then these four components of perceived value were combined into one overall concept that defined perceived value as the individuals' overall evaluation of the utility of a specific product/service based on their feelings of what is gained and what is given. However, Zeithaml's definition has been criticized as representing a narrow view of the concept on the basis of economic theory and cognitive psychology. A broader scope, which would include tourism, should be further explored in the tourism literature. According to Loureiro et al. (2020), the perceived value of travel experience (PVTE) is the process whereby a visitor gets to decide and make plans in terms of their own various experiences while travelling which enables the traveller to develop a valuable picture/imagination of their prospected trips. Perceived value of travel experience has also received increasing attention from researchers in more recent years (e.g., Um & Yoom, 2021; Zhang et al., 2019; Loureiro et al., 2020; Oriade & Schofield, 2019). The scholar, Pandža Bajs (2015), showed how perceived value is a concept that offers insight into how consumers perceive given products or services and provide guidance on how to improve the product or service in order to fulfil the customer's needs and expectations. Thus, tourism experts believe understanding travellers perceived value of a travel experience with IoT will likely provide important insights into post-purchase responses and behaviours in the era of digitalization.

This study develops perceived value into two dimensions: functional and emotional value. Functional value refers to the results of the rational and economic judgements made by individual travellers (Sánchez-Fernández & Iniesta-Bonillo, 2007). In the context of IoT usage, this also includes the functional and instrumental benefits delivered to tourists through their use of IoT technologies while travelling, especially individual tourism consumer perceptions of utility and performance (Jamal et al., 2011). Emotional value has been considered as the ability of a product or service to arouse feelings or affect states (Sheth et al., 1991). In this study, emotional value is understood as travellers perceived specific feelings about IoT adoption while travelling, such as comfort, security, pleasure, excitement, and enjoyment (Jamal et al., 2011).

Furthermore, an increasing number of IoT devices in the tourism industry have been shown to create opportunities to generate large amounts of data, known as 'big data', regarding traveller needs and preferences (Stylos & Zwiegelaar, 2019; Stylos et al., 2021). Tourism stakeholders can gain valuable insights into traveller preferences, ideas, values, and behaviours from analysing these data, and thus provide services in a more efficient and effective way (Kim et al., 2019; Xiang et al., 2015). In turn, this leads to tourists having higher levels of perceived value regarding their travel experiences.

2.3 Subjective well-being

The concept of subjective well-being (SWB) originated in ancient Greek philosophy when Aristippus proposed the idea of hedonism. Since then, the concept of hedonism has evolved throughout the centuries. Perhaps the most important development can be found in the philosophical concept of utilitarianism introduced by Jeremy Bentham in the late 18th century. More recently, ideas expressed in hedonic psychology (Kahneman & Krueger, 2006; Castellacci & Tveito, 2018) have linkages to subjective well-being.

Early SWB studies highlighted the experience of happiness in the context of mental health (Bradburn & Caplovitz,1965; Gurin et al., 1960). Later, Diener, as quoted in Holm et al., (2017) defined SWB as "a person's cognitive and affective evaluation of his or her life" (Diener, 2003, p. 413). Following the pioneering work of Diener that linked SWB to life happiness, other scholars explained that SWB refers to the extent to which a person feels life has meaning. Also, SWB is also influenced by cognitive and affective components (McCabe & Johnson, 2013; Busseri & Sadava, 2013; Diener, 1994; Tsurumi et al., 2021). The cognitive component reflects the results of a person's evaluation of information about their life (Pavot & Diener, 2008; Zhang, He & Chen, 2022). The affective component of SWB is associated with a hedonistic individual balance that weighs a comparison of a person's experiences vis a vis positive/negative emotion (Kahneman et al., 1999).

A majority of empirical studies have sought to investigate two distinct views of tourist subjective well-being: hedonic well-being, and evaluative well-being (Kahneman & Krueger, 2006; McCabe & Johnson, 2013; Castellacci & Tveito, 2018). Hedonic well-being refers to a person's evaluation of life in terms of the frequency of positive and/or negative emotions and feelings, such as joy, enjoyment, anxiety, fascination, anger, and anxiety (Canavire, 2016) and is focused on short-term feelings. By contrast, evaluative well-being can be seen as the assessment of a person's life viewed more holistically over a longer period of time (Diener, 2009). As a consequence, hedonic well-being addressed how people experience their likes more so than dislikes while evaluative well-being involves how people think about their overall life (Kahneman & Riis 2005; Kahneman & Deaton, 2010).

Similarly, Ivlevs (2017) pointed out that SWB consists of two main components, life satisfaction and happiness which are increasingly adopted as the essential core measures of well-being. Some studies have used these two terms interchangeably (Ivlevs, 2017). However, it is important to observe that there are important differences between these two terms. ‘Happiness’ is the affective component of subjective well-being and includes the presence of positive affect and the absence of negative feelings. It describes short-term feelings or emotions during an interval or activity episode (De Vos et al., 2013). By contrast, ‘life satisfaction’ is the cognitive component of SWB, and refers to the “extent to which an individual evaluates the overall quality of his life-as-a-whole favourably” (McCabe & Johnson, 2013, p.34). Thus, it is possible to argue that happiness can be seen as strikingly similar to hedonic well-being, while life satisfaction can be seen as similar to evaluative well-being. Previous studies have confirmed that subjective evaluations of one’s life can be based on purely cognitive or affective features or a combination thereof (Diener et al., 2003). Based on this review of the literature regarding tourism subjective well-being, this study measures the subjective well-being of the city break traveller as an individual judgement of one’s overall life. The next section discusses research related to the tourism experience and SWB.

2.3.1 Tourism experience and SWB

Scholars in the field of tourism research, have treated the travel experience as a distinct customer experience with an emphasis on the nature of subjective and cognitive aspects (e.g., Liu et al., 2017; Ahn & Back, 2018; Lliev, 2021; Tram, 2021). Saayman et al. (2018) have suggested that tourism can be regarded as a business of selling memorable experiences. These memorable experiences consist of the various products and services used by travellers throughout their trip and/or stay at a destination. Yachin (2018) explained that travel experiences are not dependent on the objects or even places themselves but on the personal perceptions or beliefs associated with the specific activities offered to individual tourists/consumers. In short, SWB focuses on what makes people feel good (Nawijn et al., 2010) and can be defined in a particular domain based on experiences, such as customer satiation, health, job, and tourism (Bergstad et al., 2011; Oliver, 2014). It has been widely recognised within the tourism literature that a tourist’s memorable experiences play an important role in their subjective well-being (Zins & Ponocny, 2022; Su et al., 2022; Gao & Potwarka, 20221). Tourists may take a break from the mundane, fast-paced routine of life, engage in restful activities, and thereby experience reduced stress which, in turn, increases their life satisfaction and SWB (Dolnicar et al., 2012; Lyu et al., 2018; Zheng et al., 2022;).

It is notable that many scholars consider subjective well-being in slightly different terms, such as happiness, life satisfaction, quality of life, or psychological well-being (Kim et al., 2015; McCabe & Johnson, 2013; Lindberg et al., 2022). These terms have been used interchangeably in tourism studies. Neal et al. (1999) conducted a foundational assessment of a conceptual model that explains how traveller satisfaction impacts overall life satisfaction and found that a positive travel experience contributes to traveller satisfaction in their leisure life, which invariably influences that person's overall quality of life. Later, Neal et al. (2007) examined the effect of tourism services on travellers' quality of life using spill-over theory. They explained that satisfaction with travel services significantly impacts the overall travel experience, which shows a spill-over effect on satisfaction with life in general. More recently, several other studies also have investigated the direct impact of tourism experience on the overall quality of life (e.g., Zheng et al., 2022; Tien et al., 2021; Uysal et al., 2020; Su et al., 2022).

Further details regarding SWB are found in the work of Diener (1994) who proposed three hallmarks of subjective well-being. Firstly, SWB is subjective, residing in individual experience. Second, it utilises positive rather than negative measures; and lastly, it is a global assessment of one's life domain. Additionally, recent empirical studies have demonstrated that tourism experiences can create positive moods (Zins & Ponocny, 2022; Coves-Martínez, Sabiote-Ortiz & Frías-Jamilena, 2022), and these experiences improve an individual's sense of subjective well-being (Su et al., 2016; Tien et al., 2021; Su et al., 2022). These studies provide a rich, comprehensive, and precise knowledge for understanding the role of leisure travel experience on tourists of subjective well-being through a global assessment of life domains, which is more positive than negative, and subjective. For instance, Sirgy (2011) argued that life satisfaction can be enhanced by involvement with travel and tourism events, which can produce a positive impact on important life domains since those positive effects spill over into a person's overall life. Similarly, Lyu et al. (2018) demonstrated that the travel experience may contribute directly to a person's comprehensive evaluation of their lives, even if the duration of that experience is relatively short. Their study also showed that travel experiences have a more substantial impact on life satisfaction and more positive affect than negative affect. Given the above, it is well established that tourism experiences play an essential role in travellers' subjective well-being. However, a few studies have reported no significant correlation between tourism experiences and subjective well-being (e.g., Michalkó et al., 2009; Milman, 1998). These inconsistencies may be due to differences in research contexts and methods (Uysal et al., 2016; Zheng et al., 2022). Thus, it is necessary to further empirically investigate the relationship between tourism experience and subjective well-being in different contexts.

The research context and investigation of this current study, will be traveller subjective well-being in a city break with the use of IoT. As mentioned previously, no study has yet attempted to empirically demonstrate the impact of tourism experience with the use of IoT on subjective well-being in a context of city break. This will be the first.

2.3.2 IoT technologies and SWB

Despite the lack of tourism studies that have specifically explored the relationship between IoT technologies and traveller subjective well-being in the context of a city break, there have been studies in other disciplines which have investigated the impact of technologies on human well-being. For instance, in the field of the economics of happiness, Kavetsos & Koutroumpis (2011) used large-scale survey datasets to study the relationship between Information and Communications Technology (ICT) and well-being. Their findings revealed that ICT technologies, such as mobile phones, personal computers, and/or other internet-connected devices, were significantly associated with individual user well-being which was measured by individual self-reported life satisfaction. Moreover, in the field of psychology and computer science, Chen & Chiu (2018) conducted a review study to explain how smart technologies can support quality of life in a mobile environment. Their study identified the most important domains of quality of life and also demonstrated that smart technologies which are effective for supporting aspects of life quality include: awareness, comfort, efficiency, immediacy, mobility, preparedness, and responsiveness. More recently, Sequeiros et al. (2021) also found a positive relationship between IoT and well-being in the context of smart home service.

In the tourism context, IoT technologies have been widely used in assisting tourists in fulfilling their travel needs, such as navigating, finding a location, retrieving information, and making bookings and reservations (Hu et al., 2021). Existing tourism studies have indicated that an individual's desire for life satisfaction can be fulfilled when their basic travel needs are met, which will also lead to a high level of SWB (Sirgy, 2011; Gretzel et al., 2015; Lee et al., 2018). It is possible to argue that travellers' subjective well-being can be enhanced when their needs for travel services are satisfied through the use of IoT.

In summary, this study has developed a framework for a better understanding of the relationship among IoT applications, travel experiences, and tourist subjective well-being based on the review of existing literature (See Figure 2-1). While the important role of both IoT and subjective well-being in tourism has been widely discussed in recent years, no study has yet to empirically examine how IoT technologies affect traveller subjective well-being in a context of city break. To fill this gap, this study aims to explore the factors and the extent to which IoT technologies affect city break travellers' subjective well-being.

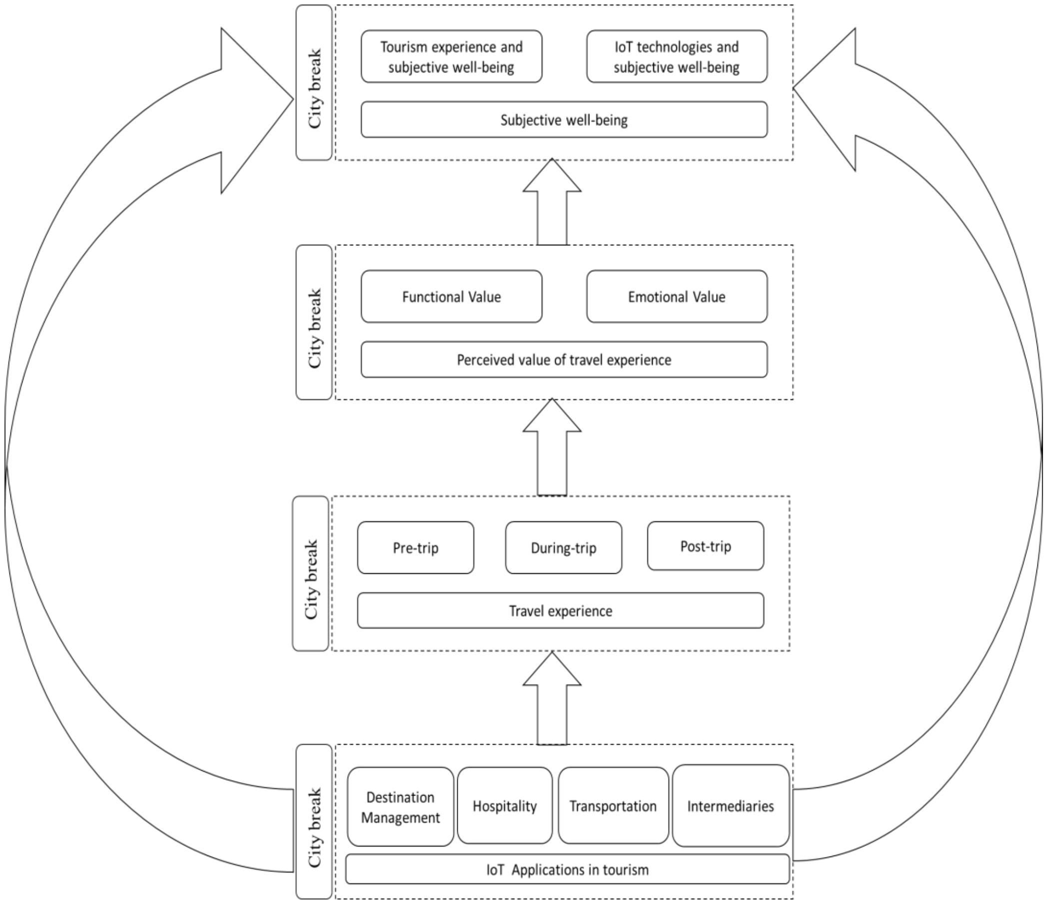

Figure 2-1. IoT and subjective well-being

(Hu et al., 2021)

2.4 Theoretical background and hypotheses development

2.4.1 Task-Technology Fit

The Task-Technology Fit (TTF) model is a widely acclaimed theoretical model that has been adopted for examining how information technology leads to performance and usage impacts. Numerous theoretical models have been proposed in various service contexts regarding the adoption of innovative technologies increasingly available to travellers. The majority of these models have focused on individuals' beliefs and attitudes regarding technologies as essential factors that can predict user adoption and intention behaviour (Zhou et al., 2010). These models include the Theory of Reasoned Action (Fishbein, 1979) and its variant Theory of Planned Behaviour (Ajzen, 1991); the Technology Acceptance Model (Davis, 1989) and so on. While these models provide valuable insights on technology diffusion/acceptance, they do not take into account the task environment, such as the requirements of a particular tourist trip. In this regard, the Task-Technology Fit model stands out as the most suitable theoretical framework for this research study (Goodhue & Thompson, 1995). Specifically, the TTF model assumes that technologies have instrumental value, so that a favourable appraisal of technology will depend on the best match between the task requirements and the actual function of a particular technology (a.k.a. task-technology fit) (Goodhue, 1998; Jeyaraj, 2022). Furthermore, insights from the tourism industry reveal that TTF can be an important driver of tourism technology adoption (Lin et al., 2020). The Task-Technology Fit model serves as the theoretical premise for this research in order to understand city break traveller adoption of IoT technologies.

Goodhue & Thompson (1995) defined task-technology fit as the extent to which the technological features of an IS product fit a user's specific tasks. As shown in Figure 2-2, a basic task-technology fit model consists of five different constructs: task characteristics, technology characteristics, individual characteristics, task-technology fit, and performance impact. Task-technology fit is a function of task characteristics, technology characteristics, and individual characteristics, which have significant impacts on user performance (Goodhue & Thompson, 1995). For the purposes of this research study, task-technology fit has been defined as the extent to which IoT technologies are well-suited to city break travel requirements and meet tourist needs.

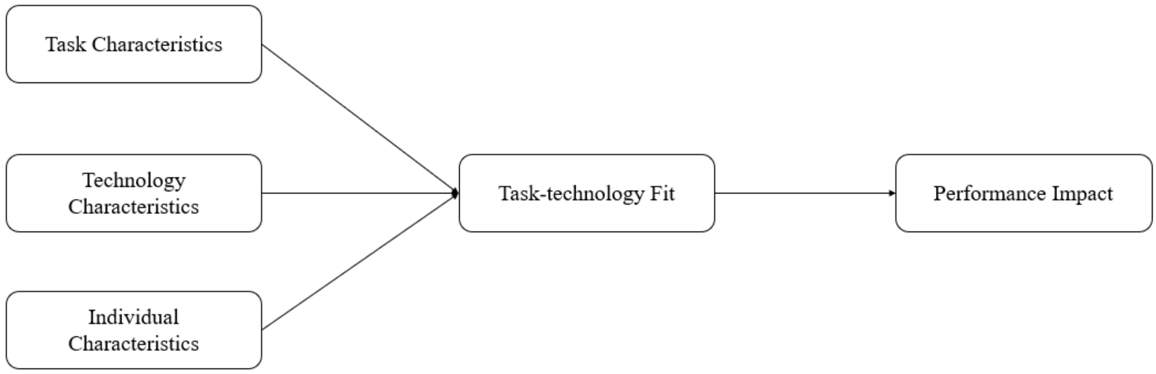

Figure 2-2. Task-Technology Fit model

(Goodhue & Thompson, 1995)

Tasks are actions carried out by individuals when converting inputs into outputs that satisfy the user's needs. Tasks are fairly predictable based on the user's perceptions of task-technology fit according to Goodhue & Thompson (1995). Task characteristics have been defined as the behavioural requirements for meeting predetermined goals that are provided through a specific process of using information systems or technology (Al-Maatouk et al., 2020). In other words, task characteristics are a set of specific requirements or behaviours that must be fully carried out in order to accomplish a defined set of goals. Tasks in this study refer to the travel activities performed by tourists towards the achievement of their city break goals.

As already mentioned, a 'short-stay nature', 'for leisure purpose', and taking place in one 'city only' are characteristics commonly associated with city breaks (Dunne et al., 2011). Task characteristics in this study are summarized: time-saving, money-saving, safety ensuring, and enabling real-time information inquiry. Task characteristics are variables that are used to help measure the ability of IoT technologies to assist tourists in performing an array of travel activities. In previous information system or information technology literature, the influences of task characteristics on TTF have been widely discussed and validated in various settings (Wang et al., 2021; Cheng, 2019; Tam & Oliveira, 2016; Gan et al., 2017). For example, Al-Maatouk et al. (2020) found significant and positive associations between task characteristics and task-technology fit while examining the use of social media for academic purposes. Therefore, this study similarly posits that task characteristics in the context of a city break are expected to impact TTF and are hypothesized as:

H1. Task characteristics positively and significantly affect IoT TTF in the context of a city break.

Technology is considered a tool used by individuals for the completion of their tasks (Goodhue & Thompson, 1995). The definition of technology characteristics depends on specific technologies (Wang et al., 2021). In this study, technology characteristics could refer to the functionality of IoT devices, which is a construct that can be used as a measure of key characteristics of IoT technologies in the context of a city break. To reiterate, the IoT has three fundamental characteristics - connectivity, intelligence, and interactivity (Yang et al., 2013; Jeong & Shin, 2019; Lu et al., 2018; Guillemin & Friess, 2009). More specifically, the IoT is able to monitor the environment and provide useful information about a user's surroundings and offer global and real-time solutions (Yang et al., 2013). No tourism literature has demonstrated the impact of IoT technology characteristics on task-technology fit in the context of a city break. However, previous research on information technology has supported the positive impact of technology characteristics on task-technology fit in various settings (Wang et al., 2020; Al-Maatouk et al., 2020; You et al., 2020). Therefore, when IoT technology characteristics meet a traveller's requirements for city breaks, then the task-technology fit will likely increase. To test this, the following hypothesis states:

H2. Technology characteristics of IoT positively and significantly affect IoT TTF in the context of a city break.

Next, individual characteristics are supported by the work adjustment theory from which TTF theory was originally derived and is an important variable in the TTF model (Goodhue & Thompson, 1995). Polančič et al. (2011) stated that the success of IoT innovations depends as much on technology as on the individuals themselves. The construct of task-technology fit is considered as a measurement of individual perceptions about the degree to which specific technologies fit with specific tasks (Goodhue & Thompson, 1995). This can be seen as the individual's subjective evaluation. Thus, Omotayo (2020) pointed out that the TTF model is a valid tool for predicting perceived performance, but it is important to keep in mind that individual characteristics should be considered. Regarding the context of this research, it is necessary to take into consideration the individual characteristics of the tourists on city breaks in order to gain a more comprehensive understanding of IoT and task-technology fit in the context of a Chinese or UK city break. Many studies have demonstrated that individual characteristics positively affect task-technology fit (D'Ambra & Wilson, 2004; Polančič et al., 2011; D'Ambra et al., 2013; Pal & Pastra, 2021 Shishakly et al., 2021; Omotayo & Haliru, 2020). Thus, this study posits that the evaluation of the TTF model of the IoT may vary depending on the abilities and experience of an individual as follows:

H3. Individual characteristics of city break travellers positively affect IoT TTF.

Perceived privacy refers to an individual's belief that he or she has the right to control personal information after it has been gathered and reflects an individual's perceived potential loss of control over personal information. This occurs when private information about an individual is used without his/her knowledge or permission (Wang & Lin, 2017). In recent years, privacy concerns over the IoT have drawn serious attention from specialists and academic researchers in various settings. Loannou et al. (2020) explained that perceived privacy could become an issue in the context of the use of IoT because it collects a continuous flow of data in real-time. Therefore, IoT might increase the existing privacy concerns of travellers or create new concerns as travellers might be unfamiliar with local regulations or unaware of the requirements to give informed consent for the collection and use of personal information. The IS literature has shown different effects of perceived privacy on technology adoption. For example, Chen & Huang (2017) demonstrated the moderating effect of perceived risk on the relationship between task-technology fit and purchase intention. However, Hsu & Lin (2016) and Featherman et al. (2021) showed that perceived privacy negatively affects a consumer's continued intention to use IoT services. Sheng et al. (2008) revealed that perceived privacy negatively influences consumer adoption of personalized services. But, there is no significant relationship between perceived privacy and intention to adopt non-personalized services because a customer's privacy concerns in the context of IS adoption and use are situation-dependent (Sheng et al., 2008). The personal information of travellers collected from IoT devices allows tourism service providers to know their customers better than otherwise and to offer more tailored, perceived privacy solutions according to Loannou et al. (2021). Thus, it can be hypothesized that travellers with high privacy concerns will be more likely to have a higher perception of IoT task-technology fit in the context of city breaks. To test this:

H4. Perceived privacy positively affects IoT TTF in the context of a city break.

In this study, task-technology fit refers to the degree to which the IoT supports tourist travel activities in the process of a city break (Goodhue & Thomposn, 1995). The TTF model posits that performance impact can be seen as the main outcome of new technology usage. Indeed, the impact of TTF on performance has been validated in many empirical studies

(McGill et al., 2009; Cheng, 2020; Franque et al., 2022; Tam & Oliveira, 2016; You et al., 2020; Al-Maatouk et al., 2020). A high level of perception of task-performance fit indicates that a traveller's requirements and needs can be satisfied by IoT during city breaks. Previous studies have provided ample evidence on the impact of travel experience and satisfaction on a traveller's SWB in a tourism context (e.g., Lyu et al., 2018; Saayman et al., 2018; Zheng et al., 2022; Tien et al., 2021; Uysal et al., 2020; Su et al., 2022; McCabe & Johnson, 2013). These insights lead to the proposition that if there is a fit between the tasks performed by the city break tourists and the use of the IoT, then traveller SWB can be enhanced. Testing the hypothesis as follows should provide some indication:

H5: Perceived IoT TTF positively affects tourist subjective well-being in the context of a city break.

Although TTF theory is rather succinct and widely used, Howard & Rose (2019) point out that TTF theory, as is the case of most theories, needs to be extended in terms of the research context and applicability. It is unreasonable to expect that a single model could fully explain technology adoption and user perceptions in different contexts (Lu & Yang, 2014). Thus, this study combines TTF and ECM in order to meet its specific research objectives.

2.4.2 Expectation-confirmation model

In the past decade, the Expectation Confirmation Model (ECM) (Bhattacherjee, 2001) has received considerable attention from IS researchers in terms of post-acceptance behaviour. This model is considered a 'landmark model' as it was the initial model that addressed the differences between user behaviour of accepting a specific IT product/service and subsequent behaviours of continued use (Lee & Kwon, 2011). Although the well-established behavioural models, such as the TAM (Davis, 1989) and the Theory of Planned Behavior (TPB) (Ajzen, 1991), have been widely applied to examine factors influencing individual acceptance of new IT products/services, these models have been limited to explaining user post-adoption beliefs (Ambalov, 2018). ECM has been one of the models most frequently applied to investigate user post-adoption attitudes and behaviours in a variety of contexts (Veeramootoo et al. 2018). In the current study, a traveller's beliefs after the initial use of IoT technologies in city breaks and the influences of these beliefs on their value perceptions of travel experience and SWB will be rigorously explored. As such, the ECM has been chosen as one of the primary components of this study's research model.

The ECM was first developed by Bhattacherjee (2001) to examine user satisfaction and continuance intention in the field of information systems and technologies (Oghuma et al., 2016). The ECM is based on the Expectation-Confirmation Theory (ECT), which reflects the relationship among consumer expectations, their perceived performance, satisfaction, and repurchase intention (Oliver, 1980). The ECT posits that consumers first form an expectation of products or services before making a decision about them. Consumers then form perceptions of performance after usage and make an evaluation to compare these with their initial expectations, and this concept is termed ‘confirmation.’ The level of consumer satisfaction is positively associated with their levels of confirmation. Finally, higher repurchase intention levels can be observed when consumer satisfaction levels are higher (Lin et al., 2012; Veeramootoo et al., 2018). In 2001, Bhattacherjee adapted ECT to ECM in order to predict IS continued usage patterns. The ECM consists of three constructs which can be used together to predict and explain user continuance intention with respect to a specific information system or product, namely, perceived usefulness, confirmation, and satisfaction (See Figure 2-3)

Figure 2-3. The Expectation Confirmation Model (ECM)

(Bhattacharjee, 2001)

The ECM had its roots in marketing and has been commonly utilised to explore consumer satisfaction and post-purchase behaviour (Houston et al., 2018). In recent years, many studies related to ECM have adapted the model or combined other models according to their research context. For instance, Oghuma et al. (2016) conducted a quantitative study based on the ECM to measure consumer continuance intention to use mobile instant messaging (MIM). Their study developed four extra constructs in relation to ECM: perceived service quality, perceived security, perceived enjoyment, and user interface. Their results demonstrated that these four additional constructs significantly affect user satisfaction and continuance intention to use MIM. It is obvious that independent variables depend on each research project’s unique context and aims. Furthermore, extending the original ECM by incorporating additional users' beliefs would enable us to broaden the scope of user behaviour in the post-adoption stage, and at the same time could improve the applicability of the ECM framework in various contexts (Bhattacherjee, 2001; Malik & Rao 2019). Thus, ECM has been adapted in an innovative way in order to gain a better understanding of the relationship between IoT technologies post-adoption phenomena and user subjective well-being.

In particular, this thesis adds perceived enjoyment, as additional post-adoption beliefs, into the original ECM. In motivation research, perceived enjoyment is described as intrinsic motivation which emphasizes the pleasure or fun derived from involving in an activity (Deci, 1971). It has been included as a key predictor of different consumer behaviours (Holdack et al., 2020). In the IS literature, several studies have confirmed the importance of perceived satisfaction in explaining IT acceptance and users' post-adoption beliefs (e.g., Akdim et al., 2022; Thong et al., 2006; Casaló et al., 2017). For instance, Thong et al. (2006) have extended perceived enjoyment in the mobile internet context into ECM, providing a better understanding of users' post-adoption beliefs about the mobile internet. Given the accumulated evidence of the significant influence of perceived enjoyment on technology usage from existing studies, perceived enjoyment has been added to the proposed model.

Moreover, the satisfaction construct in ECM was replaced with the perceived value of travel experience. McDougall & Levesque (2000) have defined value as the output consumers receive with respect to total costs. Consumers' value is a cognitive-based construct which explains the benefit-sacrifice differences (Kim et al., 2007), while satisfaction refers to an affective evaluation response which explains the difference between consumers' perceived experiences and their initial expectations (Oliver, 1980). Regarding technology adoption, Au & Enderwich (2000) point out that the attitude toward technology adoption is the cognitive process which indicates users' positive or negative feelings about using innovative technologies. Kim et al. (2007) demonstrate that perceived value is one of the key elements in determining technology adoption intention, providing deeper insights into an overall evaluation of the adoption object. In the service and marketing literature, McDougall & Levesque (2000) suggest that customers are likely to consider whether or not they received "value for money" in deciding whether or not to return to a particular service provider. Thus, it may be concluded that customer perceived value can serve as a better predictor of consumers' repurchase intentions than satisfaction, enhancing the understanding of post-adoption beliefs and subjective well-being. Along these lines, we use perceived value instead of satisfaction to investigate IoT usage and travellers' well-being while travelling.

Several empirical studies have demonstrated that the combination of TTF and ECM is useful for understanding new technology use practices (e.g., Cheng, 2019; Rahi et al., 2021; Howard & Rose, 2018). In recent years, Cheng (2019) integrated ECM and TTF to examine student e-learning continuance and the perceived impact on learning of the cloud-based e-learning system. The results verified that perceived TTF significantly contributes to perceived usefulness and confirmation. In addition, Lin & Wang (2012) integrated ECM with TTF and the IS success model to explore student continuance intention within blended learning instruction. The findings showed that students perceived fit both in utilising e-learning systems and that supporting learning requirements resulted in the confirmation of system usage.

Furthermore, despite the impact of perceived enjoyment not being directly suggested by TTF theory, many researchers have suggested that TTF has an identifiable effect on perceived enjoyment (e.g., Dickinger et al., 2008, Howard & Rose, 2019; Yang & Lin, 2015). For instance, Howard & Rose (2019) pointed out that TTF is believed to impact user reactions, which include perceived utility and enjoyment. In the e-learning context, Yang & Lin (2015) demonstrated that when technologies meet a user's specific task characteristics, then the higher the probability was that the technology would enhance the teachers' perceived usefulness and enjoyment of the e-learning environment. In relation to the context of this study, the following hypotheses are offered:

H6: IoT TTF positively affects perceived usefulness during city breaks.

H7: IoT TTF positively affects the confirmation of expectation during city breaks.

H8: IoT TTF positively affects perceived enjoyment during city breaks.

'Confirmation' in ECM is a construct that refers to "the extent to which the actual experience confirms one's initial expectation" (Bhattacherjee, 2001, p.351). This construct expresses the relation of rational associations and 'reality' is derived from cognitive dissonance theory by Festinger (1962). Cognitive dissonance occurs when a person perceives/senses their pre-acceptance usefulness is disconfirmed in actual usage (Bhattacherjee, 2001). Confirmation of expectations is a key determinant of the perceived usefulness of an information system, which is the realisation of anticipated benefits from the use of innovative technologies (Ambalov, 2018; Wu et al., 2022). The more the user's expectations of the innovative technology are confirmed, the higher the level of perceived usefulness the technology has for them (Bhattacherjee, 2001; Nascimento, Oliverira & Tam, 2018). Oghuma et al. (2016) explained that user confirmation of expectations is positively related to perceived usefulness when users realise the performance of a new technology meets their expectations and perceive its instrumental usefulness, and finally recognise that it increases their productivity. These relationships between user expectations, perceived usefulness, and confirmation of expectations have been empirically verified in most extant IS studies (e.g., Park, 2020; Tam et al., 2022; Joo & Choi, 2016; Bawack & Ahmad, 2021; Malik & Rao, 2019; Wu et al., 2022). Hence, in this doctoral project, it is argued that this is also true in the context of IoT adoption in city breaks.

The relationship between a consumer's confirmation of expectations and their perceived enjoyment has also been validated in several studies (e.g., Park, 2020; Muñoz-Carril et al., 2021). Indeed, Alarimi & Ciganek (2015) demonstrated that user confirmation of expectations while using Massive Open Online Courses (MOOCs) has a positive effect on perceived enjoyment. Oghuma et al. (2016) surveyed 334 mobile instant messaging users in South Korea, and their results indicated that user confirmation of expectations positively influenced their perceived enjoyment of using mobile instant messaging. Moreover, Chuang et al. (2018) have shown that user confirmation of expectations with augmented reality (AR) applications is significantly related to their levels of perceived enjoyment. In the present study, confirmation of expectations are understood as a city break tourist's realisation of the expected benefits of IoT technology. Taken together, these hypotheses will be investigated:

H9: Confirmation of expectations positively affect the perceived usefulness of IoT.

H10: Confirmation of expectations positively affects perceived enjoyment of IoT.

Previous studies have shown that consumer confirmation of expectation is a strong determinant of their consumption experiences (Oliver, 1980). The value perception of consumption experiences refers to the consumer's overall evaluations of their consumption experience based on his/her comparison between expected benefits from the products or services in question and sacrifices the consumer makes to achieve such benefits (Zeithaml, 1988; Diallo et al., 2018). For example, Diallo et al. (2018) explained that consumers perceive there to be more value from shopping mall services if they believe that the overall service quality that they experience substantially exceeds their expectations. Only a few tourism studies have investigated the relationship between confirmation and perceived value of travel experience with regard to IoT adoption. Serval IS studies have, however, explored the relationship between confirmation and perceived value of information system adoption (Lin et al., 2012; Hsu & Lin, 2016; Um & Yoom, 2021; Zhang et al., 2019; Loureiro et al., 2020; Oriade & Schofield, 2019). For example, Hsu & Lin (2016) have verified the positive and significant associations between confirmation of expectations and perceived value in the context of app usage. The present study has as a primary research objective the investigation of city break tourists' subjective well-being in the context of IoT usage. It is highly plausible that a tourist perceives IoT technologies to be more valuable in the context of a city break when their expectations are confirmed. Note the following derived hypothesis:

H11: Confirmation of expectations positively affects perceived value of travel experience with IoT usage.

Perceived usefulness refers to "user perceptions of the expected benefits of using an IS" (Davis, 1989). It has been regarded as one of the most influential predictors of IT adoption and user satisfaction (e.g., Bhattachrjee, 2001; Rahi et al., 2021; Park, 2020; Muñoz-Carril et al., 2021). In the field of information technology, perceived usefulness has been employed as one of the determinants of the perceived value of new technology (e.g., Aw et al., 2019; Kim et al., 2007; Yang et al., 2016). For instance, Kim et al. (2007) proposed a value-based model and demonstrated that usefulness, as one of technology's perceived benefits, is positively related to the perceived value users have gained by using new technology. Later, Yang et al. (2016) demonstrated that perceived usefulness is one of the perceived benefit components which positively and significantly affect users' overall perceived value in the context of wearable device adoption. In this study, perceived usefulness is defined as the degree to which city break tourists believe that using IoT technologies will enhance their trip experience. According to Leminen et al. (2018), IoT provides value in monitoring, control, optimisation, and autonomy. Buhalist et al. (2019) argued that IoT is transforming tourism industry structures, processes, and practices by creating a smart environment, and this is improving tourist experiences of their trips. Thus, it is reasonable to predict that the perceived usefulness of the IoT system will positively affect the perceived value of travel experiences for city break tourists. This study, therefore, proposes the following hypothesis:

H12. The perceived usefulness of IoT positively affects city break tourists' perceived value of travel experience.

Perceived enjoyment has been defined as ''the degree to which the activity of using a specific information system or technology is perceived to be enjoyable/fun in its own right, aside from any performance consequences resulting from technology use" (Venkatesh, 2000). A significant body of literature has found that perceived enjoyment is a strong determinant of user assessment of the perceived value of products/services and experiences as well as of technology adoption (Mohamad et al., 2021; Kim, Kim & Wachter 2013; Lin & Lu, 2011). In this study, the concept of perceived enjoyment (PE) adapted from Davis (1989), means that tourists feel enjoyment thanks to the instrumental value of using IoT during city break trips. The relationship between perceived enjoyment and perceived value has also been the subject of research. Drawing on a value-based model, Kim et al. (2007) demonstrated that perceived enjoyment is positively related to the perceived value of mobile internet as one of the perceived benefits of technology use. Similarly, Yang et al. (2016) have found that perceived enjoyment can be considered an effective element of the perceived value of using social virtual services. In line with these arguments, this study hypothesizes that the perceived enjoyment derived from using IoT has a significant effect on city break tourists perceived value of travel experience.

H13: Perceived enjoyment positively affects the perceived value of travel experience.

In line with equity theory, Yang & Peterson (2004) pointed out that perceived value focuses on a consumer's overall assessment of the input/output ratio while utilizing a product or service. Similarly, Pandža Bajs (2015) described perceived value as a concept that offers insight into how consumers perceive given products or services and provides guidance on creating products and services in order to fulfil customer needs and expectations. Within the tourism context, Kim et al. (2015) explained that perceived value of travel experience can be regarded as the process by which a tourist receives, selects, organizes, and interprets information based on experiences at the destination, to create a meaningful picture of the value of destination experiences. In the particular context of the present research, perceived value of travel experience is defined as a tourist's overall evaluation of given services/products involved in their city break process with IoT usage.

Previous studies have also suggested that perceived value directly leads to favourable outcomes, such as satisfaction and subjective well-being (El-Adly, 2019; Junaid et al., 2020; Lv & Xie, 2017). Lyu et al. (2018), for instance, examined this in particular tourism contexts. They specifically explored the relationships between value, experience, and subjective well-being in a cruise tourism setting. Their results indicated that perceived value had a significant influence on tourist sense of well-being. Another study conducted by Prebensen et al. (2013) examined the effects of antecedents and consequences of the perceived value of an on-site trip experience. In the marketing literature, previous researchers have also indicated that perceived value has a significant impact on consumer well-being (Meadow & Sirgy, 2008; Papagiannidis et al., 2017; Pizzi, Vannucci & Aiello, 2020). There is ample support for modelling the perceived value of travel experience as an antecedent to subjective well-being. In concordance with these findings, this study hypothesizes:

H14: Perceived value of travel experience positively affects tourists' subjective well-being.

2.4.3 The moderating role of culture

Culture has been defined as the collective programming of the mind. It includes knowledge, beliefs, values, attitudes, and other capabilities needed to interpret and navigate different environments (Hong et al., 2000). Scholars have demonstrated that national culture significantly affects consumer expectations and evaluations of products, services, and experiences (Diallo et al., 2018; Moser & Deichmann, 2021; Morgeson et al., 2015; Huang & Liu, 2018) and perceived value of consumption (Thongpapanl et al., 2018). With regard to consumer interests in and readiness to embrace innovation, it has been found that national culture significantly affects technology adoption rates (Van Everdingen & Waarts, 2003; Zhao et al., 2021) and moderates the impact of individual-level variables on innovativeness (Steenkamp, Hofstede & Wedel, 1999). To gain insight into the specific effects of national culture upon an individual's perceptions (perceived value and subjective well-being) related to IoT usage, this study adopts Hofstede's cultural framework (Hofstede, 2001; Hofstede & Minkov 2010). This framework is the most widely accepted foundation for assessing experiences of information systems (IS) amongst marketing and service management scholars (e.g., Thompson & Chmura 2015; Petersen, Kushwaha, & Kumar 2015; Tang 2017).

Hofstede's seminal research on national culture described six dimensions that influence individuals' behaviour: individualism, uncertainty avoidance, power distance, masculinity, long-term orientation, and indulgence (Hofstede, 2001; Hofstede et al., 2010). Individualism is defined as the extent to which an individual's behaviour depends upon his/her personal goals, motivations, and personal interests. Collectivism focuses on social relatedness, social roles, and collective interests (Triandis, 2001). Uncertainty avoidance refers to the degree to which people feel threatened by situations of uncertainty. Power distance refers to the distribution of power in a society (Hofstede, 2001). Masculinity refers to the extent to which a society is characterized by assertiveness as opposed to a desire to nurture and protect. Finally, indulgence represents "a tendency to allow relatively free gratification of basic and natural human desires related to enjoying life and having fun" (Hofstede & Minkov, 2010). The underlying premise of Hofstede's cultural framework is that in a society in which a long-term orientation is generally prioritized, people tend to take a pragmatic view of life and encourage efforts to consider or prepare for the future. The six dimensions enable researchers to meaningfully measure the prevailing national culture. Table 2-4 presents the descriptions of Hofstede's six cultural dimensions.

Table 2-4. Hofstede's cultural dimensions definitions

Dimension	Description
Power distance	the extent to which peoples' acceptance and expectation toward power distribution inequalities and hierarchies
Uncertainty avoidance	the degree of tolerance in society for uncertainty and ambiguity
Individualism	the degree of interdependence among a society's members
Masculinity	the distribution of gender roles and the importance that a culture attaches to stereotypical male values (e.g., power, materialism)
Long-term orientation	the temporal horizon, suggesting a culture's predominant use of monochronic (short-term) or polychronic (longer-term) time
Indulgence	the extent to which people try to control their desires and impulses

(Sources: Hofstede, 2005)

Hofstede (1983) suggested that scholars should focus only on the cultural dimensions that are most relevant to the context of their research objectives. Related academic literature has largely proposed that individualism and uncertainty avoidance are the two most relevant cultural dimensions in the context of technology adoption (Tam & Oliver, 2019) and user continuance behaviour (Diallo et al., 2018; Griffith & Rubera, 2014). Consistent with these insights and this study's philosophical goal of parsimony, individualism and uncertainty avoidance are theoretically most relevant to consumers' beliefs, behaviours, and experiences as they relate to technology adoption and thus will be investigated (Nam & Kannan 2020).

Moreover, individualism and uncertainty avoidance are commonly examined in international marketing studies to investigate the relationships between technological innovation adoption and consumer perception. These studies have had strong theoretical and empirical justification (Thongpapanl et al., 2018; Khan & Fatma, 2021). For instance, Griffith & Rubera (2014) found that consumers in cultures marked by high levels of uncertainty avoidance are reluctant to purchase technological innovations because new products represent and create uncertainty. Kumar (2014) indicated that consumers in cultures exhibiting high levels of individualism are characterized by their preferences, their individual decisions, and their willingness to try new things. This, in turn, cultivates an environment that fosters innovation that tends to be open and favourable to consumers experimenting with innovative services. These observations strongly suggest that consumer experiences and attitudes with respect to technology adoption would likely be impacted by individualism and uncertainty avoidance. Including these two key factors in this research study's guiding model can ensure the generation of insights into the effect of IoT adoption on consumer experiences and SWB.

The moderating effect of national culture on technology adoption and post-adoption perceptions and beliefs has been supported in previous studies (e.g., Lee et al., 2007; Akhtar et al., 2019; Tam & Oliver, 2019; Wei et al., 2022; Seo et al., 2018). For example, Tam & Oliver (2019) conducted an empirical study to investigate the influence of culture on m-banking use and individual performance by using the Task-Technology Fit (TTF) model with other approaches. The results revealed that the cultural dimension had important moderating effects on the relationship between technology adoption and user beliefs and behaviours. Additionally, an empirical study conducted by Guan et al. (2017) examined large online survey datasets and demonstrated that culture moderated adults' psychological and physiological responses to social media. These research outcomes may reveal that culture moderates individual perceptions, attitudes, cognitions, and beliefs through their experiences of IoT usage. Regarding the research objectives of this study, it is hypothesized that individual cultural differences influence and moderate user IoT post-adoption beliefs, which in turn affect individual subjective well-being. Thus, culture will be used in this study to moderate the relationship between perceived TTF, perceived enjoyment, the perceived value of travel experience, and subjective well-being (H5, H14).

2.4.3.1 Individualism

Individualism refers to the general preoccupation of people of a certain national culture with personal goals rather than with the attainment of collective interests related to the concerns of the community (Triandis, 2001). Individualism also means that individual behaviours depend on one's own best interest, in which case, a person will more likely care about personal goals and enjoyment rather than social norms. Lee et al. (2007) have indicated that mobile internet users with individualistic cultural backgrounds are proud to be differentiated from others and prefer technological products which show their personalities and identities. As mentioned earlier, IoT technologies have been widely applied in the tourism industry to provide personalized services for travellers based on their interests and preferences. Since users can customize these IoT-based services or products to their own needs and interests, it is likely that individualistic users will perceive more value in the IoT than will collectivistic users.

The concept of individualism offers a wide scope for theorising and interpreting consumer tendencies and social well-being. Triandis & Gelfand (1998) have divided individualism and collectivism into two sub-dimensions: the vertical sub-dimension and the horizontal sub-dimension. Vertical individualism (VI) denotes the extent to which the self is seen as fully autonomous even while inequalities are acknowledged among individuals. Horizontal individualism (HI) is defined as the extent to which the self is seen as fully autonomous against a background of significant equality between individuals. In other words, being unique and different from others is key to HI and achieving power and status via competition with others is key to VI (Shavitt et al., 2006). These distinctions are important for assessing cultural influence.

The basic concept of individualism (as contrasted with collectivism) continues to be used as the concept of choice for characterizing Western vs. Asian societies. Choi, Lee, and Kim (2006) have demonstrated that individualists are more likely to express their personalities or identities when using the mobile internet and are known to take pride in being different from others. Komarraju, Dollinger & Lovell (2008) indicated that both VI and HI prioritize satisfying personal needs. In agreement with the suggestions of Triandis & Gelfand (1998) and Triandis (2001), this study posits that individualist orientations (horizontal and vertical) have a significant influence on consumer post-beliefs in connection with IoT usage. In other words, consumers exhibiting higher levels of individualism emphasize personal goals rather than social norms when using IoT technologies. In recent years, IoT technologies have been widely used in the service industry to provide personalized services for consumers based on their perceived interests and preferences (Buhalis et al. 2019). Since users can customize services according to their own needs and interests, it is likely that individualist users will perceive more value and task-technology fit regarding IoT than collectivist users.

However, there are conflicting views on the moderating effects of individualism in the context of technology use. For example, Lee et al. (2007) indicated some positive effects of individualism on the relationship between post-adoption beliefs relating to the mobile internet and continuance intention. By contrast, Tam & Oliveira (2019) found that individualism had a negative moderating effect on TTF over the use of m-banking and does not have a moderating effect of TTF on individual performance. Moreover, McCoy et al. (2005) and Akhtar et al. (2019) demonstrated that individualism does not moderate the relationship between perceived value and behaviour intention toward email usage. In the tourism literature, researchers have suggested that individualism is positively associated with favourable consumer responses such as satisfaction, travel experience, and subjective well-being (Matzler et al., 2016). Thus, the following hypotheses state:

H15a: Individualism moderates the effect of IoT task-technology fit on subjective well-being such that the effect of IoT task-technology fit will be stronger for travellers with high levels of individualism than for those with low levels of individualism.

H15b: Individualism moderates the effect of perceived value of travel experience on subjective well-being such that the effect of perceived value of travel experience will be stronger for travellers with high levels of individualism than for those with low levels of individualism.

2.4.3.2 Uncertainty avoidance

Uncertainty avoidance has been defined as "the degree to which the society members react to uncertain or unknown situations" (Hofstede, 2001). Individuals with a high uncertainty avoidance cultural background are more likely to feel uncomfortable in unstructured and unfamiliar situations, have intense needs for predictability, and are intolerant of views, opinions and behaviours that differ from others (Kim & Stavrositu, 2018). Thus, Hofstede (2001) pointed out that individuals who feel threatened by the unknown have a desire for controlling their environment and are risk-averse in a high uncertainty culture. By contrast, individuals with a low uncertainty avoidance cultural background are more comfortable with novel and unusual environments, do not need explicit information and instructions, have a great tolerance for different behaviours, views and opinions, and risk acceptance (Hofstede, 2001; Durach & Wiengarten, 2017). In the tourism industry, risks are considered a major concern for travellers (Yavas; 1990; Litvin, 2004). Uncertainty avoidance is thus usually used to explain traveller behaviours and perceptions (Karl, 2018; Golets et al., 2021).

For example, Litvin (2004) detailed how travellers engage in search behaviours to minimize the five types of risk in a purchase decision which have been proposed by Solomon (1999): monetary (losing or wasting income), functional (does not meet practical needs), physical (causing personal illness or injury), social (seemingly unfashionable or resulting in lower status), and psychological (damaging self-esteem or engendering guilt). In addition, Cardon & Marshall (2008) found that people with high uncertainty avoidance are more likely to welcome technology that can reduce uncertainty. Thus, it is possible to argue that high certainly avoidance travellers perceive more value and enjoyment in the use of IoT. The present research considers traveller uncertainty avoidance as this may moderate the effects of IoT usage on the travel experience and subjective well-being. Thus, we hypothesize the following:

H16a: Uncertainty avoidance moderates the effect of IoT task-technology fit on subjective well-being, such that the effect of IoT task-technology fit will be stronger for travellers with high levels of uncertainty avoidance than for those with low levels of uncertainty avoidance.

H16b: Uncertainty avoidance moderates the effect of perceived value of travel experience on subjective well-being such that the effect of the perceived value of travel experience will be stronger for travellers with high levels of uncertainty avoidance than for those with low levels of uncertainty avoidance.

In summary, this doctoral project proposed a theoretical model relating the Internet of Things to travellers' subjective well-being (See Fig.2-4). The purpose of this model is to show the possible connections amongst the technological, emotional, personal, and contextual attributes influencing consumer perceived value, which in turn affect their SWB. The relationship between task-technology fit, perceived value of travel experience and SWB was also hypothesized to be moderated by the cultural orientations of an individual.

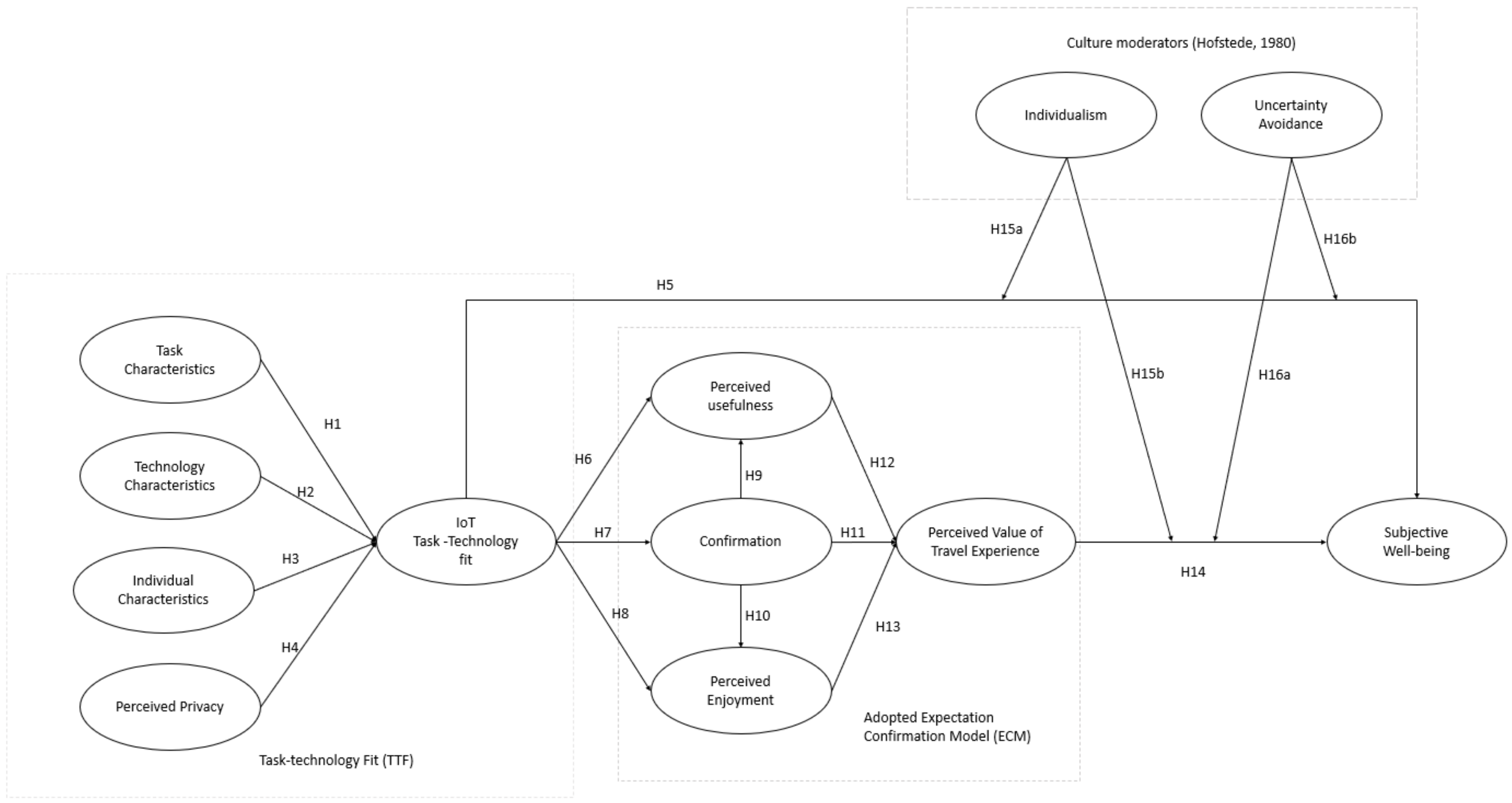

Figure 2-4. Theoretical framework

2.5 Conclusion

This chapter reviewed the relevant research on IoT, tourism, and subjective well-being which indicate that IoT technologies play an important role in the tourism industry as confirmed by previous studies. In addition, it is also observed from the literature that people's subjective well-being can be affected by smart technologies. Nevertheless, to the best of our knowledge, no attempt has been made to explore the role of the IoT in travellers' subjective well-being during city breaks. To fill this gap, we propose a research model to illustrate the relationship between IoT adoption and user subjective well-being in the context of a city break. On the basis of the Task-Technology Fit model, the expectation confirmation model, and Hofstede's culture theory, eighteen hypotheses have been proposed for this thesis study and will be examined with empirical data collected in the UK and China. In the next chapter, we shall discuss the research design and methodology applied to validate the model for its ability to measure travellers' subjective well-being regarding the use of IoT in the context of city breaks.

CHAPTER 3 RESEARCH METHODOLOGY

3.1 Introduction

The methodological underpinning of this thesis will be described, justified, and discussed in this chapter. The methods selected by a researcher provide the necessary focus and depth to the inquiry and will largely determine the results and insights derived from the study. In this chapter, Section 3.2 elaborates on the research philosophy of this project and explains why the study adopts a positivist epistemological perspective. Next, Section 3.3 details possible research approaches and justifies the adoption of the deductive approach for the study. Section 3.4 discusses the research method used for this project and provides a justification for the selection of a quantitative approach. Section 3.5 discusses the research strategy applied for this thesis and provides a justification for the selection of a survey as the most appropriate tool. Section 3.6 presents the research design of the study, and section 3.7 describes the population and explains the sampling approach. Section 3.8 presents the development of the research instrument and details the questionnaire design and content. Section 3.9 discusses the pilot test used for the study; Section 3.10 elaborates on the data collection process. Next, Section 3.11 explains the data analysis process. In Section 3.12, ethical considerations and concerns are discussed. Finally, Section 3.13 provides an overall summary of the entire chapter.

3.2 Research Philosophy

The choice of an overarching research philosophy has been widely acknowledged by academic researchers in the social sciences as vitally important. The philosophy significantly determines the way in which the research is viewed and subsequently undertaken (Saunders, Lewis, & Thornhill, 2016). As a fundamental belief system, a research philosophy governs not only the selection of the method(s), but also the ontological and epistemological assumptions that thread throughout the entire study. Guba & Lincoln (1994) grouped philosophical stances into three major categories: ontology, epistemology, and methodology.

Ontology is mainly concerned with the assumptions regarding the nature of reality and what actually constitutes a person's beliefs about reality (Bracken, 2010). By contrast, epistemology deals with the nature of knowledge and how knowledge is obtained (Tashakkori & Teddlie, 2010). Methodology refers to the techniques involved in investigative procedures and validating evidence. In social science, most research projects are formed in light of these three assumptions (Saunders et al., 2015).

Before undertaking a doctoral research project, it is essential to understand the prevailing research paradigms and their associated philosophical assumptions (Guba, 1990). Researchers have identified various paradigms of inquiry arrayed along a continuum. This study reviews four paradigms frequently found in the management literature: positivism, post-positivism, interpretivism, and constructivism (See Table 3-1).

Table 3-1. Categorization of Four Popular Research Paradigms

	Positivism	**Post-positivism**	**Interpretivism**	**Constructivism**
Ontological Assumption	Naïve realism. Objective reality. What is the real?	Critical realism. Reality is real but can be known only imperfectly	Reality can be understood.	
Epistemological assumption	Objectivism. Finding the real.	It is impossible to fully explain reality.	It involves researchers interpreting or understanding the meaning that humans attach to their actions of the research.	Knowledge is constructed rather than just passively taking in information.
Methodological assumption	How to find the real? quantitative methods. Verification of hypotheses;	There are errors in all scientific methods. Falsification of hypotheses. It may include both quantitative and qualitative methods.	Interpretation. It emphasizes qualitative analysis. Purposive and multipurpose sampling.	Mainly qualitative methods. Purposive and multipurpose sampling.

(Sources: Guba & Lincoln, 1994; Lincoln et al., 2011)

Positivism is the ontological position most strongly linked with the foundations of the natural sciences. The belief that truth is an objective reality and is independent of human factors is a hallmark of positivism (Sale et al., 2002). This means the researcher and the research objects are understood to be independent entities without any impact upon one another. From an epistemological and methodological perspective, the positivism paradigm uses a hypothetical deductive approach to test whether a viewpoint regarding a knowledge statement is true or false (Saunders et al., 2016). Tourism, information technology, and management are the primary domains of this thesis and previous empirical studies in these fields indicate the predominance of the positivism paradigm as the most common philosophical consideration (Salem et al., 2021; Griffith et al., 2021; Diallo et al., 2018; Cheng, 2018; Wu et al., 2022). A research philosophy background from a post-positivist stance also reflects objectivism (Bryman & Bell, 2015). This inquiry method seems to work in different directions, as it not only seeks to examine cause-and-effect relationships but also aims to falsify hypotheses. A positivist philosophy may include the quantitative and qualitative methods of inquiry.

In contrast to positivism and post-positivism, the interpretative paradigm concerns the understanding of human behaviour from the individual participant's perspective (Hussey & Hussey, 1997). Interpretivism holds the view that the world is an observable reality with discrete elements (Sale et al., 2002). From the epistemological and methodological perspective, interpretivism undertakes a subjectivist viewpoint holding that mutual influences exist between the research objects and the researchers (Guba & Lincoln, 1994). Interpretivism mainly includes qualitative methods.

Lastly, the most salient attribute of constructivism is its subjectivist point of view with one main difference: realities are caused by social intercommunications that are often experienced and interpreted by individuals in dynamic interaction. The methods that have been used to examine the research objectives in constructivism include interviewing and reliance on hermeneutics (Guba & Lincoln, 1994).

Each of the above-reviewed research paradigms is embedded with different philosophical assumptions and consequently is more amenable to different methodological approaches and, of course, contexts. As a result, positivism is proposed as the underlying research paradigm for this thesis. There are three reasons for this choice. First, positivism offers a useful philosophical lens for marketing and management research to test knowledge, theories, and/or the validity of a research model as well as any cause-and-effect in the fields of tourism, management, and marketing (Carson et al., 2001). In order to achieve the aims of this study, a conceptual model has been developed on the basis of task-technology fit theory, the expectation-confirmation model, and Hofstede's culture framework along with 18 hypotheses.

Second, this research aims to investigate the impact of IoT technologies on travellers' subjective well-being in the context of city breaks. From an ontological perspective, although there are numerous social actors involved (e.g., travellers, and tourism stakeholders), the IoT technologies theory accommodates any substantive reality that cannot be easily changed or removed by the social actors. Thus, IoT can be seen as an objective entity within the social reality. In other words, the IoT exists independent of the researcher and independent of the ways in which the researcher examines it.

Third, the positivism paradigm uses a hypothetical deductive approach to test whether the beliefs about a theory and existing knowledge are true or not (Saunders et al., 2016). This research study creatively combines previous theoretical perspectives with a set of key variables into a new conceptual framework. The new theoretical framework investigates a traveller's IoT post-experience feedback and subjective well-being after city-break trips in the UK and China. The relevant variables and hypotheses have been derived from previous theories and research. The hypotheses will be explored by using data collected from self-administered online surveys which ensures that the researcher remains detached from the research participants (Hussey & Hussey, 1997). The study has a clear, positivist framework and an efficient data collection process to obtain data that is easily comparable (Hussey & Hussey, 1997).

3.3 Research Approach

According to Bell and Bryman (2018), a theory may be developed by means of deductive, inductive, or abductive approaches. The deductive approach is also known as 'theory-testing' - the examination of the relationship between the research and existing theories. A deductive approach explores the causal associations between concepts and variables which is facilitated most often by a positivist/quantitative approach (Bryman, 2015). The inductive approach, by contrast, begins with the formulation of a theory, moves next to the generation of hypotheses associated with that theory, proposes links amongst particular constructs, and finally investigates those assumptions based on reality (Gummesson, 2000). The abductive approach can be seen as a combination of the inductive and deductive research approaches. However, the abductive approach handles an incomplete set of data in the form of observations from which insights are extracted from the available data. The deductive approach focuses on the confirmation of hypotheses by the researcher(s) who analyse the data, information, and produce a generalizable theory (Saunders et al., 2016). The abductive approach allows researchers to explain facts based on incomplete data that are not explained by existing knowledge/theories by using their best analytical and sensemaking abilities (Saunders et al., 2016).

The deductive approach is considered the most appropriate research approach for this thesis. In the tourism and IS literature, the deductive approach has been widely used to confirm the effectiveness of existing theory through hypothesis testing (Azungah, 2018; Wang et al., 2021; Cai & Leung, 2020; El-Masri et al., 2022; Oghuma et al., 2016; Chiu et al., 2020; Cheng, 2019; Wu et al., 2022; Tam & Oliveira, 2016; Choudrie & Dwivedi, 2005). For example, Oghuma et al. (2016) have confirmed the expectation confirmation model in the context of mobile instant messaging by validating their set of hypotheses. Tam & Oliveira (2016) have confirmed the task-technology fit theory in the context of m-banking by using a deductive approach. In this research, the task-technology fit theory and expectation confirmation model serve as primary components of the theoretical framework for researching traveller perceptions of value and their state of subjective well-being regarding IoT usage. This theoretical framework can be used and refined through the generation of hypotheses in the context of tourism which can subsequently be validated or rejected with empirical data.

3.4 Research Methods

Following the selection of a proper research approach amongst those mentioned above, this section discusses the research methodology for this study. According to Creswell (2003), quantitative and qualitative research methods are the two choices for the researcher. Both research methods have their uniqueness. Table 3-2 illustrates the features of qualitative and quantitative research. The quantitative methodology is associated with the positivist paradigm and deductive approach. Bell & Bryman (2018) indicated that the quantitative method commonly applies numerical analysis to explain the associations between the factors in the research. On the other hand, the qualitative method derives theories and propositions by drawing on data in the form of a detailed description and seeks a deep understanding of the situational variables involved in the study at hand (Creswell, 2003; Myers, 2015). In this doctoral research, quantitative research is used.

Table 3-2. Features of Quantitative and Qualitative Research

	Quantitative research	**Qualitative research**
Research goals	Discover new ideas	Establish credibility
Basic characteristics	Objective	Subjective

Type of research questions	More structured	Less structured
The view of the research project	Deductive	Inductive
Sampling	Representation of target group	Limited to the respondents
Generalizability of research results	Very good	Very limited

(Sources: Bell & Bryan, 2018)

Qualitative and quantitative approaches have advantages and disadvantages. For qualitative research, a number of advantages have been summarised by Neuman, (2013), such as facilitating the improvement of an existing theory; providing deep insights into the subjects that are being explored; no limitations on interview questions; the researcher can manage the process; the ability to adjust the research direction quickly when generating new findings; and, participants are empowered and the value of their opinions are emphasized (Neuman, 2013). However, this approach has disadvantages, including bias and subjective interventions by researchers; the investigative procedures are inherently vague, responses are subjective; and the limited sample size forestalls any generalizability (Neuman, 2013)

By using the quantitative method, the data can be collected and analysed faster and easier than the qualitative method. Also, researchers can arrive at more accurate and objective measures of variables (Saunders et al., 2016). In addition, this method allows for a large sample and results which are generalizable (Payne & Williams, 2011). However, the quantitative method has its shortcomings. For instance, the quantitative method is not able to explain social phenomena which cannot be easily measured. Also, since it insists on the objectivity of social realities, a person's unique existence and subjective interactions with similarly varied social entities impose considerable limitations. Table 3-3 summarises the advantages and disadvantages of qualitative and quantitative research.

Table 3-3. Advantages and Disadvantages of Quantitative and Qualitative Research

	Advantages	Disadvantages
Qualitative	Enhancing theory development Facilitating in-depth insights	Limited sample size The finding is not generalizable

	Flexible methods Empowering participants and value placed on a participant's view	
Quantitative	Enable more precise and objective measurement of variables Structured or standard methods Statistical nature Generalisations are possible	Limit understanding of the meaning behind social phenomena Limit understanding of subjective aspects of human existence Inapplicable to some social phenomena which cannot be measured

(Sources: Saunders et al., 2016)

A quantitative research approach has been chosen for three reasons. First, as mentioned in Section 3.2 and Section 3.3, this study applies the deductive approach associated with the positivist paradigm. Thus, the quantitative method is aligned and attuned with the research philosophy and approach that underpins this thesis (Creswell et al., 2003; Bryman et al., 2015). Second, Saunders et al. (2009) indicated that a quantitative approach mainly seeks to examine a theory in an attempt to enhance its predictive power and/or knowledge of phenomena. Since the purpose of this research is to test a set of hypotheses in terms of the existing literature and examine the associations between variables, then a quantitative method is ideal. Moreover, this study collects data in the UK and China involving a large sample size which points to a strength of a quantitative research methodology. This study seeks to provide findings that are generalizable to larger populations and contexts making this study's outcomes practicable.

3.5 Research Strategy

An appropriate strategy is considered to be a critical first step in any social science research project. Surveys are traditionally associated with a positivist paradigm (Collis & Hussey, 2014) and have been selected as the research instrument for this study. According to Pinsonneault & Kraemer (1993), a survey is deemed suitable for research given the following three requirements: 1). the research necessitates the collection of data through the use of pre-defined and structured instruments for questioning, 2). the research aspires to acquire generalizable results from a number of target population members that can be extended to the entire population, and 3). The study involves a measurable research topic and uses a quantitative method. The rationale for using a survey in this thesis is detailed according to the requirements set forth by Pinsonneault & Kraemer (1993).

First, the current study builds a conceptual model based on existing theories, specifically the task-technology fit theory, the expectation confirmation model, as well as Hofstede's cultural theory. The measurement items are derived from those well-known theories reviewed in the IS and marketing literature. Data in this study was collected by asking questions with pre-defined instruments identified in previous research which meets the first requirement of Pinsonneault & Kraemer (1993). Second, according to Zikmund (2003), survey research allows a quick, efficient, and precise way to evaluate information about a target population. This research investigates the factors influencing city break travellers' subjective well-being while using IoT in the UK and China. This involves dealing with large sample sizes and different geographical areas which make it difficult to use qualitative methods, such as in-depth interviews and observations. These challenges bolster the decision to use an online survey. Additionally, a survey can be used to collect a large amount of data in a fast and inexpensive way (Gilbert, 2001). Also, this study yields generalizations and practical information about city break traveller perceptions of IoT usage in the UK and China. This fits the description of the second requirement.

Finally, previous tourism and IS literature have shown that the impact of IoT technologies and traveller subjective well-being are research topics that can be measured with numerical instruments (Yang, Yang & Plotnick, 2013; Escobar-Rodríguez & Carvajal-Trujillo, 2014; Venkateshe et al., 2012; Sirgy et al., 2011; Bhattacherjee, 2001; Goodhue & Thompson, 1995). In addition, the research model proposed in Chapter 2 is consistent with the previous studies related to the task-technology fit and expectation confirmation models which consider a survey as a tool to collect data. In summation, a survey is a preferred tool for achieving the objectives of this thesis.

3.6 Research Design

In social science research, a research design encompasses the entire process of answering research questions and addressing any problems that should arise. A research design includes the methods and processes as well as their implementation during the entire research endeavour. A quality research design offers researchers a systematic framework for data collection and analysis procedures (De Vaus, 2002). Figure 3-1 outlines the entire process of this study, starting with the literature review followed by methodology, data collection, data analysis, and finally leading towards the study's final contribution to theory.

First, a comprehensive literature review was conducted to build the foundation for the entire research project. This provides a basic understanding of how IoT technologies are understood to function in the tourism industry and how smart technologies contribute to a tourist’s subjective well-being. On this basis, gaps in the research were identified, and the research aims and objectives could be proposed to address these gaps. In addition, the task-technology fit model and expectation-confirmation model, as well as culture-related studies, have been critically reviewed, forming the foundation of the development of the research model and of the hypotheses to be tested in this research. Next, in order to validate the conceptual model including any hypotheses and/or conjectures between the constructs established, a series of rational decisions are undertaken. Completion of this validation then leads to the data collection process and the application of data analysis techniques. Finally, an explanation is offered of how this study’s dataset contributes to the existing literature.

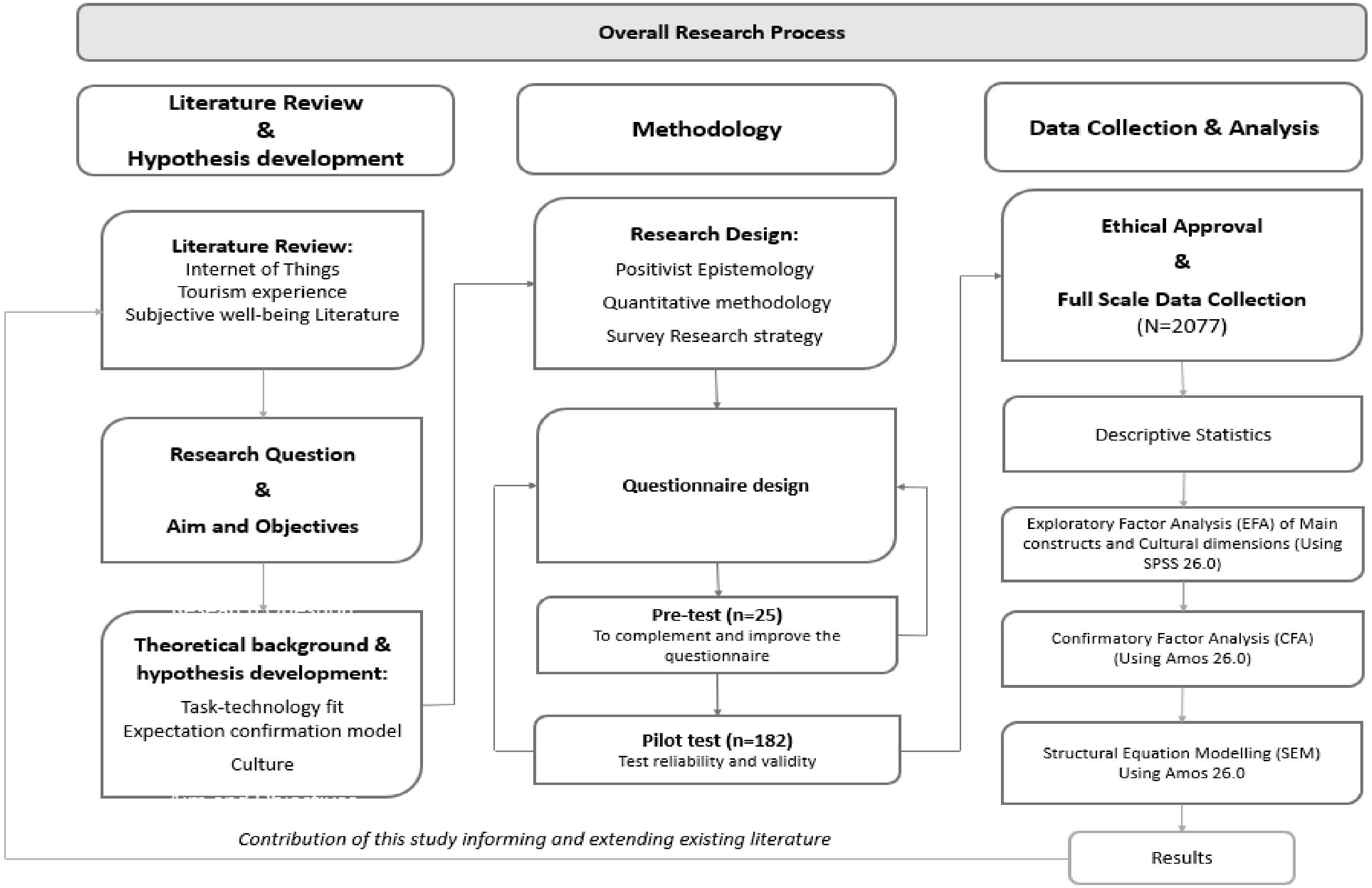

Figure 3-1. Overall Research Process

(Source: the author)

3.7 Target Population and Sampling

Selecting a target population is also an essential step of any research project (Baker, 2002). An appropriate population is essential for the researcher to examine the proposed hypotheses with confidence and eventually draw conclusions about empirical findings (Eisenhardt, 1989). Thus, the choice of the population of research should be carefully considered and should be associated with the research objectives (Saunders et al., 2016). Regarding the context of this study, the target population selected for this study includes individual city break tourists in the UK and China who have taken a city break trip at least once in the last 12 months. Because it is not possible for this thesis to cover such a massive population, a representative sample was used in the process of data collection.

The main techniques in any sampling process can be grouped into probability and non-probability sampling (Saunders et al., 2016). Probability sampling means the sample has been chosen randomly so that each unit in the population can be known and would never be zero. Saunders et al. (2009) noted that probability sampling is normally linked with experimental research strategies that use surveys. A non-probability sample is a sample that has not been chosen randomly. Bryman & Bell (2015) observed that non-probability sampling is more frequently used in case studies. Thus, in this study, the probability sample will be processed according to the survey-based research strategy.

Under the umbrella of probability sampling, there are four techniques: simple random sampling, stratified sampling, systematic sampling, and cluster sampling (Bryman, 2015). According to Taherdoost (2016), a simple random sample means every case has an equal chance of being selected in the sample of the population. Simple random sampling can be done using a lottery method, currency notes, and other options. Systematic random sampling involves selecting items from an ordered population using a skip or sampling interval (Bryman, 2015). This sort of sampling is simple to do and easy to verify, but technically only the first subject is a probability selection. Stratified sampling is a type of probability sampling in which the population has been divided into subgroups, and a random sample is selected in every subgroup. Stratified sampling is often selected when there is a lot of variation within a population, such as company size, gender, or occupation. Cluster sampling involves the whole population that is divided into clusters or groups such as by geographic area, country, school, or some other grouping; then, a random sample is selected from each cluster. When research subjects are fragmented and dispersed over large geographical areas, researchers have normally selected cluster sampling as it saves time and money (Davis, 2005). Following this suggestion, random cluster sampling is used in this study. The whole population is divided into two clusters, the UK and China.

The appropriate sample size must be determined in order to ensure the results are trustworthy and reliable (Sekaran & Bougie, 2016). Following the suggestions of Hair et al. (2006), the sample size should be equal to or bigger than ten times the maximum number of paths targeting any construct of the measurement items (Hair et al., 2006). Moreover, A greater sample size is required for structural equation modelling (SEM) than for other multivariate techniques (Bryman, 2015). Tabachnick (2016) suggested that, in general, 300 participants would be an adequate sample size, 500 subjects would be much better, and 1000 participants would be considered excellent. Moreover, in order to obtain a suitable sample size, G*power software has been applied for the sample size calculation. G*power software is a free power analysis program which has been commonly used for sample size calculation in social science research (Faul et al., 2009). The G*Power software suggested a minimum of 1017 survey responses (effect size=0.3; size=0.5; a=0.05; power=0.95; df=303; critical $\chi 2$=344.59) to increase the robustness of data analysis. Therefore, the number was doubled for a conservative sample size recommendation in order to minimize sampling error (SE). A total of 2077 questionnaires were collected.

3.8 Measurement Scale

Throughout the research method literature, scholars have emphasized that the design of a survey questionnaire is one of the most essential parts of the overall research plan. This is especially the case for quantitative research (Bryman, 2015) in order to ensure the collection of accurate, relevant data. Likert scales are considered the most popular and common rating scale (Tigre & Dedrick, 2004). A typical seven-point Likert scale shows how a person feels about a wide range of different relationships. In this doctoral project, this scale ranges from 1 (strongly disagree) to 7 (strongly agree).

The seven-point Likert scale was chosen in this study for three reasons. First, a Likert scale is a most well-known, simple, and widely used scale adopted by researchers for data gathering (Viswanathan, Sudman & Johnson, 2004). Second, according to the review of the literature relevant to the current study, a seven-point Likert scale indeed has been the most commonly chosen approach (Venkatesh et al., 2003; Venkatesh & Davis, 2000; Loureiro et al., 2020; Srite & Karahanna, 2006; Tam & Oliveira, 2016). Third, seven-point Likert scale items have been demonstrated to be exceedingly accurate, simple to use, and best capture a respondent's actual judgement (Finstad, 2010)

Most of the variables and the associated questions in this investigation evaluate different aspects of IoT usage and city break experience. Some of the questions are slightly reworded and might seem a bit repetitive to participants, however, the survey cover letter explains that the research is about IoT usage during a city break which can be similar and overlapping at times. The English and Chinese cover letters define ‘IoT' and 'city break' in layman’s terms. In addition to questions about respondents' demographic information, this study also collects information about traveller experiences with IoT and their city break experiences.

The questionnaire is prefaced with an informed consent statement that participants must read and accept before completing the survey. Respondents are then invited to complete the questionnaire with regard to their experience of IoT usage during their city break trips. They are asked to identify the extent to which each survey statement reflects their views. The informed consent section clearly underlines the questionnaire's voluntary nature and guarantees the complete anonymity and confidentiality of all respondents. The questionnaire consists of three parts:

- Questions related to the user’s background information in relation to their city break experiences, motivations, and IoT usage.
- Questions related to variables that might affect the user’s experience, including task characteristics, IoT technology characteristics, individual characteristics, perceived privacy, perceived usefulness, perceived enjoyment, confirmation, perceived value of travel experience, cultural moderators, and subjective well-being.
- Questions related to demographics, including general information about a participant’s residence, gender, age, and educational level.

City break travellers who live in the UK and China were asked to rate their degree of agreement or disagreement with each questionnaire item. Every survey item is crafted to address specific constructs concerning IoT usage. All the variables in this study come from prior studies and have been adapted wherever necessary for the city break context with the use of IoT. For instance, survey items regarding the TTF model, task characteristics, and IoT task-technology fit come from Goodhue & Thompson (1995); IoT technology characteristics are adopted from Yang et al. (2013); perceived privacy measures derived from Escobar-Rodríguez and Carvajal-Trujillo (2014) and individual characteristics have come from Agarwal & Prasad (1998). In the adapted expectation-confirmation portion of the questionnaire, the perceived usefulness and confirmation come from Bhattacherjee (2001) and perceived enjoyment from Venkatesh et al. (2012). The measurement of the perceived value of travel experience comes from El-Haddadeh (2019) using a three-item scale to measure a consumer's perceptions of IoT value for short-term travelling. In addition, the Satisfaction with Life Scale is to measure SWB (Sirgy et al., 2011), using a four-item scale, with modifications to suit the context of IoT.

It is crucial to assess the influence of the city break context on participants. The impact of culture is measured via the dimensions of individualism and uncertainty avoidance (Hofstede, 2001). The value of Hofstede's dimensions has been widely recognized, yet also criticized. For example, it has been noted that the original measurement of these dimensions was conducted via a large-scale study among employees of a multi-national corporation by examining their work environment (Bochner & Hesketh, 1994). However, a relatively contained organizational culture may or may not be appropriate across different contexts. Moreover, scholars have argued that Hofstede's dimensions may not be relevant with today's vibrant global cross-cultural influences. National cultures of just four decades ago may not adequately explain contemporary social and psychological phenomena across different countries, which are increasingly influenced by global subcultures (Orr et al., 2008). Yet, in 1991, Hofstede defended the usefulness of his cultural dimensions for identifying differences between national cultures, arguing that any convergence between cultures is only superficial and does not play a decisive role in shaping values and beliefs. More recently, Hofstede has argued that each culture evolves but that all of them do so while moving in the same inherent direction (Minkov & Hofstede, 2011).

To achieve the objectives of the current study, we have employed the same items used in Hofstede's cultural dimensions in an IoT context and believe that a high degree of reliability and construct validity for our measurements is attainable. By surveying consumers of tourism services who largely exhibit clear differences in their cultural identities, this study aims to achieve a better understanding of the influence of selected cultural dimensions at the global level. Previous studies in the field of information systems management have often adapted versions of Hofstede's measurement items to identify the characteristics of entire groups (Srite & Karahanna 2006; Tam & Oliveira, 2019; Lee et al., 2007). Scholars have also recognized that examining culture at the individual level may offer interesting insights into the relationship between consumer response and technological innovation (Griffith & Rubera 2014). Thus, if researchers are interested in how cultural dimensions affect an individual's perception of IT usage, then an evaluation based on individual cultural characteristics is appropriate.

Accordingly, individualism was measured using the three-item scale suggested by Lee et al. (2007) with minor adaptations to fit city breaks. This scale specifically reflects the integration of technology contexts (e.g., mobile internet) within cultural ideologies and is also aligned with the identification of a user's individual-level cultural characteristics, as suggested by Lee et al. (2007). Uncertainty avoidance measures were adopted from Srite & Karahanna (2006) using their five-item scale. Each measurement item is assessed by using a 7-point Likert scale, where participants are required to express their feelings in relation to proposed statements, indicating their agreement on a scale from 1–7 (1= strongly disagree and 7= strongly agree). Table 3-4 provides a list of the scale items.

Table 3-4. Questionnaire Variables

Variable	**Measurement Items**	**Source**
Task characteristics (TAC)	TAC1. During my city break trips, I need to access travel information anytime and anywhere. TAC2. During my city break trips, I need to enhance my time efficiency. TAC3. During my city break trips, I need to ensure my safety. TAC4. During my city break trips, I need to save money.	Goodhue & Thompson, 1995
Technology characteristics (TECH)	TECH1: IoT technology provides a real-time solution. TECH2: IoT technology provides comprehensive information about surrounding environments. TECH3: IoT technology provides the ability to monitor the environment.	Yang et al., 2013
Perceived privacy (PP.)	PP1. I am concerned the IoT may collect too much personal information from me. PP2: I am concerned that the IoT will use my personal information for other purposes without my authorization. PP3: I am concerned the IoT will share my personal information with other entities without my authorization. PP4: I am concerned that unauthorized persons (i.e., hackers) may have access to my personal information. PP5: I am concerned about the privacy of my personal information during transactions. PP6: I am concerned that the IoT may sell my personal information to others without my permission.	Escobar-Rodríguez & Carvajal-Trujillo, 2014

Task-technology Fit (TTF)	TTF1: Using the IoT fits well with my city break trip goals and needs. TTF2: Using the IoT fits well with the way I like to enhance the time efficiency of my city break trip. TTF3: Using the IoT fits well with the way I like to budget my city break trip. TTF4: Using the IoT fits well with the way I like to ensure I am safe during my city break trips.	Goodhue & Thompson, 1995
Individual Characteristics (IDC)	IDC1: If I heard about a new information technology, I would look for ways to experiment with it. IDC2: Among my peers, I am usually the first to explore new information technologies. IDC3: In general, I am hesitant to try out new information technologies.	Agarwal & Prasad, 1998
Confirmation (CON)	CON1. My travel experience of city breaks while using IoT was better than I expected. CON2. The service level provided by IoT was better than I expected. CON3. Overall, most of my expectations of using IoT were confirmed.	Bhattacherjee, 2001
Perceived usefulness (PU)	PU1. Using IoT improved my city break trip performance. PU2. Using IoT enhanced my effectiveness during the city break trips. PU3. Overall, I believe that using IOT was useful in my city break trips.	Bhattacherjee, 2001
Perceived Enjoyment (PE)	PE1.Using IoT during city breaks is fun. PE2. Using IoT during city breaks is enjoyable. PE3.Using IoT during city breaks is very entertaining.	Venkatesh, 2012
Perceived value of travel experience (PVTE)	PVTE1: Compared to the effort I need to put in, IoT is beneficial to my city break trip. PVTE2: Compared to the time I need to spend, the usage of IoT is worthwhile for my city break trip. PVTE3: c	EL-Haddadeh et al., 2019
Individualism (IDV)	ID1: I frequently use IoT applications that express my personality. ID2: I do not want to feel like an anonymous member of a group that uses IoT. ID3: I frequently use IoT applications that can differentiate me from other people.	Lee et al., 2007

Uncertainty avoidance (UA)	UA1: Rules and regulations are important because they inform people about what the expectations are. UA2: Order and structure are very important in any environment. UA3: It is important to have specific requirements and instructions spelt out in detail so that I always know what I am expected to do. UA4: It is better to have a bad situation that you know about, than to have an uncertain situation that might be better. UA5: Providing opportunities to be innovative is more important than requiring standardized work procedures.	Srite & Karahanna, 2006
Subjective well-being (SWB)	SWB1. Overall, my experience of this city break trip was memorable, having enriched my quality of life. SWB2. My satisfaction with life, in general, was increased shortly after the trip. SWB3.Although I always have my ups and downs, in general, I felt good about my life shortly after the city break trip. SWB4. Overall, I felt happy upon my return from my trip.	Sirgy et al., 2011

3.9 Study setting

English is considered the international business language. Be that as it may, this research collected data not only in the UK but also in China, where English is not widely used or spoken (Zhang & Heung, 2002). Therefore, Chinese participants might not be able to understand the English version of the survey. Of course, this would cause serious issues in collecting data in China. Therefore, the questionnaire has been provided in both English and Chinese languages.

To ensure equivalence, back-translation techniques have been used in this study as suggested by Behr (2017). The questionnaire was originally created in English and then translated into Chinese. By using back-translation techniques, the Chinese version of the survey is then translated back into English. Both versions of the questionnaires have been proofread by native speakers in the UK and China. During the back-translation process, no problems in translation were found. The whole process of translation involved the researcher, who is Chinese and a translator who has extensive experience in developing questionnaires in Chinese and has an excellent command of English. The questionnaire was pilot tested to ensure the final version of the questionnaire had been thoroughly checked before its distribution.

3.10 Pilot Testing

The main aim of a pilot test is to complement and improve the questionnaire. A pilot test helps make sure that participants understand the questions in their intended way and can answer the questions appropriately, thus providing a high level of content validity (Bryman, 2015). In addition, the pilot test in this study is also used to evaluate the suitability of the measurement items and to highlight any irrelevant items in the questionnaire that should be deleted. Previous scholars suggest that it is important to find out any potential errors or confusing questions in a survey before the process of real data collection occurs (Saunder et al., 2016). If participants identify any measurement items as not clear or misinterpreted, then those items must be deleted or modified. Indeed, Van Teijlingen & Hudley (2002) have suggested that researchers should conduct a pilot test before the main survey for the following reasons:

- It helps to develop and to evaluate the research tools' suitability.
- It aids in determining whether or not a full-scale study is feasible.
- It can figure out how well the sampling frame and method work.
- It can identify any logistical problems that could occur when the proposed methods are used.
- It assists in predicting the resulting variables, which ultimately determine the size of the sample.
- It assists in determining the resources (i.e., financial and staff-related resources) which will be needed for the planned study.
- It can help to evaluate techniques that will be used in the proposed data analysis process to eliminate any possible issues.
- It helps in creating the research questions and plan.
- It educates the researcher on various factors pertaining to the research procedures.

Following the suggestions of Teijlingen & Hudley (2002), a pilot study was conducted. The data for the pilot study was collected between 20th August and 1st Sep 2020. A draft of the questionnaire was first pre-tested by two independent researchers at the University of Bristol to address any issues of readability, clarity, and layout of the questionnaire. Once confirmed, 193 responses were collected that including 182 valid surveys, 98 from the UK and

97 in China. Next, Qualtrics was used for the online posting; this is a professional online survey tool used by various quantitative researchers (Qualtrics, 2022). As mentioned earlier, every participant had at least one city break experience during the previous year.

Since the data was collected in the UK and China, the survey is available in both Chinese and English versions. Participants in the pilot study were not only required to complete the survey, but also were required to provide feedback about the wording, question consistency, the design of the survey, the clarity of questions and any other beneficial feedback. Based on constructive feedback and comments from respondents, ambiguous and confused questions are reworded, and a new version of the questionnaire will be used for the main survey data collection.

Participant feedback regarding the questions has been summarised in Table 3-5. The questionnaire was revised for the final version in light of these valuable suggestions and comments. For instance, the definition of city break has been provided in the cover letter and makes it clear that the questionnaire asks about the last city break experience within the previous 12 months. Regarding question 11, one of the participants suggested that there are different popular mobile applications in different countries. This issue has been considered in the main survey design to improve the quality of the questionnaire, and a few more popular applications have been added to the answer list. Lastly, the structure of the questionnaire has been changed according to additional valuable feedback. The demographic information had been originally collected at the beginning of the survey in the pilot test. Since this survey takes about 10-15 mins to complete, the questions related to demographic information have been moved to the final section of the questionnaire to make sure the respondents can give their full attention to the main measurement items.

Moreover, it is essential for further model testing to gauge the reliability of the survey measurement items. Cronbach's α coefficient method has been used because it is the most popular technique to measure data reliability (Bryman, 2015).

Table 3-5. Pilot Survey Feedback

Questions	**Feedback**	**Suggestions for the final survey**
Q9: How did you get to your city break destination? Q10: How long did it take to get to your city break destination?	Not very clear if it refers to the average trip or the last trip.	Make it clear that we are asking about the last city break experience in the last 12 months.

Q11: What kind of Mobile applications did you usually use to plan your trip?	There are different popular apps in different countries Different apps are used in different travel stages.	Add more apps for Chinese users like Baidu Maps. Add two more questions to ask about mobile application usage on the trip and after the trip.
	Some of the respondents are not sure what a 'city break' is.	Explain more about city breaks at the beginning, (a trip to one city, a short-term trip（1-3days), or a trip for leisure purposes only).

3.11 Data Collection

The data collection process is the quintessential hallmark of a rigorous research project (Sulton & Austin, 2000); this is when opinions regarding the research topic from the targeted population are collected (Zikmund, 2003). There are several ways to carry out a survey, such as in-person interviews, phone interviews, online surveys, and questionnaires sent in the mail (Bryman, 2015). For selecting an appropriate data collection method, Fowler (2002) suggested that researchers should consider the type of research questions, the sample size, and the research objectives, as well as the cost of reaching participants in a timely fashion.

As mentioned in the previous section, an online survey has been chosen. This study has a large sample size comprised of tourists who took a city break in the UK and China. The participants were distributed across two large geographical areas which are far apart. Moreover, Thus, the online survey is ideal because a large sample size and different geographical areas allow the researcher to collect a considerable amount of data in an efficient, accurate, and minimally costly manner (Zikmund, 2003).

However, some scholars have noted the disadvantages of the online survey method. These include a lack of guidance for respondents, as well as a misunderstanding of survey questions. To avoid these issues, this study attaches a cover letter which has defined every professional term, such as ‘IoT’ and ‘city break.’ A pilot study, as already described, was performed to improve the questionnaire. These steps should ensure that respondents understand each question correctly and can respond appropriately. Moreover, to avoid incorrect questionnaire completion, the researcher has set up the online survey so that participants can't skip questions or avoid giving missing answers. In addition, a professional online survey marketing company, Qualtrics, was charged to help to recruit travellers with some experience with city breaks in the UK and China.

The main reasons for using Qualtric to collect data are: 1) it is a reliable survey tool that comes highly recommended by a number of educational institutions for academic research purposes and is fully compliant with UK data protection requirements; 2) it provides choices for several different languages (Qualtrics, 2018) thus permitting the creation of a survey in both Chinese and English; and, 3) travellers in China can easily access Qualtrics surveys and fill them out.

The sample for the study was acquired through a panel from Qualtrics. To ensure the respondents were suitable for this study, a screening question was included: How many times do you have city break trips in the last 12 months? Respondents who answered “no” were terminated from the main survey immediately while others proceeded to complete the main survey. A total of 2200 surveys were received between 10th September to 20th October 2020. Data quality control was instigated through data quality pledge statements, qualifying questions, and speed checks. There are 24 respondents who had zero standard deviation for their answers, indicating that they hit the same button for all scale questions. These respondents were excluded from the analysis. Moreover, we have removed 99 responses as the time they used to answer the survey was less than 8 mins, which is the minimum amount of time considered necessary to read and complete the survey. As a result, 2077 valid surveys were retained for further analysis.

3.12 Data Analysis

The data analysis process was conducted using many steps to ensure valid and reliable findings. Many statistical techniques were applied to validate the credibility of the results, including coefficient α, factor analysis, and structural equation modelling (SEM) analysis. Statistical Package for Social Science (SPSS) 26.0 software was used for data analysis. The reasons why we used SPSS for this study instead of other available statistical analysis tools are as follows. First, SPSS provides an effective way of managing and analysing data quickly. Secondly, SPSS offers a wide range of options and allows researchers to choose the appropriate statistical methods based on their specific needs (Kirkpatrick, 2015). Finally, and most importantly, this statistical package offers all the calculation functions which are required in this study, including descriptive and reliability analysis, correlation techniques, confirmatory factor analysis (CFA) and SEM. The data analysis process and techniques used in this study are briefly presented in Table 3-6 and detailed in the following sub-sections.

Table 3-6. Data Analysis Techniques and Purposes

Required analysis	**Purpose**	**Analysis techniques**	**Tools**	**Recommend value**	**References**
Non-Response Biasness	To make sure that the collected sample is the representation of the whole population	Paired sample t-test	SPSS 26.0		
Demographic and descriptive analysis	To investigate the respondents' backgrounds; To provide the summaries of the sample and the measures	Mean, standard deviation, frequency,	SPSS 26.0	N/A	N/A
		Skewness and kurtosis	SPSS 26.0	Value < ±2.58	Hair et al., 2006
Correlation analysis	To identify the relationship, patterns, significant connections, and trends between two variables or datasets	Pearson's correlation,	SPSS 26.0	<0.8	Hair et al., 2006
Reliability assessment	To evaluate the consistency of independent or comparable measures of the	Cronbach's α	SPSS 26.0	> 0.7	Bryman, 2006

	same object or group				
Exploratory Factor Analysis (EFA)	To confirm that the scale selected for the study is supported by the data	Kaiser-Mayer-Olkin (KMO)	SPSS 26.0	> 0.60	Kaiser, 1974
		Bartlett's test of sphericity	SPSS 26.0	> 0.3	Bartlett, 1954
		Communality	SPSS 26.0	> 0.5	Hair et al., 2006
		Variance/loading	SPSS 26.0	>0.4	Churchill, 1979
Confirmation factor analysis (CFA)	To evaluate the measurement model	Goodness-of-Fit indices	Amos 26.0		
		Convergent and Discriminant Validity	Amos 26.0		
Structural Equation Modelling (SEM)	To evaluate the structural model.	Goodness-of-Fit indices	Amos 26.0		
		β coefficient	Amos 26.0	P-value≤0.05 and t value ≥ 1.96	Hair et al., 2006
		R^2 of endogenous (dependent) latent variable	Amos 26.0	The R^2 value of 0.67, 0.33, 0.19 are substantial, moderate, and weak respectively	Chin, 1998

3.12.1 Non-Response Biasness

Researchers in the social sciences have found that non-response (or late-response) bias exists when non-responders in a sample vary significantly from responders (or early responders). This bias might result in a sample that does not fully represent the original target population. The non-response bias is typical in descriptive, analytic, and experimental research, and it has been shown to be an important concern in survey research (Armstrong & Overton, 1977; Churchill, 1979). Since an online survey is a primary tool to collect data in this research, it is thus necessary to assess the likelihood of non-response bias of the sample before conducting data analysis. As suggested by Armstrong & Overton (1977), the non-response biases in this study are evaluated using paired sample t-test to compute the difference between early and late responses. In this case, the first 50 responses are considered as early responses and the last 50 responses as late responses in order to run the paired sample t-test.

3.12.2 Descriptive analysis

As a frequently used analytical technique in quantitative research, descriptive analysis has been conducted in this thesis in order to offer values that are more meaningful for the variables and items that are being measured (Sidel, Bleibaum & Tao, 2018). Descriptive statistics is a technique for determining the features of a data set by delivering summaries of data samples (Bryman, 2016). Indeed, this approach is a type of univariate analysis that involves factors such as graphical presentation, tabulated frequencies, measures of central tendency (i.e., mean, median, and mode) and dispersion analysis (Bryman & Bell, 2018).

In this doctoral study, descriptive statistics for the demographic variables, such as gender, country, and age are analysed first in order to provide an overview of the sample's characteristics and distribution. Next, descriptive analysis of measurement items evaluates the average value of each measurement item and its standard deviation. Also, normal distributions for the indicators of latent factors in terms of skewness and Kurtosis are observed (i.e., less than 2 of the absolute value of univariate skewness, and less than 3 of the absolute value of univariate kurtosis).

3.12.3 Correlation analysis

Correlation analysis is one of the most common and reported statistical techniques to measure relationships and/ or associations between two variables. Typically presented in a matrix table, researchers can quickly examine the coefficients for these relationships (Robson, 2002). In the marketing literature, for instance, correlation coefficients have been widely used to analyse quantitative data collected through research survey methods to identify the relationship, patterns, significant connections, and trends between two variables or datasets.

Following Hair et al. (2006), this study conducts correlation analysis using the Pearson coefficient calculation in SPSS 26.0. The Pearson coefficient is a method for assessing the strength and direction of a linear relationship between two variables without making any assumptions about cause and effect. Pearson coefficients range from +1 to -1, where +1 means a positive relationship, -1 means a negative relationship, and 0 means there is no relationship. A threshold value of Pearson's r should not be exceeded 0.8 (Hair et al., 2006). This is because the multicollinearity issue should be considered when the correlation coefficient between two variables is higher than 0.8. This makes it difficult to ascertain the effect of any single independent variable as interrelationships might exist between variables.

3.12.4 Reliability assessment

After the correlation analysis of the data, the reliability of the instruments was assessed. Reliability analysis is a statistical evaluation of the consistency of independent or comparable measures of the same object or group (Churchill, 1999). A reliability analysis is especially important for social science research because it allows for the accuracy and consistency of measurements and eliminates bias (error free) as well as substantiates the quality of the research (Bryman, 2016). In social science research, a number of methods have been used in testing a scale’s reliability. One of the most popular techniques that have been applied by scholars to assess the data reliability is Cronbach alpha - known as coefficient alpha (α) (Bryman, 2015). The correlation coefficient (r) is the standard statistical measure of the average correlations between factors and their measures that define each factor (Field, 2000). As recommended by Bryman (2017), the value of a Cronbach's alpha should equal or be greater than 0.7 which is considered acceptable for further analysis. In this study, the Cronbach alpha coefficient measure is used to evaluate construct reliability, and 0.70 was set as the estimated threshold.

3.12.5 Exploratory factor analysis (EFA)

Exploratory factor analysis is performed in order to further examine the measurement items. According to Tabachnick & Fidell (2007), exploratory factor analysis (EFA) is a multivariate statistical approach that has emerged as a significant tool in social science research for the development and validation of a particular theory and its variables. It is also a useful statistical method to test the correlation of a relatively large number of variables using a quantitative method. It reduces these large number of variables into a smaller set of factors which is more manageable and understandable (Fabrigar et al., 1999). Latent variables, which cannot be observed directly, are also known as factors or constructs. The assessment of observable variables allows for intensive data analysis to clarify latent and other variables (Hair et al., 2006).

In the process of conducting exploratory factor analysis, this study seeks rational measurement items that can be differentiated from other items and can assess the correlation among the observable variables in the proposed model. This is a critical step as it ensures good quality and precision of the data set for the theories that underpin the research variables. Interestingly, some quantitative studies do not run an exploratory factor analysis test as the measurement items had been tested in previous literature. While the measurement items in this thesis have been established and validated in previous IS literature, exploratory factor analysis has still been performed in the process of data analysis. This is because the measurement items have been slightly modified in the context of city breaks. Thus, EFA has been conducted to validate the measurement items in the context of a city break.

An exploratory factor analysis using the maximum likelihood extraction method and varimax rotation has ensured that all items are loading on the appropriate constructs (Kline, 2005). The maximum likelihood extraction method has been incorporated into the design for three reasons. First, maximum likelihood estimation is one of the most dependable estimations methods in EFA (Hair et al., 2006). Second, this method generates parameter estimates (i.e., factor loadings and error variances) that are most likely to have resulted in the observed correlation matrix. Third, the maximum likelihood extraction method has a simple structure, which is crucial for enabling clear interpretations. Moreover, the varimax approach has been chosen because it too is the most frequently utilized variance maximising process and has solid generalizability and replicability power more than the oblique rotational method (Tabachnick & Fidell, 2007).

According to Field (2005), exploratory factor analysis ensures that each item used in each construct loads onto a single factor. This research inquiry uses the Kaiser-Myer-Olkin’s (KMO) Measure of Sampling Adequacy and Barlett's Test of Sphericity to measure the data set and evaluate whether factor analysis should be performed, as suggested by Field (2005). Researchers have discovered that KMO is one of the most reliable ways to determine whether data is suitable for factor analysis (Bryman et al., 2016). The KMO value should be more than 0.5 and a significance level for Bartlett's test should be less than 0.05 (Kaiser, 1974).

3.12.6 Confirmatory factor analysis (CFA)

Congruent with the writings of Hair et al. (2006), two main approaches have been included in the structural equation modelling (SEM) process: measurement model estimation and structural model validation. The measurement model estimation clarifies the pattern by which each measurement item loads on a particular factor (construct or variable) in the research model and ensures the reliability and validity of measures and constructs. Confirmatory factor analysis is most often performed for the measurement model estimation as indicated in social science and behaviour literature (Saunders et al., 2016).

In this thesis, confirmatory factor analysis (CFA) is the first step of the SEM process and has been used to validate the measurement model. According to Noar (2003), CFA is a multivariate statistical procedure used to verify the factor structure of a set of observed variables. As a powerful statistical technique, CFA allows the researchers to test the fit of the data to the specific, theory-derived measurement model. This means that the items load only onto the factors they are supposed to measure, therefore, CFA helps find any potential weakness of individual items (Suhr, 2006). In particular, researchers can identify the number of factors required in the data and which measured variable is related to which latent variable using CFA. Thus, CFA can be used as a tool to confirm or reject the theory about latent variables.

A number of statistical analyses are performed in CFA to evaluate how well a research model fits the data, including goodness-of-fit as well as convergent and discriminant validity. According to Hair et al. (2006), the goodness of fit refers to the extent to which the estimated model predicts the actual or observed input matrix (covariances or correlations). A good set of indices should include three measurable indices: absolute, incremental, and parsimonious. Absolute indices examine if a certain model leaves significant unexplained variation. These indices include Chi-square (X^2) accompanied by the model's degree of freedom, probability, the goodness of fit index (GFI), and the root mean square error of approximation (RMSEA) (Hair et al., 1998). The incremental fit index compares a certain model to a potential baseline or null model calculated with the same data. This set of indices includes the Tucker-Lewis index (TLI), comparative fit index (CFI), and incremental fit index (IFI). The Parsimonious Fit Index, also known as the adjusted measure, evaluates the extent to which the model measures both fit and parsimony while considering the degree of freedom that is employed in the model specification. The parsimonious indices include the adjusted goodness-of-fit index (AGFI) (Hair et al., 2006). The AGFI values are presented in Table 3-7.

Table 3-7. Goodness-of-Fit Indices

Model fit indices	Recommended criteria
X^2/df	<5
GFI	≥0.90 (the higher, the better)
AGFI	≥0.80 (the higher, the better)
IFI	≥0.90 (the higher, the better)
TLI	≥0.90 (the higher, the better)
CFI	≥0.90 (the higher, the better)
RMSEA	< 0.08

(Source: Hair et al., 2006)

3.12.6.1 Convergent and discriminant validity

Convergent and discriminant validity tests have been tested in most social science studies to ensure construct validity. Convergent validity means that different measures in a particular construct are supposed to share a high rate of variance in common (Hair et al., 2006). In other words, it can be explained as the extent to which there is a correlation among items of the same construct. According to Hair et al. (2006), factor loading, average variance extracted (AVE), and construct reliability (CR) prediction techniques can be used to estimate the convergent validity of every construct. For a high level of convergent validity, it is suggested that the model standardized loading measure must be 0.7 or higher, the value of AVE must exceed 0.5 and estimates for construct reliability must exceed 0.7 (Fornell & Lacker, 1981). Moreover, discriminant validity refers to the degree to which two conceptual constructs are different from each other (Hair et al., 2006). To confirm the discriminant validity, the procedures proposed by Fornell and Larcker (1981) have been applied in this study. In particular, the square root of the AVE was calculated in this thesis to check if the value is greater than the correlations between each pair of constructs, thus meeting the criterion suggested by Fornell and Larcker (1981).

3.12.7 Structural equation modelling (SEM): Factorial structure

Structural equation modelling (SEM), also known as causal modelling, involves a group of statistical techniques which helps to translate the underlying theories into data analysis (Tabachnik & Fidell, 2006). SEM not only facilitates researchers whenever attempting to model complex relationships between the independent and dependent variables, but also provides a flexible and comprehensive way to perform data analysis (Hair et al., 2006; Byrne, 2013). Cheng (2001) has shown that SEM is more effective than other analyse techniques (e,g, multiple regression) for management studies. Moreover, Byrne *et al*. (2011) have suggested that researchers should use SEM methods to perform analysis as it provides meaningful solutions in almost any situation. To date, in the consumer behaviour, tourism, and information system literature, SEM has been increasingly used to test measurement items and to validate the hypothesized path(s) in the research model (e.g., Gupa, Yousaf & Mishra, 2020; Wang *et al.*, 2021; Franque et al., 2022; Chi & Han, 2021; García-Milon *et al.*, 2021; Lin & Hsieh, 2022; Suess et al., 2018).

In the present research, CB-SEM is adopted to validate the hypotheses that have been established to explore the impact of the set of factors most pertinent to the guiding research model. The rationale behind the selection of the SEM techniques is as follows: 1) CB-SEM is the most widely applied SEM method (Hair et al., 2017), mentioned throughout recent literature with tourism contexts similar to this thesis (e.g., Franque et al., 2022; Chi, Cai & Li, 2017; García-Milon et al., 2021), information system (e.g., Gupa et al., 2021; Bawack & Ahmad, 2021; Tam & Oliveira, 2019) and marketing (e.g., Asharf et al., 2017; Ashraf et al., 2018; Diallo et al., 2018); 2) As mentioned in the previous section, a total sample of 2077 responses have been collected. This sample size is large enough to satisfy the requirements of CB-SEM as suggested by Hair et al. (2017); and 3) As discussed in Chapter 2, the task-technology fit theory and expectation confirmation model have been used to develop the research model. All of these theories are well-established in the information system literature. This thesis will confirm, disconfirm, or elaborate on these theories in the tourism literature in which case, the CB-SEM are highly suitable.

This study uses CB-SEM through the IBM SPSS AMOS 26.0 to validate the conceptual model. In recent years, IBM SPSS AMOS has been widely recognized by social science researchers as an extremely helpful SEM software (Dash & Paul, 2021; Babbie, Wagner & Zaino, 2022; Muijs, 2022). More importantly, compared with other statistical techniques, AMOS is able to develop an attitudinal and behavioural model which reflects complex relationships with precision (Ong & Puteh, 2017). In this thesis, travellers' subjective perceptions of the use of IoT are explored, so the selection of IBM SPSS AMOS is warranted.

According to Hair et al. (2006), the assessment of the structural model in CB-SEM focuses on model fit and path tests regarding the causal relations in the conceptual model. First, the same set of fitness indices with CFA is used, including chi-square (X^2), degree of freedom (Df), the goodness of fit index (GFI), the adjusted goodness of fit index (AGFI), the Tucker-Lewis Index (TLI), the incremental fit index (IFI) comparative fit index (CFI), and the root mean square error fit index (RMSEA) (Hair et al., 2010). In the next step, the path coefficients and significance are evaluated. Each path relationship proposed in the conceptual model is tested through regression weight and significance level. For the determination of a significant path coefficient, the probability value (P-value) should be less than 0.05 (Hair et al., 2006).

To assess the moderating effects of individualism and uncertainty avoidance, this research evaluated the interactive impact between each moderating variable and the hypothesised associations by using Amos 26.0 following Ping (1995). In particular, it was hypothesised that individualism and uncertainty avoidance would have moderating effects on the association between task-technology fit and subjective well-being, and the link between perceived value of travel experience and subjective well-being. To assess the likelihood of the moderating effects, task-technology fit and perceived value of travel experience were identified as predictors, individualism and uncertainty avoidance as moderators and were then multiplied to generate interaction constructs (task-technology fit × individualism; task-technology fit × uncertainty avoidance; perceived value of travel experience × individualism; perceived value of travel experience × uncertainty avoidance, respectively) to predict traveller subjective well-being.

Moreover, according to Chin (1998), R square (R^2) has been tested in this thesis. R^2 is a statistical measure that shows the proportion of the variation explained by an independent variable for a dependent variable. In social science research, Chin (1998) suggested the R^2 values of. 0.67, 0.33, and 0.19 in research models as substantial, moderate, and weak, respectively.

3.13 Ethical Considerations

In social and business science research, whenever research involves human subjects and/or human behaviour, then ethical issues are a preeminent concern (Zikmun, 2003). The absence of ethical consideration before or during data collection could result in a lack of cooperation or compliance from participants to the point that it could even prevent gathering the required quantity of data (Cavana, Delahaye & Sekaran, 2000). At a minimum, informed consent is a prerequisite for any type of study involving human subjects, with the exception of situations when a human-subjects review committee determines that obtaining such consent is either impossible or not valuable in relation to the potential benefits or risks of the research.

Several ethical considerations as suggested by Cavana, Delahaye & Sekaran (2000) should be taken into account by researchers to safeguard human rights. First, researchers must obtain full consent from the participants before collecting any data, and under no circumstances should any respondents be coerced into completing a survey. Second, researchers should ensure the protection of the privacy of respondents, both anonymity and confidentiality. Third, researchers should clearly explain the research purpose and the expected outcome of the study. Fourth, all aspects of anonymity need to be protected; researchers should avoid collecting any personal, sensitive, or identifying information unless absolutely necessary. The present study is in full compliance with the Data Protection Act (1998) as well as the university regulations in regard to these ethical issues. This doctoral project has been approved by the School Research Ethics Committee at the University of Bristol before data collection began on 18th August 2020.

In particular, several actions have been taken in relation to the ethical concerns prior to data collection: 1) By using Qualitric, a consent form must be agreed to before a participant proceeds to the survey, 2) A cover letter is also provided which explains the research aim and defines key terminology such as ‘IoT’, ‘city break’ to ensure participants understand the project and survey, 3) Respondents are informed that participation in the survey is voluntary and that they can withdraw at any time without consequences, 4) It is explicitly clear that any personal information is protected, remain confidential, and only used for the purpose of academic research, and 5) The participants are emphatically told that their information will not be utilised for marketing and/or sales purposes. A copy of the consent form with the questionnaire in two languages, English and Chinese, is provided in Appendix A and Appendix B respectively.

3.14 Conclusion

This chapter presented an overview of the research philosophy, research design, and research methods that are used in this research. A positivism paradigm is being applied and a critical discussion of other choices detailed in the chapter provided a rationale and justification.

This chapter also elaborated upon research methods, research approaches and research strategies that have been chosen for the research: a deductive approach, quantitative techniques, and a survey as the primary elements of the research strategy. The data analysis procedures and considerations of research ethics were also explained in this chapter which lay the foundation for the presentation and explanation of the data analysis in the next chapter.

CHAPTER 4 DATA ANALYSIS AND RESULTS

4.1 Introduction

The purpose of this chapter is to test the hypothesized research model. Section 4.2 presents the results of the pilot test that was used to verify the reliability of the constructs. Section 4.3 presents the data analysis of the main study, including the Non-Response Biasness, demographic analysis, descriptive statistics, correlation, and the reliability assessment of the instrument. Next, Section 4.4 conducts the exploratory factor analysis for the main constructs and cultural moderator construct in the research framework by using Statistical Package for the Social Sciences (SPSS) 26.0. Subsequently, Section 4.6 provides the Confirmatory Factor Analysis (CFA), including Goodness-of-Fit indices, Convergent Validity and Discriminant Validity using SPSS Amos (Analysis of Moment Structures) 26.0. Section 4.7 validates the research model using Structural Equation Modelling (SEM). The last section provides a summary of this chapter.

4.2 Pilot Study

The significance of a pilot study was emphasised in the previous chapter as a critical step in developing reliable instruments for achieving the study's intended aims. This section presents findings from the pilot study. As mentioned earlier, there were 193 surveys collected between 20th August 2020 and 1st September 2020, of which 182 were valid. It was confirmed that all participants had a city break experience in the UK or China in the 12 months before Covid-19. In order to firmly substantiate this point, many cross-referenced questions were included in the questionnaire. The pilot test discovered that respondents took an average of 15 to 20 minutes to complete the survey. There were slightly more male respondents (51.6% versus 48.4%) than female respondents. Importantly, the participants included in the pilot study were not asked to take part in the final study. This is due to the possibility that a respondent’s subsequent behaviour might be influenced by having taken part in the pilot study (Haralambos & Holborn, 2000).

Next, the instrument’s reliability was evaluated using the Cronbach coefficient approach. Cronbach's alpha (inter-item consistency reliability) was chosen because It is commonly accepted in the extant literature and relatively easy to calculate. As shown in Table 4-1, twelve constructs were measured, namely: task characteristics, technology characteristics, perceived privacy, task technology fit, confirmation, perceived usefulness, perceived enjoyment, the perceived value of travel experience, subjective well-being, individualism, and uncertainty avoidance. The results showed that the individual construct reliability ranges from 0.815 to 0.928 which is above the agreed threshold of 0.7 (Bryman, 2015). Thus, all the measurements were used for full-scale data collection.

Table 4-1. Pilot Study Reliability Analysis

Variable	**Reliability (α)**
Task Characteristics	0.928
Technology characteristics	0.815
Perceived privacy	0.878
Task-technology fit	0.845
Confirmation	0.823
Perceived usefulness	0.875
Perceived enjoyment	0.845
Perceived value of travel experience	0.844
Subjective well-being	0.911
Individualism	0.914
Uncertainty avoidance	0.926
Overall Reliability Cronbach's α	0.909

4.3 Main Study

Having adopted a positivist research philosophical paradigm, this study also employed a quantitative approach to validate the proposed framework. A large amount of data was gathered using a questionnaire administered to city break travellers in the UK and China between 10th September and 20th October 2020. This research study collected data through an online survey because of the COVID-19 pandemic restrictions (e.g., the need for social distancing). As mentioned, a useful survey tool, Qualtrics, was used to conduct an online survey; 2077 travellers were recruited who had at least one city break trip in the UK and China in the year preceding COVID-19 (For this sample S.E. = 2.09%). During the data collection phase, participant confidentiality and anonymity were guaranteed in an effort to minimise any social desirability and evaluation apprehension. Moreover, Harman's single-factor test was used to limit the risk of common method bias. According to Podsakoff et al. (2003), common-method bias did not seem to be an issue in this research, since the variance described in the factor analyses was not higher than 0.5.

4.3.1 Non-Response Biasness

During data collection, it is important to make sure that the collected sample is representative of the entire population (Saunders et al., 2016). The unanticipated rejection of responses might cut down the sample size and might lessen the effectiveness of the sample's representation of the entire population (Bryman, 2015). The bias of the collected data can occur when the sample does not fully represent the whole population. Social science researchers have found that non-response bias frequently appears in survey studies, where responders are systematically different from non-responders (Armstrong & Overton, 1977; Churchill, 1999). In this study, an effective response rate allowed a low level of non-response bias (Weiss & Heide, 1993).

Nonetheless, the probability of any potential non-response biases in this study was evaluated by using paired sample t-test to compute the difference between early and late responses (See Table 4-2) (Armstrong & Overton, 1977). In particular, this study took the first 50 responses as early responses and the last 50 responses as late responses to run the paired sample t-test. As shown in Table 4-2, the results revealed no significant difference between the early response and the late response. Since the significance level of all constructs in this research was greater than 0.05, it can be stated that non-response bias was not an issue in this doctoral research study.

Table 4-2. Paired Sample t-test Observing Non-response Biasness

Paired Samples Test									
		Paired Differences							
					95% Confidence Interval of the Difference				
		Mean	Std. Deviation	Std. Error Mean	Lower	Upper	t	df	Sig. (2-tailed)
Pair 1	TAC_E - TAC_L	-.31000	1.91700	.27111	-.85481	.23481	-1.143	49	.258
Pair 2	TECH_E - TECH_L	-.38000	2.07130	.29293	-.96866	.20866	-1.297	49	.201
Pair 3	IDC_E - IDC_L	-.36667	1.83596	.25964	-.88844	.15511	-1.412	49	.164
Pair 4	PP_E - PP_L	-.33000	2.07717	.29376	-.92032	.26032	-1.123	49	.267
Pair 5	TTF_E - TTF_L	-.41000	1.70291	.24083	-.89396	.07396	-1.702	49	.095
Pair 6	CON_E - CON_L	-.36667	1.89192	.26756	-.90434	.17101	-1.370	49	.177
Pair 7	PE_E - PE_L	-.38667	1.81997	.25738	-.90390	.13056	-1.502	49	.139
Pair 8	PU_E - PU_L	-.32667	1.90415	.26929	-.86782	.21449	-1.213	49	.231
Pair 9	PVTE_E - PVTE_L	-.38667	1.77583	.25114	-.89135	.11802	-1.540	49	.130
Pair 10	SWB_E - SWB_L	-.00500	.17121	.02421	-.05366	.04366	-.207	49	.837
Pair 11	IDV_E - IDV_L	-.25333	1.49308	.21115	-.67766	.17100	-1.200	49	.236
Pair 12	UA_E - UA_L	-.29600	1.37454	.19439	-.68664	.09464	-1.523	49	.134

Note: TAC = task characteristics; TECH = technology characteristics; IDC = individual characteristics; PP = perceived privacy; TTF = task-technology fit; CON= confirmation of expectation; PE = perceived enjoyment; PU= perceived usefulness; PVTE = perceived value of travel experience; SWB = subjective well-being; IDV = individualism; UA = uncertainty avoidance

4.3.2 Sample profile

The respondent characteristics are shown in Table 4-3. Female travellers (53.4%) marginally outnumbered male travellers (46.6%). Ages 18-25 (26.9%) and 26-35 (54.5%) accounted for the biggest portion of the sample. In all, 81.7% hold a bachelor’s degree or higher, while 15.7% of respondents were diploma holders. Moreover, the results showed that the majority of respondents (55.9%) had 2-3 city break experiences per year before COVID-19, and 47.4% had 2-3 city break experiences over the last five years. The common uses of mobile apps for short vacations were identified as: Google Maps/City Maps/Baidu Maps (17.2%), PayPal/Alipay (14.1%), Uber/DIDI (12.9%), Booking.com/Ctrip/ Qunar (10.8), Weather (10.2%), Airbnb/Tujia (9.2%), Trip advisor/ Tuniu /RED (9.7%), and WeChat/Facebook/Instagram (8.3%).

Table 4-3. Respondent Demographic Profile

		Frequency	Percentage（%）
Country of residence	UK	1008	48.5
	China	1069	51.5
Gender	Male	967	46.6
	Female	1110	53.4
Education	Less than high school	11	.5
	High school	43	2.1
	Associate degree in college	326	15.7
	Bachelor's degree	889	42.8
	Master's degree or above	808	38.9
Age	18-25	558	26.9
	26-35	1131	54.5
	36-45	264	12.7
	46-55	121	5.8
	56 above	3	.1
Short vacation frequency in the last year	1	242	11.7
	2-3	1162	55.9
	4-5	385	18.5
	More than 5	288	13.9
Short vacation frequency in the last five year	1	97	4.7
	2-3	984	47.4
	4-5	610	29.4
	More than 5	386	18.6

IoT-based mobile apps used for short vacations	Booking.com / Ctrip/ Qunar	749	10.8
	Google Maps/City Maps/ Baidu Maps	1190	17.2
	Trip advisor/ Tuniu /RED	672	9.7
	Airbnb/Tujia	640	9.2
	Uber/DiDi	896	12.9
	PayPal/Alipay	976	14.1
	Skyscanner/Ly.com	525	7.6
	Weather	705	10.2
	WeChat/Facebook/Instagram	575	8.3
	Others	6	0.1

4.3.3 Descriptive Statistics

The constructs measured in this study were task characteristics (TAC), technology characteristics (TECH), individual characteristics (IDC), task-technology fit (TTF), perceived privacy (PP), confirmation of expectation (CON), perceived usefulness (PU), perceived enjoyment (PE), perceived value of travel experience (PVTE), subjective well-being (SWB), individualism (IDV), and uncertainty avoidance (UA). All of the constructs were evaluated using a multiple-item, fully-anchored, seven-point Likert scale, with scores ranging from "1" for "strongly disagree" to "7" for "strongly agree." As reported in Table 4-4, the average value of each measurement item was higher than the neutral point, which illustrates that most of the respondents agreed with the items (Atzori et al., 2010). Furthermore, following the univariate normality criterion suggested by Costello & Osborne (2005), normal distributions for our latent factor indicators were observed in terms of the value of skewness and Kurtosis (i.e., less than two of the absolute value of univariate skewness, less than three of the absolute value of univariate kurtosis).

Table 4-4. Descriptive Statistics

Construct		N	Minimum	Maximum	Mean	Std. Deviation	Skewness	Kurtosis	Corrected Item-to-Total Correlation	Cronbach's α	No of Items
Task characteristics	TAC1	2077	1	7	5.74	.971	-.891	1.417	.780	.902	4
	TAC2	2077	1	7	5.78	1.001	-.799	.966	.769		
	TAC3	2077	1	7	5.74	.983	-.757	1.087	.780		
	TAC4	2077	1	7	5.79	.975	-.845	1.243	.790		
Technology characteristics	TECH1	2077	1	7	5.66	1.078	-.575	.086	.952	.922	3
	TECH2	2077	1	7	5.58	1.076	-.408	-.102	.819		
	TECH3	2077	1	7	5.63	1.059	-.526	.128	852		
Task-technology fit	TTF1	2077	1	7	5.75	.926	-.969	1.918	.840	0.926	4
	TTF2	2077	1	7	5.79	.952	-.904	1.535	.834		
	TTF3	2077	1	7	5.71	.946	-.773	1.315	.811		
	TTF4	2077	1	7	5.72	.978	-.763	1.067	.823		
Individual	IDC1	2077	1	7	5.73	1.090	-1.158	1.831	.801	0.887	3

characteristics	IDC2	2077	1	7	5.73	1.134	-1.019	1.216	.739		
	IDC3	2077	1	7	5.71	1.110	-1.057	1.483	.739		
Perceived privacy	PP1	2077	1	7	4.99	1.564	-.757	-.468	.831	0.949	6
	PP2	2077	1	7	5.14	1.661	-.872	-.134	.875		
	PP3	2077	1	7	5.15	1.628	-.858	-.115	.851		
	PP4	2077	1	7	5.22	1.503	-.943	.219	.811		
	PP5	2077	1	7	5.25	1.583	-.981	.191	.849		
	PP6	2077	1	7	5.20	1.608	-.952	.127	.834		
Confirmation	CON1	2077	1	7	5.74	.885	-.853	1.995	.877	0.939	3
	CON2	2077	1	7	5.75	.897	-.766	1.724	.855		
	CON3	2077	1	7	5.77	.883	-.856	1.968	.890		
Perceived enjoyment	PE1	2077	1	7	5.82	.919	-.880	1.583	.859	0.916	3
	PE2	2077	1	7	5.83	.909	-.919	1.846	.847		
	PE3	2077	1	7	5.76	.891	-.826	1.766	.785		
Perceived usefulness	PU1	2077	1	7	5.82	.925	-.992	1.988	.859	0.927	3
	PU2	2077	1	7	5.78	.936	-.869	1.598	.837		
	PU3	2077	1	7	5.78	.924	-.923	1.810	.855		

Perceived value of travel experience	PVTE1	2077	1	7	5.77	.928	-.888	1.585	.860	0.933	3
	PVTE2	2077	1	7	5.69	.910	-.779	1.618	.856		
	PVTE3	2077	1	7	5.73	.898	-.939	1.999	.869		
Subjective well-being	SWB1	2077	1	7	5.64	.874	-.738	1.579	.812	0.914	4
	SWB2	2077	1	7	5.68	.887	-.830	1.906	.802		
	SWB3	2077	1	7	5.69	.887	-.848	1.998	.799		
	SWB4	2077	1	7	5.68	.873	-.789	1.849	.802		
Individualism	IDV1	2077	1	7	5.45	1.001	-.737	.949	.839	0.914	3
	IDV2	2077	1	7	5.37	1.008	-.551	.705	.796		
	IDV3	2077	1	7	5.49	1.001	-.720	.849	.843		
Uncertainty avoidance	UA1	2077	1	7	5.41	1.046	-.585	.410	.807	0.926	5
	UA2	2077	1	7	5.38	1.063	-.574	.426	.810		
	UA3	2077	1	7	5.34	1.179	-.935	.736	.815		
	UA4	2077	1	7	5.23	1.211	-.684	.392	.832		
	UA5	2077	1	7	5.06	1.291	-.686	.259	.760		

Note: TAC = task characteristics; TECH = technology characteristics; IDC = individual characteristics; PP = perceived privacy; TTF = task-technology fit; CON= confirmation of expectation; PE = perceived enjoyment; PU= perceived usefulness; PVTE = perceived value of travel experience; SWB = subjective well-being; IDV = individualism; UA = uncertainty avoidance.

4.3.4 Correlation analysis

Basic correlation analysis measures the degree of the relationship between variables as well as multicollinearity between the independent variables (Hair et al., 2006). A Pearson correlation analysis was conducted in this study to identify the association between the variables in the research framework. According to Akoglu (2018), the correlation coefficient value (r) should not be more than 0.8, which might produce less reliable probabilities in terms of the effect of independent variables in a research model. Table 4-5 provides the correlation matrix with Pearson's r along with the affiliated test outcomes for significance. It shows proof of the linear relationship between the variables found in this research.

4.3.5 Reliability assessment

Cronbach's alpha is the most common method used by academic researchers to measure the reliability of data (Saunders et al., 2016). As suggested by Bryman (2015), a Cronbach alpha of 0.7 or above can be regarded as suitable for further investigation. In addition, the corrected item-to-total correlations were used to define how an item is related to the overall score for the other item, which allowed for item modifications. The acceptable threshold for corrected item-to-total correlations is 0.30 (Nunnally & Bernstein, 1994). As shown in Table 4-4, the Cronbach alpha value of all the variables in this thesis was well above the accepted standard of 0.7. Also, all the values of item-to-total correlation were much higher than 0.7. Thus, the first assessment of reliability showed that all variables had satisfactory reliability. For any further data analysis, this was necessary.

Table 4-5. Correlations

		TAC	TECH	TTF	IDC	PP	CON	PE	PU	PVTE	IDV	UA	SWB
TAC	Pearson Correlation	1											
TECH	Pearson Correlation	.175**	1										
TTF	Pearson Correlation	.418**	.546**	1									
IDC	Pearson Correlation	.287**	.367**	.484**	1								
PP	Pearson Correlation	.130**	.190**	.244**	.164**	1							
CON	Pearson Correlation	.334**	.364**	.600**	.402**	.164**	1						
PE	Pearson Correlation	.328**	.347**	.558**	.380**	.184**	.558**	1					
PU	Pearson Correlation	.334**	.370**	.580**	.383**	.198**	.584**	.524**	1				
PVTE	Pearson Correlation	.335**	.332**	.540**	.383**	.203**	.540**	.607**	.510**	1			
IDV	Pearson Correlation	.215**	.205**	.287**	.226**	.110**	.272**	.316**	.273**	.388**	1		
UA	Pearson Correlation	.239**	.150**	.267**	.194**	.116**	.270**	.297**	.257**	.332**	.312**	1	
SWB	Pearson Correlation	.318**	.281**	.495**	.371**	.170**	.513**	.614**	.474**	.644**	.446**	.373**	1

Note: TAC = task characteristics; TECH = technology characteristics; IDC = individual characteristic; PP = perceived privacy; TTF = task-technology fit; CON= confirmation of expectation; PE = perceived enjoyment; PU= perceived usefulness; PVTE = perceived value of travel experience; SWB = subjective well-being; IDV = individualism; UA = uncertainty avoidance

4.4 Exploratory Factor Analysis (EFA)

Exploratory factor analysis was used to evaluate the dimensions of the questionnaire and to confirm that all items were loaded on the appropriate constructs (Kline, 2005). This study used exploratory factor analysis with maximum likelihood and varimax rotation method to assess whether items loaded on the relevant variable and to discover any significant cross-loadings (Costello & Osborne. 2005). In particular, Kaiser-Myer-Oklin's (KMO) Measure of Sampling Adequacy and Barlett's Test of Sphericity were utilized to examine the sample's suitability for factor analysis (Field, 2005). KMO is regarded as one of the best methods for determining whether data are suitable for factor analysis (Field, 2005). The KMO value should be more than 0.5 and a significance level for Bartlett's test should be less than 0.05 (Kaiser, 1974). As shown in Table 4-6, the outcomes of this study indicated a KMO value of 0.940 and Bartlett's test value of ($p< 0.05$). These results satisfied the initial assumptions for the EFA and confirmed the suitability of the data for factor analysis.

Table 4-6. KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.942
Bartlett's Test of Sphericity	Approx. Chi-Square	79452.963
	df	946
	Sig.	.000

The next step was to figure out the number of extracted factors by using the eigenvalues method. Furthermore, exploratory factor loading was examined using maximum likelihood estimation and varimax rotation. Following Hair et al. (2006), factor loadings less than 0.4 were suppressed in order to highlight the most significant correlations. Communalities for all the items were examined using maximum likelihood extraction. Table 4-7 displays the total variation explained by each factor. Only factors with an eigenvalue >1 were considered significant, and the remaining were considered as irrelevant. (Tabachnick & Fidell, 2007). Using the eigenvalues methods, the results revealed that twelve factors with a total of 1.0 eigenvalues were produced from the forty-four items, accounting for 82.64% of the variance, as shown in Table 4-7.

Table 4-7. Total Variance Explained

Factor	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	14.684	33.374	33.374	14.380	32.682	32.682	4.669	10.612	10.612
2	4.386	9.968	43.342	4.135	9.398	42.080	3.830	8.704	19.317
3	3.436	7.808	51.150	3.087	7.017	49.097	3.116	7.081	26.398
4	2.472	5.617	56.767	1.939	4.407	53.505	3.078	6.995	33.393
5	2.301	5.230	61.997	2.073	4.712	58.216	2.638	5.995	39.387
6	1.940	4.409	66.405	2.017	4.583	62.800	2.531	5.752	45.139
7	1.595	3.624	70.029	1.255	2.851	65.651	2.447	5.562	50.701
8	1.435	3.262	73.292	1.172	2.663	68.315	2.416	5.492	56.193
9	1.098	2.496	75.788	1.129	2.565	70.880	2.396	5.445	61.638
10	1.012	2.299	78.087	0.819	1.861	72.741	2.356	5.354	66.993
11	1.004	2.281	80.368	0.805	1.829	74.570	2.104	4.782	71.774
12	1.000	2.273	82.641	0.818	1.859	76.429	2.048	4.654	76.429
13	0.426	0.968	83.609						
14	0.357	0.812	84.421						
15	0.344	0.781	85.202						

The twelve extracted factors are indicated in Table 4-8. Factor 1 consisted of six items of perceived privacy; factor 2 consisted of five items of uncertainty avoidance; factor 3 consisted of four items of subjective well-being; factor 4 consisted of four items of task characteristics; factor 5 consisted of three items of technology characteristics; factor 6 consisted of four items of task technology fit; factor 7 consisted of three items of individualism; factor 8 consisted of three items of perceived usefulness; factor 9 consisted of three items of confirmation of expectation; factor 10 consisted of three items of personal traits; factor 11 consisted of three items of perceived enjoyment; factor 12 consisted of three items of perceived value of travel experience. Furthermore, according to Hair et al. (2006), all factor loading values should be 0.7 or higher. As detailed in Table 4-8, all factors in the study loaded above 0.7, and there were no cross-loadings in any items that were greater than 0.4. Communalities show how much variation in each variable is taken into account. Table 4-9 revealed that the communalities for all items in this study were greater than the acceptable value of 0.5 as suggested by Kaiser (1974). Consequently, these results supported the decision that the data collected by the study was suitable for further analysis.

Table 4-8. Exploratory Factor Loading

Factors												
	1	2	3	4	5	6	7	8	9	10	11	12
PP2	0.900											
PP3	0.871											
PP5	0.862											
PP1	0.852											
PP6	0.850											
PP4	0.822											
UA4		0.841										
UA3		0.833										
UA2		0.817										
UA1		0.814										
UA5		0.783										
SWB4			0.731									
SWB1			0.726									
SWB2			0.719									
SWB3			0.703									
TAC4				0.809								
TAC1				0.798								
TAC3				0.797								
TAC2				0.784								
TECH1					0.854							
TECH3					0.850							
TECH2					0.792							
TTF4						0.682						
TTF2						0.682						
TTF3						0.670						
TTF1						0.662						
IDV3							0.862					
IDV1							0.847					
IDV2							0.781					
PU3								0.782				
PU1								0.778				
PU2								0.740				
CON3									0.796			
CON1									0.763			
CON2									0.731			
IDC3										0.822		
IDC1										0.810		
IDC2										0.713		
PE1											0.763	
PE2											0.738	
PE3											0.631	
PVTE3												0.720
PVTE2												0.715
PVTE1												0.709

Note: TAC = task characteristics; TECH = technology characteristics; IDC = individual characteristics; PP = perceived privacy; TTF = task-technology fit; CON= confirmation of expectation; PE = perceived enjoyment; PU= perceived usefulness; PVTE = perceived value of travel experience; SWB = subjective well-being; IDV = individualism; UA = uncertainty avoidance. Factor loadings below 0.4 were suppressed to highlight the most important relationships.

Table 4-9. Communalities

	Initial	Extraction
TAC1	.622	.699
TAC2	.604	.678
TAC3	.624	.699
TAC4	.635	.718
TECH1	.741	.829
TECH2	.694	.749
TECH3	.742	.828
TTF1	.744	.781
TTF2	.724	.776
TTF3	.689	.732
TTF4	.699	.752
IDC1	.675	.784
IDC2	.569	.628
IDC3	.661	.778
PP1	.716	.745
PP2	.780	.822
PP3	.733	.772
PP4	.669	.699
PP5	.729	.763
PP6	.712	.743
CON1	.797	.847
CON2	.754	.789
CON3	.809	.883
PE1	.774	.868
PE2	.753	.822
PE3	.651	.677
PU1	.759	.831
PU2	.722	.776
PU3	.747	.824
PVTE1	.766	.823
PVTE2	.754	.810
PVTE3	.776	.840
SWB1	.687	.743

SWB2	.675	.729
SWB3	.669	.720
SWB4	.658	.725
IDV1	.726	.814
IDV2	.645	.705
IDV3	.728	.828
UA1	.701	.740
UA2	.694	.739
UA3	.679	.737
UA4	.708	.747
UA5	.622	.636

Extraction Method: Maximum Likelihood.

*Note***:** *TAC = task characteristics; TECH = technology characteristics; IDC = individual characteristics; PP = perceived privacy; TTF = task-technology fit; CON= confirmation of expectation; PE = perceived enjoyment; PU= perceived usefulness; PVTE = perceived value of travel experience; SWB = subjective well-being; IDV = individualism; UA = uncertainty avoidance.*

4.5 Confirmatory Factor Analysis (CFA)

The measurement model was analysed with confirmatory factor analysis (CFA). Hair et al. (2006) suggested two steps for conducting a confirmation factory analysis. The first one is using goodness-of-fit indices, the second one is determining the construct validity, consisting of discriminant and convergent validity.

4.5.1 Goodness-of-Fit Indices

Based on the suggestions of Hair et al. (2010), seven criteria were used to examine the overall measurement model fit, including chi-square (X^2), the degree of freedom (*df*), the goodness of fit index (GFI), adjusted goodness of fit index (AGFI), Tucker-Lewis Index (TLI), incremental fit index (IFI), comparative fit index (CFI), and root mean square error fit index (RMSEA). Table 4-10 summarizes the findings of CFA; a satisfactory fit of the measurement model was determined. The Chi-square value was 1946 with 836 degrees of freedom, which showed that the model was acceptable (Gaskin & Jim, 2016). The value of RMSEA was 0.025, which satisfied the accepted threshold of 0.08 or less. The GFI, AGFI, IFI, TLI, and CFI values were 0.957, 0.949, 0.986, 0.984, and 0.986, respectively, and all were within acceptable limits (Hair et al., 2006). Thus, the measurement model was confirmed.

Table 4-10. CFA Model Estimates

Model fit indices	Recommended criteria	Default model
Chi-square	N/A	1946
Degree of freedom	N/A	836
X^2/df	<5	2.328
GFI	≥0.90 (the higher the better)	0.957
AGFI	≥0.80 (the higher the better)	0.949
IFI	≥0.90 (the higher the better)	0.986
TLI	≥0.90 (the higher the better)	0.984
CFI	≥0.90 (the higher the better)	0.986
RMSEA	< 0.08	0.025

Note: χ2/df: chi-square divided by the degrees of freedom; GFI: The goodness of fit index; AGFI: adjusted goodness of fit index; IFI: Incremental Fit Index; TLI: Tucker–Lewis index; CFI: comparative fit index; RMSEA: The root mean square error of approximation

4.5.2 Convergent and discriminant validity

Construct validity is the degree to which the assessment of the constructs is an accurate representation of the concept of interest (Zikmund, 2003). The most extensively acknowledged types of construct validity are discriminant and convergent validity (Hair, 2006), which were used in the current study. Detailed information on each type is summarised in the following sections.

4.5.2.1 Convergent validity

In this study, convergent validity was tested and examined by factor loadings, composite reliability (CR), and average variance extracted (AVE). In line with Bagozzi and Yi (1998), the value of AVE should be higher than 0.5 and the value of CR should be higher than 0.7. Also, factor loading for all indicators should have a standardised regression weight of higher than 0.5. As shown in Table 4-11, the AVE of all the latent constructs in this study exceeded the minimum criterion of 0.5, and the value of CR of latent constructs exceeded 0.8. The results in Table 4-11 also demonstrated that all the factor loadings were greater than 0.7, which is appropriate to proceed with further analysis (Chin, 1998). Thus, it can be concluded that the measurement model had a high level of convergent validity.

Table 4-11. Convergent Validity

Construct	**Items**	**Factor loading**	**CR**	**AVE**
Task characteristics (TAC)	TAC1	.836	0.902	0.696
	TAC2	.820		
	TAC3	.835		
	TAC4	.847		
Technology characteristics (TECH)	TECH1	.906	0.922	0.798
	TECH2	.866		
	TECH3	.908		
Task-technology fit (TTF)	TTF1	.890	0.926	0.757
	TTF2	.878		
	TTF3	.850		
	TTF4	.863		
Personal traits	PT1	.887	0.889	0.727
	PT2	.794		
	PT3	.875		
Perceived privacy	PP1	.861	0.949	0.755
	PP2	.904		
	PP3	.877		
	PP4	.836		
	PP5	.874		
	PP6	.861		
Confirmation (CON)	CON1	.922	0.940	0.839
	CON2	.890		
	CON3	.934		
Perceived enjoyment (PE)	PE1	.925	0.917	0.787
	PE2	.907		
	PE3	.828		
Perceived usefulness (PU)	PU1	.912	0.927	0.809
	PU2	.883		
	PU3	.904		
Perceived value of travel experience (PVTE)	PVTE1	.906	0.933	0.823
	PVTE2	.897		
	PVTE3	.918		

Subjective well-being (SWB)	SWB1	.864	0.914	0.727
	SWB2	.853		
	SWB3	.850		
	SWB4	.843		
Individualism (IDV)	IDV1	.903	0.914	0.781
	IDV2	.841		
	IDV3	.905		
Uncertainty avoidance (UA)	UA1	.862	0.926	0.715
	UA2	.863		
	UA3	.857		
	UA4	.857		
	UA4	.785		

4.5.2.2 Discriminant Validity

Discriminant validity refers to the extent to which a construct can be distinguished from other constructs included in the proposed model. It can be evaluated by comparing the AVE for any two constructs with the square of correlation estimate for these two constructs (Fornell & Larcker, 1981). Discriminant validity is considered significant when the average variance extracted is higher than the squared correlation estimates for the variables (Voorhees et al., 2016). The diagonal elements must be larger than corresponding off-diagonal elements to enable an adequate determination of discriminant validity. The outcomes shown in Table 4-12 indicated that the square root of each construct AVE exceeded the construct's correlation to other latent variables. Hence, all latent variables of the model had a significant level of discriminant validity.

Table 4-12. Discriminant Validity

	TAC	TECH	TTF	IDC	PP	CON	PE	PU	PVTE	IDV	UA	SWB
TAC	0.835											
TECH	0.190***	0.893										
TTF	0.459***	0.586***	0.87									
IDC	0.321***	0.402***	0.527***	0.853								
PP	0.140***	0.202***	0.259***	0.178***	0.869							
CON	0.361***	0.391***	0.642***	0.436***	0.172***	0.916						
PE	0.356***	0.368***	0.599***	0.417***	0.193***	0.593***	0.887					
PU	0.365***	0.396***	0.626***	0.418***	0.208***	0.625***	0.563***	0.9				
PVTE	0.364***	0.355***	0.582***	0.419***	0.213***	0.574***	0.653***	0.548***	0.907			
IDV	0.235***	0.220***	0.309***	0.248***	0.117***	0.290***	0.340***	0.292***	0.419***	0.884		
UA	0.264***	0.168***	0.297***	0.218***	0.126***	0.292***	0.331***	0.283***	0.367***	0.339***	0.845	
SWB	0.350***	0.303***	0.539***	0.411***	0.181***	0.550***	0.665***	0.514***	0.699***	0.487***	0.416***	0.853

Note: TAC = task characteristics; TECH = technology characteristics; IDC = individual characteristics; PP = perceived privacy; TTF = task-technology fit; CON= confirmation of expectation; PE = perceived enjoyment; PU= perceived usefulness; PVTE = perceived value of travel experience; SWB = subjective well-being; IDV = individualism; UA = uncertainty avoidance.

4.6 Structural Model and Hypothesis Testing

Next, structural equation modelling (SEM) was utilized to test the structural model using Amos 26.0. First, a similar set of fitness indices were used to validate the structural model. As illustrated in Table 4-13, the results indicated that all the values illustrated a good fit for the structural model. X^2/df had achieved an acceptable value of 2.781. The results for GFI, AGFI, IFI, TLI, CFI were 0.957, 0.951, 0.984, 0.983, 0.984, respectively. The value of RMSEA was 0.029 which met the acceptable threshold of 0.08 or below. These model fit outputs for the measurement model revealed that the collected data was in line with the theory-driven model. Therefore, the path coefficients of the structural model could be further examined.

Table 4-13. Model Fit Indices for Structural Model

Model fit indices	Recommended criteria	Default model
Chi-square	N/A	3072.66
Degree of freedom	N/A	1031
χ^2/df	<5	2.980
GFI	≥0.90 (the higher the better)	0.944
AGFI	≥0.80 (the higher the better)	0.937
IFI	≥0.90 (the higher the better)	0.977
TLI	≥0.90 (the higher the better)	0.975
CFI	≥0.90 (the higher the better)	0.977
RMSEA	< 0.08	0.031

Note: χ2/df: chi-square divided by the degrees of freedom; GFI: The goodness of fit index; AGFI: adjusted goodness of fit index; IFI: Incremental Fit Index; TLI: Tucker–Lewis index; CFI: comparative fit index; RMSEA: The root mean square error of approximation

This study uses SEM through AMOS 26.0 to validate the hypotheses in the research model. Following Hair et al. (2010), standardised regression weight, critical ratios (t-value) and p-values were employed to test all the hypotheses in this study. A relationship is significant when a P-value is less than 0.05 (typically ≤0.05) and an absolute t-value is higher or equal to 1.96. The results of the hypothesis tests in this study are reported in Table 4-14. Task characteristic in the city breaks positively and significantly affected IoT task technology fit ($\beta = 0.265$; $p < 0.01$), thus H1 was supported. Technology characteristics of IoT; individual characteristics; and perceived privacy positively and significantly affected task technology fit

($\beta = 0.386$, $p < 0.01$; $\beta = 0.257$, $p < 0.01$ and $\beta = 0.082$; $p < 0.01$, respectively). Thus, H2, H3 and H4 were supported. In addition, task-technology fit significantly and positively affected subjective well-being ($\beta = 0.228$; $p < 0.01$), thus, H5 was supported. Similarly, task technology fit was found to have a positive and significant effect on perceived usefulness ($\beta = 0.387$; $p < 0.01$), confirmation of expectation ($\beta = 0.751$; $p < 0.01$) and perceived enjoyment ($\beta = 0.381$; $p < 0.01$). Therefore, H6, H7 and H8 were all supported. Furthermore, confirmation of expectation positively and significantly affect perceived usefulness ($\beta = 0.370$; $p < 0.01$), perceived enjoyment ($\beta = 0.341$; $p < 0.01$) and perceived value of travel experience ($\beta = 0.190$; $p < 0.01$). Thus, H9, H10 and H11 were supported. Perceived usefulness and perceived enjoyment were found to have a positive and significant influence on perceived value of travel experience ($\beta = 0.153$; $p < 0.01$, $\beta = 0.385$; $p < 0.01$, respectively). Thus, H12 and H13 were supported. Perceived value of travel experience positively and significantly affected subjective well-being ($\beta = 0.319$; $p < 0.01$). Thus, H14 was supported.

Table 4-14. Path Hypothesis Testing

Hypotheses	Estimated	S.E.	C.R.	P value	Results
H1: Task characteristics → Task-technology fit	.265	.018	13.913	***	Supported
H2: Technology characteristics → Task-technology fit	.386	.016	19.333	***	Supported
H3: Individual characteristics → Task-technology fit	.257	.017	12.495	***	Supported
H4: Perceived privacy → Task-technology fit	.082	.010	4.718	***	Supported
H5: Task-technology fit → Subjective well-being	.228	.019	10.394	***	Supported
H6: Task-technology fit → Perceived usefulness	.387	.026	15.521	***	Supported
H7: Task-technology fit → Confirmation	.751	.029	26.107	***	Supported
H8: Task-technology fit → Perceived enjoyment	.381	.027	14.948	***	Supported
H9: Confirmation → Perceived usefulness	.370	.025	15.054	***	Supported
H10: Confirmation → Perceived enjoyment	.341	.026	13.604	***	Supported
H11: Confirmation → Perceived value of travel experience	.190	.025	7.518	***	Supported
H12: Perceived usefulness → Perceived value of travel	.153	.024	6.198	***	Supported
H13: Perceived enjoyment → Perceived value of	.385	.023	15.830	***	Supported
H14: Perceived value of travel experience → Subjective well-being	.319	.022	12.307	***	Supported

*Note: *p < 0.05. **p < 0.01. ***p < 0.001*

Moreover, Figure 4-1 provides a summary of the results of the conceptual model. The findings indicated that subjective well-being was predicted by the proposed research model as the main dependent variable since the squared multiple correlations (R^2) were 0.495 (Chin, 1998). The value of squared multiple correlations (R^2) for task-technology fit and confirmation of expectation was 0.513, and 0.370 respectively. The value of squared multiple correlations (R^2) for perceived usefulness, perceived enjoyment, and perceived value of travel experience was 0.464, 0.424, and 0.490, respectively. All the R^2 of the endogenous constructs in the model were higher than the 10% threshold proposed by Falk and Miller (1992).

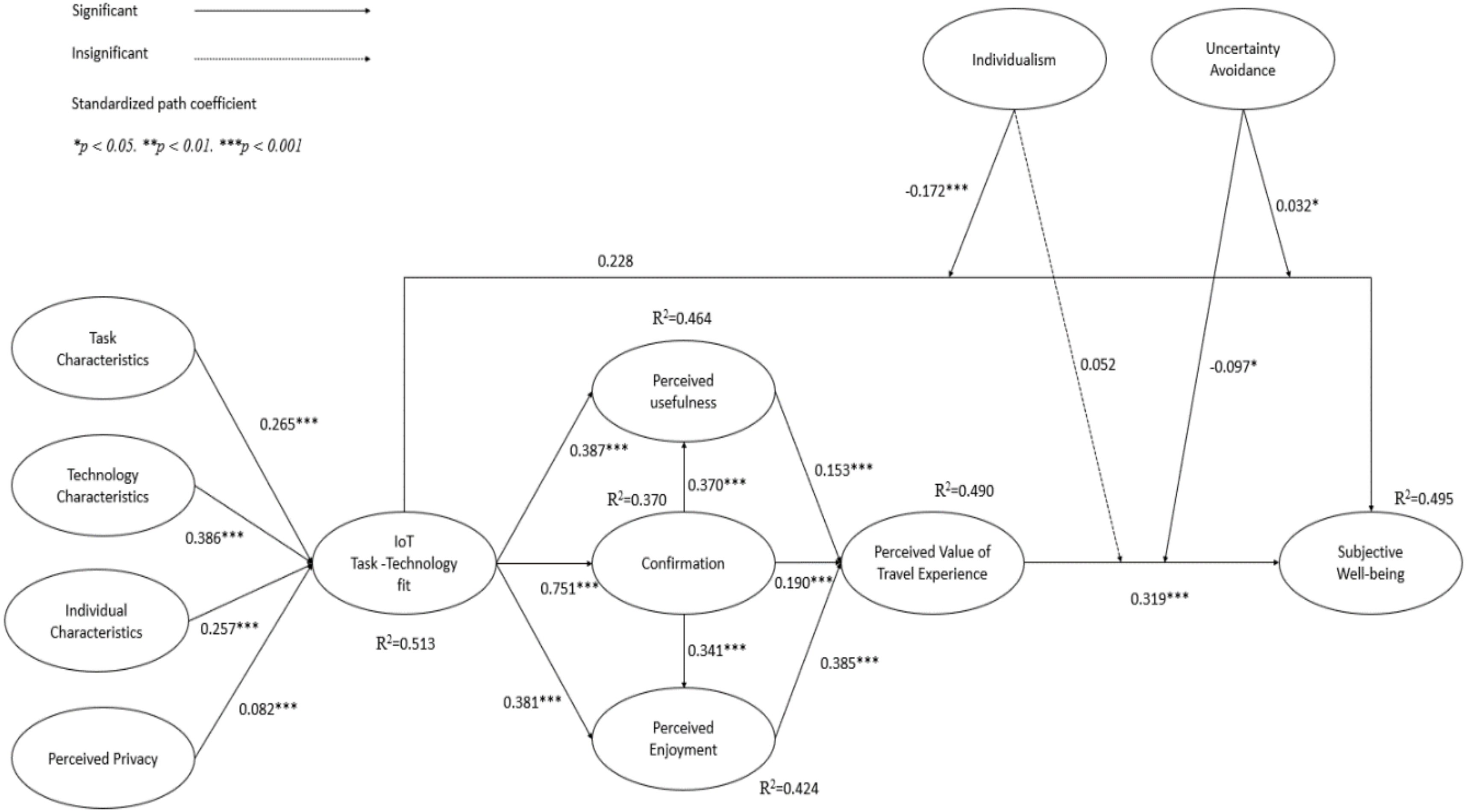

Figure 4-1. Results of the Analysis

4.6.1 Testing moderating impact

Following Ping (1995), this thesis evaluated the interactive impact between each moderating variable and the hypothesised associations to investigate the moderating effects of the cultural environment. Regarding individualism, it was hypothesised that individualism would have a moderating effect on the association between task-technology fit and subjective well-being, and the link between perceived value of travel experience and subjective well-being. To assess the likelihood of any moderating effects, task-technology fit and perceived value of travel experience were identified as predictors and individualism as a moderator and were then multiplied to generate interaction constructs (task-technology fit × individualism; perceived value of travel experience × individualism respectively) to predict traveller subjective well-being. As indicated in Table 4-15, the moderating impact of individualism on the association between task-technology fit and subjective well-being (β = -0.172; $p < 0.01$) was negative and significant. Therefore, individualism dampens the relationship between task-technology fit and subjective well-being (see Figure 4-2) and hence, H15a was partially supported. However, the moderating impact of individualism on the link between perceived value of travel experience and subjective well-being (β = 0.052; $p = 0.149$) was not significant. Therefore, H15b was rejected.

Furthermore, it was hypothesised that uncertainty avoidance would have a moderating effect on the link between task-technology fit and subjective well-being as well as the associations between perceived value of travel experience and subjective well-being. The results of this research indicated that the interaction between uncertainty avoidance and task technology fit was positively associated with subjective well-being (β = 0.032, $p < 0.05$). Therefore, uncertainty avoidance strengthened the positive association between task-technology fit and subjective well-being (see Figure 4-3) and hence, H16a was supported. In addition, the predicted standardized path coefficients for the influence of uncertainty avoidance on the relationship between perceived value of travel experience and subjective well-being (β = -0.097; $p < 0.01$,) were significant and negative. Therefore, uncertainty avoidance dampened the positive association between perceived value of travel experience and subjective well-being (see Figure 4-4) and thus, H16b was partially supported.

Table 4-15. Moderating Effect Testing

Hypotheses	Estimated	S.E.	C.R.	P value	Results
H15a: Individualism x Task-technology fit → Subjective well-being	-0.172	.013	-4.829	***	Partially supported
H15b: Individualism x Perceived value of travel experience → Subjective well-being	0.052	.014	1.444	.149	Not supported
H16a: Uncertainly avoidance x Task-technology fit → Subjective well-being	0.032	.014	2.314	.021	Supported
H16b: Uncertainly avoidance x Perceived value of travel experience → Subjective well-being	-0.097	.014	-2.896	.004	Partially supported

*Note: Regression coefficients are standardized regression coefficients. *p < 0.05. **p < 0.01. ***p < 0.001*

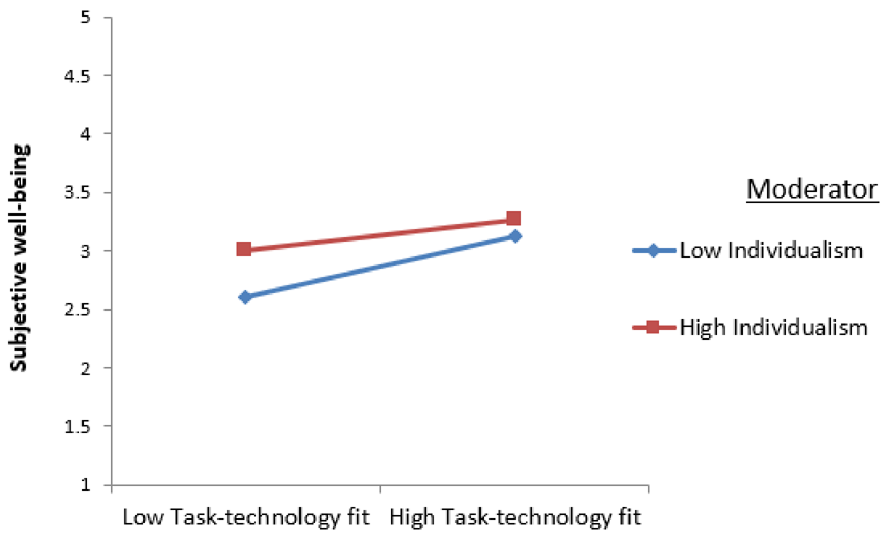

Figure 4-2. The Moderating Role of Individualism in the Association between Task-technology Fit and Subjective Well-being

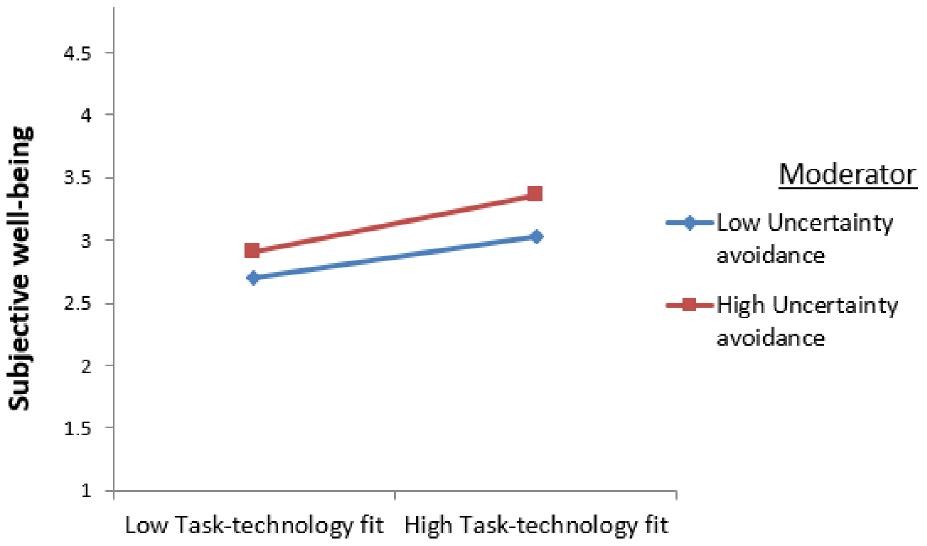

Figure 4-3. The Moderating Role of Uncertainty Avoidance in the Association between Task-technology Fit and Subjective Well-being.

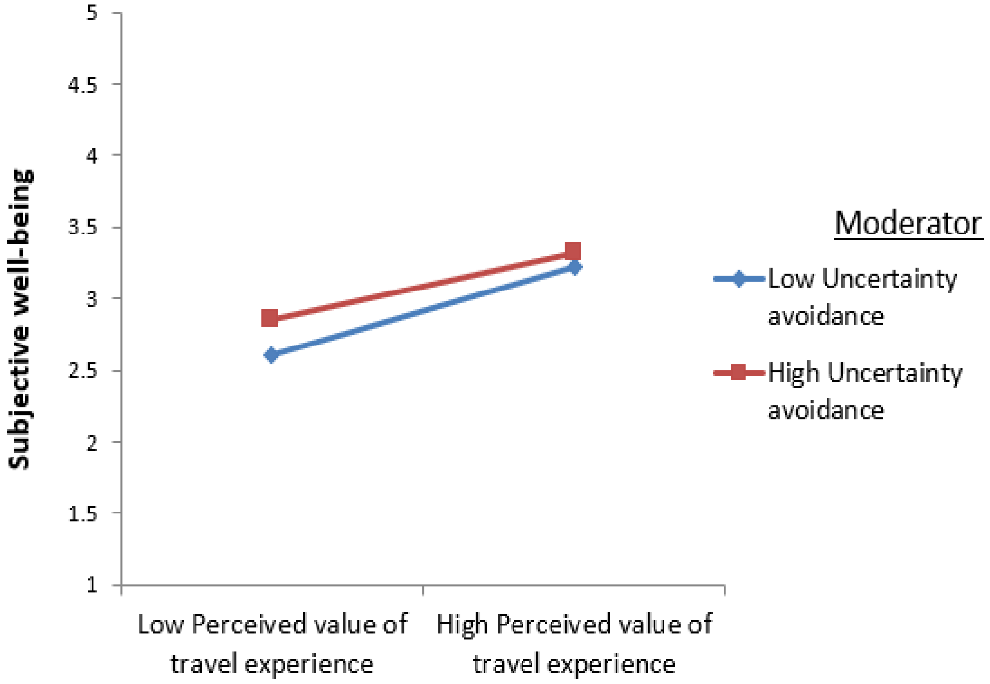

Figure 4-4. The Moderating Role of Uncertainty Avoidance in the Association between Perceived Value of Travel Experience and Subjective Well-being

4.7 Conclusion

In summary, valid empirical data was collected from 2077 city break travellers in the UK and China and the integrated model was validated using SPSS 26.0 and Amos 26.0 software. This chapter began with the preliminary findings of the pilot test. The results of the pilot study revealed that the instrument was reliable and valid for full-scale data collection. Then, using a paired sample t-test between early and late respondents, non-response biases in the main survey data were analysed. All of the results were insignificant, indicating that there was no difference between the responses of early and late participants. Thus, non-responses bias was not an issue in this study. Next, the demographic characteristics of participants were presented, and a reliability test was conducted. The results revealed that all variables had enough reliability which meant further analysis was possible

Furthermore, an exploratory factor analysis (EFA) assessed the research scales and variables via SPSS 26.0. The data analysis results further indicated that the total of 2077 collected data can be used for further analysis. Finally, the proposed model was assessed and tested in a two-stage approach employing structural equation modelling (SEM). This first step validates the measurement model by evaluating the model fit and construct reliability, discriminant validity, and convergent validity. Results revealed a good fit of the measurement model and a significant level of convergent and discriminant validity. The second step was to test the hypothetical associations proposed in the research model. The results showed that 15 out of 18 hypotheses proposed in the study were supported, 2 out of 18 hypotheses proposed were partially supported and 1 of 18 hypotheses prosed in the study was rejected. The upcoming chapter will discuss these results.

CHAPTER 5 DISCUSSION

5.1 Introduction

This study examines and discusses the impact of the Internet of Things (IoT) on traveller subjective well-being (SWB) by studying traveller perceptions of IoT usage during city breaks. The proposed model incorporates task-technology fit (TTF), expectation confirmation model (ECM), and Hofstede's culture theory for understanding the technological, emotional, personal, and contextual attributes influencing traveller subjective well-being (SWB). Due to the scarcity of relevant tourism research on IoT technologies and traveller SWB, the results of this study were evaluated in light of similar research conducted in other fields. In particular, in light of the proposed hypotheses the analysis took into account similar ideas from the existing literature, but in a different context. In this chapter, we provide an overview of the data results presented in the previous chapter and describe the data evaluation that has rejected or supported the proposed hypotheses with justifications from the relevant part of the literature review. Most importantly, in Section 5.2, each hypothesis proposed in Chapter 2 is discussed in detail. In Section 5.3, the moderating effect of culture is elaborated further. Section, 5.4, encapsulates a summary of this chapter.

5.2 Discussion of Hypothesis Test Results

Each of the eighteen (18) hypotheses that formed the essence of this academic research inquiry is discussed in detail and interpretations are offered for being either supported or rejected.

5.2.1 Impact of task characteristics on task-technology fit

The empirical examination reveals that a significant relationship exists between the requirements of city break tasks and the corresponding IoT task technology fit. This result contradicts that of Zhou et al. (2010) who demonstrated a strong negative association between task characteristics and technology fit in the context of mobile banking. One possible explanation is that this study considers task characteristics as travel activities performed by tourists to reach their city break goals. The travellers who are more aware of the challenges that are faced during a city break are more likely to use technologies in assisting their trip and thus more likely to perceive a higher level of task-technology fit (Lee et al., 2007). Also, the findings are consistent with the task-technology fit model (Goodhue & Thompson, 1995) and more recently (Al-Maatouk et al., 2020; Cheng, 2019; Sinha et al., 2019; Ling et al., 2021; Jeyaraj, 2022) which suggest that the task characteristics play a positive role in perceived task-technology fit across various contexts. For instance, Tam and Oliveira (2016) have validated the significant impact of task characteristics on perceived task-technology fit in the context of mobile banking usage. Al-Maatouk et al. (2019) have demonstrated a significant relationship between task characteristics and task-technology fit for using social media for academic purposes. This research study extends these studies by confirming the positive and significant effect of task characteristics on perceived task-technology fit in the context of city breaks in the UK and China. This can be attributed to the fact that the task characteristics are a critical driver for determining the suitability of IoT technologies that need to be employed for achieving city break task objectives.

5.2.2 Impact of technology characteristics on task-technology fit

The characteristics of the IoT technology encompass different technical aspects of IoT to address the diverse requirements encountered in specific contexts (Fang et al., 2021). The results of this research demonstrate that IoT technology characteristics have a positive and significant impact on IoT task-technology fit in the context of a city break. This finding is consistent with recent task-technology fit literature (Wang et al., 2021; Al-Maatouk et al., 2020; You et al., 2020; Howard & Rose, 2019) which observes a positive and significant impact of technology characteristics on perceived task-technology fit in various contexts of technology usage. In the current study, this result can be explained by the fact that the unique characteristics of the IoT (e.g., intelligence, connectivity, and interactivity) make it a promising tool in shaping the fit of the technology to certain contexts involving city breaks (Xu et al., 2014).

It is noteworthy that the findings of this research reveal that IoT technologies characteristics have a significantly stronger direct effect on task-technology fit than the characteristics of city break tasks. This is contrary to the studies of Yang & Lin (2015) and Khan et al. (2018), which suggested task characteristics have a stronger direct effect on task-technology fit than technology characteristics. In a tourism context, a possible explanation for this relationship can be derived from the study of Buhalis & Amaranggana (2015), who argued that the travel experience is affected by technologies throughout the entire journey in the modern tourism era. This implies that people are becoming familiar with the use of technology for vacations, which explains why technology characteristics have a stronger impact on task-technology fit when compared with task characteristics (Gretzel et al., 2015). In addition, the findings are consistent with other previous studies (Yang & Lin, 2015; Afshan & Sharif, 2016; Tam & Oliveira, 2016; Gan et al., 2017) which also suggest that the direct effect of technology characteristics on TTF is much stronger than the direct effect of task characteristics. Thus, echoing the support of a recent study of Howard and Davis (2022), this doctoral research study proposes that whether task characteristics have more impact on TTF than technology characteristics is determined by the specificity of task activities.

5.2.3 Impact of individual characteristics on task technology fit

The results of this research suggest that individual characteristics of city break travellers play a significant role in their perceived IoT task-technology fit. This is consistent with the task-technology fit theory proposed by Goodhue & Thompson (1995) and extends previous literature (D'Ambra & Wilson, 2004; Polančič et al., 2011; Shishakly et al., 2021; Omotayo & Haliru, 2020) by investigating the impact of city break traveller characteristics on IoT task-technology fit. More specifically, D'Ambra and Wilson (2004) have demonstrated that individual characteristics have a significant effect on user perceptions of task-technology fit with the ubiquitous access to the World Wide Web. In addition, Polančič et al. (2011) have demonstrated that individual characteristics significantly impact task-technology fit in the case of the voluntary framework because it plays a critical role in user perception. Based on their research, this study further confirms a positive and significant association between city break traveller characteristics and perceived task technology fit in the context of city breaks. This finding also follows the suggestions of Omotayo et al. (2020) to consider individual characteristics in understanding technology post-adoption beliefs.

5.2.4 Impact of perceived privacy on task-technology fit

Perceived privacy has been confirmed to have a positive and significant impact on task-technology fit. This finding also agrees with the previous study of Loannou et al. (2021), who explained that tourism service providers are now better able to know their customers and offer more tailored, perceived privacy solutions through the use of IoT technologies. This implies that city break travellers with a high level of privacy concerns will be likely to perceive a high level of IoT task-technology fit during city breaks. Nevertheless, this result differs from some findings in the previous research literature. Specifically, in the research of Hsu & Lin (2016), privacy concerns are negatively related to the user's adoption of IoT services. In accordance with the study of Chen & Huang (2017), perceived privacy significantly moderates the relationship between task-technology fit and purchase intention in the context of online shopping. In contrast to these findings, the current study confirms a significant and positive impact of perceived privacy on IoT task-technology fit in the context of a city break. The justification for this difference could be that consumer privacy concerns in the context of technology adoption are situationally dependent; this interpretation is supported by Sheng et al. (2008).

5.2.5 Impact of task-technology fit on subjective well-being

Results of this research highlight the extent to which task-technology fit plays a crucial role in traveller SWB. This represents a new contribution to the tourism literature. While existing literature places an emphasis on identifying the impact of task-technology fit on individual performance (Goodhue & Thompson, 1995) and continuance intention to use technology (Wang et al., 2021; Al-Maatouk et al., 2020; You et al., 2020; Tam & Oliveira, 2016), the results in this study reveal that perceived IoT task-technology fit has a significant and positive effect on traveller SWB in the context of city breaks. In the current research, task-technology fit refers to the extent of the IoT to support tourist travel activities and any associated requirements in the process of city breaks; this resonates with previous tourism studies (Lyu et al., 2018; Saayman et al., 2018; Chen et al., 2017; McCabe & Johnson, 2013). Additionally, this finding also extends previous IS studies (Lyu et al., 2018; Saayman et al., 2018; Zheng et al., 2022; Tien et al., 2021; Uysal et al., 2020; Su et al., 2022; McCabe & Johnson, 2013) by demonstrating the impact of TTF on SWB instead of the behavioural intention of technology usage. In other words, travellers perceive that IoT technologies meet their city breaks task requirements, and they consequently form a high perception of their subjective well-being improvement by using IoT technologies.

5.2.6 Impact of task-technology fit on perceived usefulness / confirmation /perceived enjoyment

The results of this research corroborate previous studies (e.g., Lin & Wang, 2012; Howard & Rose, 2018; Cheng, 2019; Rahi et al., 2021), indicating that the combination of the task-technology fit model and expectation confirmation model provides deeper insights into the user's beliefs of new technology than a single model approach. The results have shown that task-technology fit has positive and significant effects on the factors that underpinned the expectation confirmation model.

In particular, the findings reveal that task-technology fit significantly and positively affects perceived usefulness. This supports recent studies by Rahi et al. (2021) and Tao et al. (2022), who suggest that the user's feeling of supportive technology will positively influence their use of new technology. The present study verifies and extends their results in the context of city breaks by demonstrating the significant impact of IoT task-technology fit on the perceived usefulness of city break travellers. This implies that travellers perceived fit both in utilising the IoT devices and supporting travel requirements results in a high level of perceived usefulness during city breaks.

The relationship between task-technology fit and confirmation of expectations has also been confirmed in this study. The results of this study extend the important factors determining individual performance in the task-technology fit model to the expectation confirmation model, which agrees with previous IS studies (Howard & Rose, 2019; Lin & Wang, 2012; Cheng, 2019) that combined task-technology fit model with expectation confirmation model to explain the IS adoption. For instance, this study concurs with the findings of Lin & Wang (2012), demonstrating that perceived fit both in utilising e-learning systems and that supporting learning requirements result in the confirmation of system usage. Furthermore, this study extends the results of previous IS studies (Howard & Rose, 2019; Lin & Wang, 2012; Cheng, 2019) and confirms that there exists a significant positive impact of TTF on city break traveller confirmation of IoT adoption in the UK and China. This suggests that travellers perceive fit both in terms of utilising the IoT technologies and supporting city break requirements resulting in the confirmation of expectation with the use of IoT.

Moreover, the research findings also demonstrate that the traveller's perceived task-technology fit is positive and significantly affects perceived enjoyment. Previous empirical research in the field of IS has explained that a higher degree of task-technology fit results in positive reactions, such as enjoyment (Yang & Lin, 2015; Dickinger et al., 2008, Howard & Rose, 2019). The current study further confirms that task-technology fit has a positive and significant impact on perceived enjoyment with the use of IoT in the context of city breaks. This implies that with an ever better fit between technology adoption and city break tasks, then the more enjoyment and fun that individuals will perceive in using IoT during city breaks.

5.2.7 Impact of confirmation on perceived usefulness /perceived enjoyment

The results of this research reveal that confirmation of expectation has a positive and significant impact on perceived usefulness, which validates the association between confirmation of expectation and perceived usefulness in ECM proposed by Bhattacherjee (2001). In the context of technology adoption, the significant association between confirmation of expectation and perceived usefulness implies that when people find their expectations for the technologies are satisfied, then they are more likely to perceive the usefulness of the technology (Park, 2020). Our findings support various findings in other research in the IS field by confirming the effects of confirmation on the perceived usefulness of IoT usage in the context of city beaks (Park, 2020; Tam et al., 2022; Joo & Choi, 2016; Bawack & Ahmad, 2021; Malik & Rao, 2019; Wu et al., 2022).

For instance, the finding of this study supports the study of Oghuma et al. (2016), who identified that confirmation of expectations is positively related to perceived usefulness because users realise the performance of new technology indeed meets their expectations and instrumental usefulness is greatly appreciated. Our finding reveals that city break travellers who perceive IoT technologies as surpassing their anticipated expectations will perceive IoT as useful for their city breaks. This finding indicates that user confirmation of expectation is important not only in the general IS context but also in the widely varied tourism environment characteristic of city breaks.

Similarly, a positive relationship between confirmation and perceived enjoyment is also confirmed in this research. This result supports the existing literature that demonstrates a positive association between confirmation of expectation and perceived enjoyment (e.g., Park, 2020; Muñoz-Carril et al., 2021; Oghuma et al., 2016; Alarimi & Ciganek, 2015; Chuang et al., 2018). Moreover, Thong et al. (2006) incorporated the perceived enjoyment as intrinsic motivation, into the original expectation confirmation model to investigate information technology continuance. Their findings demonstrate that the user's experience with technologies would either confirm or disconfirm their expectation of perceived enjoyment. In other words, user confirmation of expectation has a significant influence on perceived enjoyment. Similarly, this study validates that perceived enjoyment can be added as an additional post-adoption belief into the expectation confirmation model to investigate the user perceptions of technology usage in the tourism context. This implies that traveller confirmation of expectations has a positive and significant effect on their perceived enjoyment while using IoT technologies in city breaks.

5.2.8 Impact of confirmation on the perceived value of travel experience

Results from this study also reveal that confirmation of expectations is positively related to the perceived value of travel experience. This result can be considered as an extension of the expectation confirmation model (Bhattacherjee, 2001) which suggests that user confirmation of expectations from prior IS use has a significant impact on user satisfaction. Tourism researchers have widely validated that traveller confirmation of expectations of their travel experience positively affects their satisfaction in different settings (Chuang et al., 2018; Manchanda & Deb, 2021; Malik & Rao, 2019). However, there is little research about the effect of confirmation of IoT usage on the perceived value of travel experience in the context of city breaks. The results of this study confirm the positive associations between confirmation and perceived value of travel experience regarding IoT usage in city breaks. These findings are consistent with previous IS studies (Lin et al., 2012; Hsu & Lin, 2016; Um & Yoom, 2021; Zhang et al., 2019; Loureiro et al., 2020; Oriade & Schofield, 2019), who argued that confirmation of expectation of technology adoption positively affects perceived value. Also, the results align with the study conducted by Hsu & Lin (2016), who demonstrated that confirmation of expectations of accommodation apps has a significant effect on consumer perceived value. This study indicates that travellers feel greater degrees of the value of their travel experience when their expectations are confirmed at the beginning of their use of IoT technologies.

5.2.9 Impact of perceived usefulness/enjoyment on perceived value of travel experience

The results reveal that perceived usefulness has a positive impact on the perceived value of travel experience. This is consistent with the existing IS studies (Aw et al., 2019; Kim et al., 2007; Yang et al., 2016) which consider perceived usefulness to be an important utilitarian motivation and antecedent of a consumer's attributions of perceived instrumental and functional value. The findings of these scholars demonstrate that perceived usefulness significantly affects users' perceived value of technology adoption. Moreover, in the marketing literature, there is a significant relationship between perceived usefulness and perceived value which means that when consumers construct their assessments of the experience then their value of consumption is likely to be based on their utilitarian motivation (perceived usefulness) (Thongpapanl et al., 2018). The findings of the current study further confirm that the perceived usefulness of IoT has a positive impact on the perceived value of travel experience in the context of tourism. The results demonstrated that the perceived value of travel experience is defined as an overall evaluation made of the travel experience that is based on a comparison between the expected benefits from the IoT and the sacrifices travellers make to achieve such benefits in city breaks. The findings argue that perceived usefulness is indeed one of the important constructs in the expectation confirmation model and has a significant and positive impact on the perceived value of the travel experience. This finding enriches the existing body of research (Aw et al., 2019; Kim et al., 2007; Yang et al., 2016) by applying the expectation confirmation model in a tourism context.

Similarly, the results also show that perceived enjoyment of IoT positively and significantly predicts traveller's perceived value of travel experience toward using IoT in city break trips. Perceived enjoyment is considered to be one of the hedonic motivations which is a strong determinant of a user's assessment of the perceived value of products/services and experiences as well as of technology adoptions (Mohamad et al., 2021; Kim, Kim & Wachter 2013; Lin & Lu, 2011). Our findings suggest that a city break traveller who perceives a high level of enjoyment or fun with IoT technologies is more likely to rate their perceptions of the value of IoT technologies in the context of city breaks rather high. This finding is consistent with previous studies as well (Kim et al., 2007; Yang et al., 2016; Mohamad et al., 2021) which found that perceived enjoyment positively affects the perceived value as one of the beneficial components.

Moreover, this study found that perceived enjoyment is more influential on travellers' perceived value of their travel experience than perceived usefulness. These results share similarities as well as differences with findings in the extant literature. In particular, this result confirms previous studies in the field of IS (e.g., Thong et al., 2006; Lin & Lu, 2011) which show that perceived enjoyment has a stronger influence on perceived value than perceived usefulness. For instance, Lin & Lu (2011) have demonstrated that perceived enjoyment is the most influential factor in users' continuance behaviour. Their findings reveal that creating an enjoyable environment for social networking sites might be more effective than emphasizing utilitarian values in the context of social networking site usage. This study suggests that individuals experiencing a higher degree of enjoyment while using IoT technologies are more likely to perceive the value of travel experiences, if/when compared with the perceived usefulness of IoT technologies. However, these findings contradict several IS research studies that showed that perceived usefulness is the strongest determinant of IS acceptance (e.g., Akdim et al., 2022; Ma et al., 2017; Yang et al., 2016). Hence, it is possible to argue that the effect of motivational factors on perceived value may be different depending on the specific contexts and technologies, with the support of the study of Yu et al. (2017).

5.2.10 Impact of perceived value of travel experience on subjective well-being

As expected, it was found that traveller perceived value of their travel experience has a significant effect on their subjective well-being. This means that the facilitation of a traveller's perceived value of a travel experience with the use of IoT can significantly influence their subjective well-being in the context of city breaks. This finding expands the existing marketing literature (Meadow & Sirgy, 2008; Papagiannidis et al., 2017; Pizzi et al., 2020) and demonstrates a significant role of perceived value of services/products on consumer well-being.

In particular, this study extends their findings to a new context, namely, that of the use of IoT in city break trips, and also supports the findings of Lyu et al. (2018) and Prebensen et al. (2013) who found that travellers who perceived more value of travel experience tend to have a high level of subjective well-being. This is in agreement with the study conducted by Meadow & Sirgy (2008), who argued that perceived value is composed of utilitarian and hedonic value. The utilitarian value is associated with the accomplishment of a task. But in contrast, a hedonic value is derived from fun or playfulness; both have an impact on the affective and cognitive aspects of subjective well-being (Meadow & Sirgy, 2008). Therefore, attracting and retaining travellers by providing a valuable travel experience has become especially important for enhancing their subjective well-being.

5.3 Discussion of Moderators

In the context of city break travel, there are many variables that have direct, indirect, and/or even situational determinants of the experience at hand that influence subjective well-being.

5.3.1 Individualism

Previous studies have indicated that individualism, as an important cultural dimension, is an important way of understanding the motivations underlying human activity and behaviour (Triandis, 2001; Akhtar et al., 2019). In the IS literature, researchers have pointed out that people with a high level of individualism are more likely to use technology to meet their needs (Choi et al., 2006; Lee et al., 2007; Tam & Oliveira, 2019). This is because an individual tends to do things in his/her own best interests and emphasises personal goals and enjoyment more so than social norms when using technologies (Hofstede, 2010). Thus, this study proposed that individualism moderates the effect of IoT task-technology fit on subjective well-being such that the effect of IoT task-technology fit will be stronger for travellers with high levels of individualism than for those with low levels of individualism.

However, in contrast to our conceptualization, the research results have shown that individualism negatively moderates the effect of task-technology fit on subjective well-being. These results show the opposite trend in comparison with the observations of Lee et al. (2007) who have found positive effects of individualism on post-adoption beliefs relating to the mobile internet. However, this finding agrees with the study of Tam & Oliver (2019) who concluded that individualism negatively affects the relationship between task-technology fit and technology adoption. It is possible to argue that people with a higher level of individualism are associated with having a more demanding, stricter evaluation of services (Huang et al., 2016; Chatterjee & Mandal, 2020), leading to a low level of task-technology fit.

Moreover, contrary to the hypothesis, individualism was found to have no effect on the association between the perceived value of travel experience and subjective well-being. This finding suggests a statistically nonsignificant difference between the UK and China for the effect between the perceived value of travel experience with the use of IoT and SWB in the context of city breaks. Thus, for low as well as high individualism countries, the perceived value of travel experience increases traveller subjective well-being in similar ways.

This study (1) theorized that individualistic cultures can be a moderator of the association between the perceived value of travel experience and traveller subjective well-being, and (2) previous research has found individualism to be an important driver of penetration rates of new technologies (Griffith & Rubera, 2014; Zhao et al., 2021; Talay et al., 2019), which would also positively affect user post-adoption beliefs and individual performance (Lee et al., 2007; Tam & Oliver, 2019). However, this doctoral project indicates that individualism is not a significant boundary condition in the relationship between the perceived value of IoT technology and subjective well-being. The reason for this lack of significant effects could be that individualism plays an important role in both a traveller's perceived value of travel experience regarding IoT and subjective well-being (Tam & Oliveira, 2019; Diener et al., 2003). Accordingly, this finding agrees with the studies of Akhtar et al.

(2018) and Mortimer et al. (2015) who also demonstrated that individualism does not moderate the relationship between perceived value and user behaviour intention.

5.3.2 Uncertainty avoidance

As expected, uncertainty avoidance has been confirmed to have a positive moderating effect on the relationship between task-technology fit and subjective well-being in this study. The connection is stronger with low levels of uncertainty avoidance than with high levels of uncertainty avoidance. These findings closely match the study results of Cardon & Marshall (2008) which indicated that people with high uncertainty avoidance are more likely to welcome technology that can reduce uncertainty. However, this finding also notes some differences with the study of Tam & Oliveira (2019) who emphasized the negative moderating effect on the associations between task-technology fit and individual performance. The reason for this difference may lie in the fact that people have different perceptions and requirements regarding technology adoption in different contexts, supporting Durach & Wiengarten (2017). Overall, our findings reveal that the uncertainty avoidance moderator suggests a statistically significant difference between China and the UK for the effect between perceived IoT task-technology fit and subjective well-being in the context of city breaks. This is because the risks (e.g., unfamiliar environment and situations) are a major concern for travellers; in such cases, high uncertainty avoidance travellers might necessitate a closer IoT fit between the travel tasks and technology than low avoidance travellers (Litvin, 2004).

However, the results of this study have shown that uncertainty avoidance negatively moderates the associations between the perceived value of travel experience and subjective well-being. This finding is both similar and different from other findings in the previous literature. According to Kim & Stavrositu (2018), travellers with high levels of uncertainty avoidance feel uncomfortable in unstructured and unfamiliar situations and are more likely to use technologies during the trip. Hence, this study shows that uncertainty avoidance positively moderates the relationship between the perceived value of travel experience and subjective well-being. On the other hand, the results of this study also share some differences with this argument. Specifically, uncertainty avoidance negatively moderates the effect of the perceived value of travel experience on subjective well-being, such that the impact of the perceived value of travel experience is stronger for travellers with low levels of uncertainty avoidance than for those with high levels of uncertainty avoidance. Nevertheless, our study is consistent with Lee et al. (2007), which demonstrated that uncertainty avoidance has a negative and significant effect on post-adoption beliefs in the context of mobile internet usage. This is because individuals with low levels of uncertainty avoidance are more comfortable with novel and unusual conditions, and are thus likely to perceive less value of technologies than users who are untroubled by ambiguous circumstances. The results of this research illustrate that uncertainty avoidance plays an important role in moderating the relationship between the perceived value of travel experience and subjective well-being in the context of IoT usage in city breaks.

5.4 Conclusion

This chapter discussed the results of the 18 proposed hypotheses of this study. The discussion of the results focused on the following three aspects. First, undertaken was an investigation of whether the research findings confirmed, disconfirmed, or enriched the understanding of the theories chosen for this thesis, including the task-technology fit model (TTF), the expectation confirmation model (ECM) as well as Hofstede's culture theory. It was also explained which findings confirmed the validity but also the suitability of additional considerations and viewpoints that can build upon those theories. Second, the similarities and differences between the findings of this research and previous research in similar fields were discussed. Third, well-reasoned explanations for the test findings were provided. In some cases, the interpretations and explanations were original or even differed from the existing scholarship.

CHAPTER 6 CONCLUSION

6.1 Introduction

This final chapter explains how the research questions are answered and how this doctoral study contributes to the existing literature and indicates practical considerations for tourism managers. The main aim of this research was to explore the role of IoT in city break travellers' subjective well-being. The development of the theoretical framework identified the factors that could influence travellers' subjective well-being in the context of IoT usage. Building upon prior scholarly work and existing theories (e.g., task-technology fit theory, expectation confirmation model, and Hofstede's culture dimension), an integrative theoretical framework was developed and tested. As shown in Figure 6-1, this chapter has summarised the key findings of this thesis, theoretical and practical contributions, as well as some directions that future research can be pursued, and how this field of inquiry has been extended.

In particular, the next section provides a summary of the research findings viewed in concert with related research questions. In Section 6.3, this study outlines the theoretical contributions to the existing literature. In Section 6.4, the implications for managerial practices are discussed. In Section 6.5, the limitations of this thesis and directions for future study will be suggested.

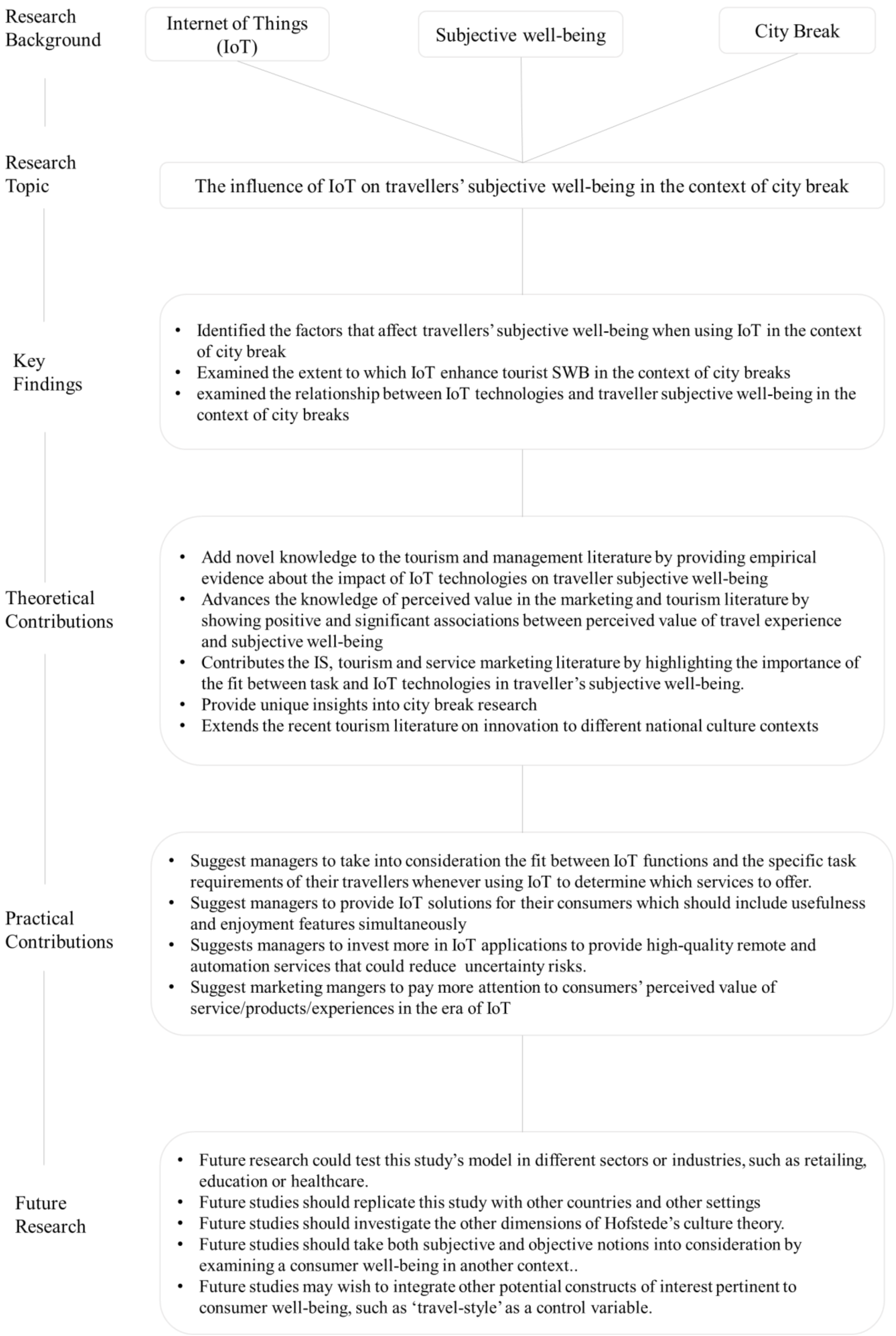

Figure 6-1. Research summary

(Sources: the author)

6.2 Research Findings

This research thesis examined the influences of IoT technologies on travellers' subjective well-being in the context of city breaks. The key features of this thesis are outlined as follows: 1) this study explored the main factors determining traveller subjective well-being with the use of IoT in the context of city breaks; 2) this study identified the extent to which IoT affects traveller subjective well-being in the context of city breaks; 3) this study examined the relationship between IoT technologies and traveller subjective well-being in the context of city breaks.

This study substantiated that a set of main factors affecting city break travellers' subjective well-being towards the use of IoT are found within a combination of technological, emotional, personal, and contextual attributes. More precisely, this includes task characteristics, technology characteristics, individual characteristics, perceived privacy, task-technology fit, perceived usefulness, confirmation of expectation, perceived enjoyment, perceived value of travel experience, subjective well-being, individualism, and uncertainty avoidance.

In particular, the findings have found the relationship between TTF constructs and travellers' subjective well-being towards using IoT in city breaks is positive and significant. In the TTF model, technology characteristics and task-technology fit, as important technological attributes, significantly affect travellers' perceptions of task-technology fit which in turn affect the sense of subjective well-being. Task characteristics, as an important contextual attribute, have considered a specific task environment which plays a significant role in the perceived task -technology fit and in turn affects travellers' subjective well-being. Individual characteristic, as an important personal attribute, also shows a significant role in perceived task-technology fit and subjective well-being. Moreover, perceived privacy has been considered as another important factor in the TTF model. This research reveals that perceived privacy positively affects TTF, which in turn affects SWB.

This study also demonstrates that the relationship between ECM constructs and traveller subjective well-being towards using IoT in city breaks is positive and significant. Perceived usefulness and confirmation of expectation of IoT are important technological attributes which play a significant role in the perceived value of travel experience and consequently affect the sense of subjective well-being. Perceived enjoyment, an emotional attribute, also has a significant impact on perceived value of travel experience and in turn, affects traveller subjective well-being. Moreover, the results of this research have demonstrated that individualism and uncertainty avoidance, two cultural contextual attributes, have a significant moderating role in travellers' subjective well-being towards the use of IoT in the context of city breaks. To reiterate, the factors that affect travellers' subjective well-being regarding the use of IoT include an array of technological, emotional, personal, and contextual attributes.

Moreover, this research reveals that travellers' subjective well-being is influenced by factors associated with the task-technology fit and the confirmation of expectations while using IoT in the context of city breaks. However, the technological factors appeared to be less influential when compared to the emotional factors. For example, perceived value of travel experience had a more direct impact on subjective well-being, compared to task-technology fit. Perceived enjoyment of IoT had the strongest indirect influence on travellers' subjective well-being in the UK and China. Moreover, our results have also shown that technology characteristics had a stronger direct impact on task-technology fit and an indirect impact on subjective well-being than task characteristics, individual characteristics, and perceived privacy. In other words, IoT technologies characteristics play an essential role in city break travellers' subjective well-being in the UK and China. Finally, the findings of this research have shown that the perceived value of travel experience by the city break travellers is affected by a combination of the factors associated with the expectation confirmation model. In the expectation confirmation model, perceived enjoyment of IoT had the strongest influence on the perceived value of travel experience in the UK and China, which in turn affected their subjective well-being, compared with perceived enjoyment and confirmation.

Regarding the relationship between IoT and subjective well-being, the findings of this study reveal that there is a positive impact of IoT technologies on travellers' subjective well-being. For instance, travellers' perceptions of the task-technology fit positively affect their subjective well-being when using IoT on city break trips. Moreover, the city break travellers with a high level of subjective well-being, were found to be the individuals with a high level of value perception of IoT technologies.

However, the relationship between the use of IoT in city breaks and traveller subjective well-being is affected by other important factors. The findings of this research suggest that individualism and uncertainty avoidance play important moderating roles in the associations between task-technology fit and subjective well-being as well as the link between the perceived value of travel experience and subjective well-being in the UK and China. More specifically, individualism moderates the positive effect of task-technology fit on SWB, such that its effect is stronger for consumers with low individualism versus those with high individualism.

Moreover, uncertainty avoidance strengthens the positive relationship between task-technology fit and subjective well-being, while dampening the positive relationship between task-technology and subjective well-being.

6.3 Theoretical Contributions

This thesis was motivated by an insufficient understanding of the relationship between IoT and subjective well-being in the existing literature. By addressing this knowledge gap, this study makes a number of substantial theoretical contributions.

First of all, this study supports the importance of innovative technologies in tourism and management literature (Benckendorff et al., 2019; Hu et al., 2021; Demirel et al., 2022; Rahman & Hassan, 2021; Wang et al., 2020). In particular, with its emphasis on the role of IoT-based applications in the travel experience (Car et al., 2019; Saayman et al.,2018), this study further elaborates on the influence of IoT on travellers' subjective well-being through the enhancement of travellers perceived task-technology fit and perceived value of travel experience. Specifically, this thesis identified the role of IoT technologies in city break trips and how it affects traveller subjective well-being. In doing so, this doctoral research developed an integrated research model to examine the major factors and the extent to which IoT influences city break traveller subjective well-being in the UK and China.

In comparison with previous studies that have explored the impact of innovative technologies on the travel experience (Pai et al., 2020; Jeong & Shin, 2020; Rahman & Hassan, 2021; Shin et al., 2022), the findings of this study add novel knowledge to the tourism and management literature by providing empirical evidence about the impact of IoT technologies on traveller subjective well-being in the context of city breaks. The results reveal that the main factors which positively affect traveller subjective well-being in the context of IoT usage include task characteristics, technology characteristics, individual characteristics, perceived privacy, task-technology fit, perceived usefulness, perceived enjoyment, confirmation of expectation, perceived value of travel experience. Also, the study responds to the recent call by Gretzel & Stankov (2021) for more studies on information technologies and well-being in relation to tourism, by specifically focusing on the effect of using IoT technologies on traveller subjective well-being in the context of city breaks, when heretofore, only a limited amount of literature could be found.

Moreover, despite the fact that marketing literature suggests that perceived value is the most important determinant of consumer loyalty and repurchase intentions (Woodruff, 1997), this study advances the knowledge of perceived value by providing empirical findings of the direct impact of perceived value of travel experience on subjective well-being. This study forms the first attempt to empirically investigate travellers' perceived value of travel experience regarding the use of IoT on their subjective well-being in the context of city break. The findings extend previous research on the importance of perceived value on the travel experience and satisfaction (Nam & Kannan, 2020; Lee, 2021; Solakis et al., 2022) and continuance behaviour of technologies (Thonhpapanl et al., 2018; Pizzi et al., 2020; Bertrandias et al., 2021) by showing positive and significant associations between perceived value of travel experience and subjective well-being in the context of city breaks with solid empirical evidence. This implies that when travellers perceived a high value of IoT technologies during city breaks, their subjective well-being will more likely be enhanced. In other words, these findings provide valuable insights into the body of tourism and marketing literature by adding to the knowledge of tourism well-being in the new era of IoT.

Furthermore, this doctoral dissertation contributes to the IS, tourism and service marketing literature by highlighting the importance of the fit between task and IoT technologies in travellers' subjective well-being. To the best of our knowledge, our study is the first to investigate the impact of IoT technologies on travellers' subjective well-being based on task-technology theory. Our results reveal that perceived IoT task-technology fit (TTF) has a significant and positive effect on travellers' SWB in the context of city breaks. Drawing upon recent studies considering individual performance and user behaviour as the main outcomes of TTF (e.g., Wang et al., 2021; Cheng, 2020; Franque et al., 2022; Tam & Oliveira, 2016; You et al., 2020; Al-Maatouk et al., 2020), our study adds new knowledge on the evaluation of technology adoption, by confirming that subjective well-being can be as another outcome of TTF in the context of tourism. This finding also contributes to IS literature by enhancing the applicability of task-technology fit theory. Moreover, our study further extends the few tourism works (Lyu et al., 2018; Saayman et al., 2018; Zheng et al., 2022; Tien et al., 2021; Uysal et al., 2020; Su et al., 2022; McCabe & Johnson, 2013), by demonstrating the fit of IoT and tourists' travel activities and specific requirements have a direct impact on travellers' subjective well-being in the UK and China. This response is to a recent call of Hidayat et al. (2021) for more research to further examine the TTF model in developed and developing countries.

This finding also extends the previous IS works in tourism to examine travellers' satisfaction and experience (e.g., Chuang et al., 2018), by applying the expectation confirmation model to explore travellers' subjective well-being with the use of IoT. As supported by our empirical results, the perceived enjoyment is considered as an additional user’s belief in the expectation confirmation model and the construct satisfaction was replaced by perceived value of travel experience in order to identify antecedent that focus on users’ subjective well-being. These findings add to the previous studies containing quantitative evidence (e.g., Thong et al., 2006; Malik & Rao 2019) which has demonstrated that adoption of the expectation confirmation model in terms of research context provides a better understanding of user post-adoption beliefs about the technology usage. This current research has added perceived enjoyment and replaced satisfaction with perceived value into the expectation confirmation model in order to examine travellers' subjective well-being associated with the use of IoT. The results shed light on the combined impact of traveller confirmation of expectation and perceived enjoyment play as important in understanding the perceived value of travel experience, which in turn positively affects subjective well-being. This study clearly contributes to the body of literature on the expectation confirmation model and increases the understanding of the impact of innovative technologies on individual subjective well-being.

This thesis also contributes to the scant but growing city break research in the tourism literature. The review of tourism research reveals that city breaks are receiving increasing attention from scholars (Charterina & Aparicio, 2015; Dunne et al., 2011; Balińska, 2020). Nonetheless, critical insights resulting from city break travellers' actual perspectives on IoT usage remain relatively scarce. This study partially fills this research gap by empirically investigating the impact of IoT on city break travellers perceived value of travel experience and subjective well-being. This study replies to another recent call for more research on investigating the impact of new technologies on the travel experience on a particular trip (Fan et al., 2022). In this study, the role of IoT in affecting city break travellers’ perceived value of travel experience and subjective well-being was rigourously investigated. The findings provide unique insights into the role of IoT in the development of city break tourism by providing a comprehensive understanding of how to enhance the travel experience even amidst the fluid context of a city break.

Finally, this work extends the recent tourism literature on innovation to different national cultural contexts, especially focused on individualism and uncertainty avoidance (Kim & Stavrositu, 2018; Hailey et al., 2021; Zhou & Sotiriadis, 2021; Moser & Deichmann, 2020). While previous studies analysed the impact of culture on innovative technologies and tourism (Griffith & Rubera, 2014; Tam & Oliver, 2019; Chatterjee & Mandal, 2020; Huang & Liu, 2018; Khan & Fatma, 2021; Wei et al., 2022), only limited attempts have been made to explore the moderating role of culture in the relationship between innovative technologies and tourism well-being. This study extends this research stream by examining if and how individualism and uncertainty avoidance moderate the relationship between IoT and traveller subjective well-being. This thesis also responds to the recent calls for research into cross-cultural factors that influence the extent to which emerging technologies enhance consumer experiences, including influence on subjective well-being (Nam & Kannan, 2020). By drawing upon culture (Hofstede, 2001) as an investigative, possible moderator, this study advances tourism and management literature by explaining cross-national differences between IoT usage and subjective well-being in the UK and China. Once more, this study is likely the first to explore the impact of culture on the relationships between IoT and subjective well-being in the tourism context.

In particular, the study provides evidence that individualism negatively affects the relationship between task-technology fit and subjective well-being. More recently, Tam & Oliver (2019) demonstrated that individualism negatively moderates the relationship between task-technology fit and technology use in a mobile banking context. The results arrived at in this study extend this recent research by further examining the moderating role of individualism in the relationship between task-technology fit and subjective well-being, but uniquely in the tourism context. The analyses across two different countries (UK and China) clarify that the effect of task-technology fit is stronger for travellers with low levels of individualism than for those with high levels of individualism. This finding adds to the limited body of tourism research on culture and innovation technologies (Akdeniz & Talay 2013; Griffith & Rubera, 2014) by providing important empirical insights into the moderating role of individualism.

Concerning uncertainty avoidance, our findings from the study indicate that that the effect of task-technology fit will be stronger for travellers with high levels of uncertainty avoidance than for those with low levels of uncertainty avoidance. In the tourism literature, a number of studies have investigated the impact of uncertainty avoidance on travel behaviour (Seo et al., 2018; Chatterjee & Mandal, 2020; Karl, 2018) and travel intention (Golets et al., 2021). This study expands these existing works by showing a positive moderating role of uncertainty avoidance in the association between technology use (e.g., perceived task-technology fit) and post-adoption beliefs (e.g., subjective well-being). This finding, amongst others already mentioned, enriches existing tourism literature by incorporating the task-technology fit theory and Hofstede's culture theory.

Lastly, this research thesis has taken a first step toward exploring the moderating role of uncertainty avoidance in the relationship between perceived value of travel experience and subjective well-being. While previous studies identified that individuals with a high level of uncertainty avoidance are more likely to welcome new technologies while travelling (Kim &

Stavrositu, 2018), this finding adds new insights regarding the impact of uncertainty avoidance on the associations between perceived value of travel experience towards IoT usage and subjective well-being. In this study, the impact of perceived value of travel experience is stronger for travellers with low levels of uncertainty avoidance than for those with high levels of uncertainty avoidance. This result offers opportunities for future research in examining the difference between the UK and China regarding traveller subjective wellbeing in an era of IoT.

6.4 Practical Contributions

Several implications for managers can be drawn from this study, particularly in the tourism-related industries, such as destination management organisations (DMO), hospitality, and transportation. This study provides useful insights for tourism managers who may employ IoT technologies to improve the subjective well-being of their consumers. This is essential since marketing researchers and practitioners have started to consider consumer SWB as a marker of success for their business (Ward et al., 2021). In particular, tourism managers can now pinpoint the underlying factors that affect consumer SWB by empirically evaluating their perceptions of IoT usage in the tourism context. This intimate feedback enables the ability to adjust marketing strategies to match the speed of technology advancement to achieve desired outcomes.

The results show that task characteristics, individual characteristics, technology characteristics, perceived privacy, task-technology fit, confirmation of expectation, perceived usefulness, and perceived enjoyment of IoT technologies, and perceived value of travel experience are important factors determining the subjective well-being level during a city break trip. These factors play a crucial role in improving consumer well-being throughout the tourism market. For instance, this research shows that task-technology fit had a direct effect on traveller subjective well-being. Thus, it is suggested that city break tourism managers should take into consideration the fit between IoT functions and the specific task requirements of their travellers whenever using IoT to determine which services to offer. By designing IoT platforms to provide services related to city break a traveller's specific tasks, such as shorter decision time and budgetary and time-space restrictions, tourism managers can ensure the right fit between IoT technologies and city break travellers, which in turn affect their consumer's subjective well-being.

Moreover, research results suggest that the use of IoT services influences SWB, and that both utilitarianism (usefulness) and hedonism (enjoyment) components play a role in this regard. Thus, managers should provide IoT solutions for their consumers that improve their perceptions of experience value, and ultimately their SWB. However, these solutions can include usefulness and enjoyment features simultaneously. With respect to usefulness, managers can provide more efficient and effective services by adopting IoT applications that are user-friendly (i.e., faster service). For enjoyment, managers can focus on a consumer's feelings of pleasure and fun while using IoT to deliver services.

Destination managers can create advertising content with IoT that is rich in real-time and simultaneously engages and entertains the travelling tourist. Moreover, the findings reveal that enjoyment is a more powerful factor affecting subjective well-being with the use of IoT for both the UK and China, when compared with usefulness. To enhance user subjective well-being, tourism managers can place more emphasis on creating an enjoyable, memorable experience with the use of IoT that can be more effective than emphasising singular, simple utilitarian benefits. Thus, service providers are encouraged to invest more in understanding how their consumers perceive the elements of enjoyment when using IoT technologies and incorporate these elements into their application development.

Additionally, the strong link between perceived value of travel experience and SWB reveal that manager should be aware of the importance of perceived value as it plays an important role in traveller subjective well-being. Managers can increase a traveller's perceived value by providing effective and enjoyable services for their customers and a more engaging travel experience. For example, hotel managers can adopt IoT technologies to provide multidimensional services, such as mobile check-in, keyless entry, call for transportations, and ordering room services through mobile apps. These necessary tasks are aided by IoT by reducing the time and effort consumers must invest, thus increasing their perceived value and leading a higher subjective well-being. This could offer a heightened value to the travel experience, which might lead to a unique brand impression, enhanced loyalty, and create more word-of mouth recommendations.

The results also reveal that understanding cultural characteristics is significant in enhancing consumer level of subjective well-being towards the use of IoT. More specifically, the findings of this study show that traveller subjective well-being is determined not only by the traveller's perceived task-technology fit and perceived value of travel experience but also by a traveller's cultural background. Thus, tourism managers and IoT service providers must pay increasing attention to cultural factors because a consumer's perceived value of offerings or technologies and their subjective well-being may vary according to their cultural background. In short, different IoT solutions can be used to achieve desired marketing goals in different countries.

More specifically, this doctoral research shows that the positive effect of traveller perceived task-technology fit on their subjective well-being is weaker in highly individualistic countries (e.g., UK) than in low-individualism countries (e.g., China). Thus, in a low-individualism country, tourism managers and marketers should place more emphasis on incorporating selected smart IoT-based applications into their services to enhance consumers perceived task-technology fit, which leads to a higher level of the sense of subjective well-being. However, in a high-individualism country, managers may find more difficulty trying enhance their customer's subjective well-being by improving the perceptions of task-technology fit. In such situations, tourism mangers and marketers should pay more attention to other ways to improve the subjective well-being of travellers. Instead, they can enhance the perceived value of travel experiences by their consumers while using IoT to deliver services.

This study provides another interesting insight into the effect of uncertainty avoidance on travellers subjective well-being. The results reveal that uncertainty avoidance positively moderates the relationship between perceived task-technology fit and subjective well-being but negatively moderates the relationships between perceived value of travel experience and traveller subjective well-being. This means that different marketing strategies should be considered in diverse cultural settings. More exactly stated, in a high- uncertainty avoidance culture, tourism managers and marketers should pay more attention in order to improve the consumer's perception of task-technology fit. This finding suggests that managers should invest more in IoT applications to provide high-quality remote and automation services that could reduce uncertainty risks. If done well, then this is likely to enhance the perceived task-technology fit of tourists while travelling in a post-Covid-19 era.

6.5 Limitations and Future Research

While the results of this study are valuable for theory development and practitioners, there, there are some limitations that should be taken into consideration. First, this study focused on the tourism industry. However, tourism can be seen as a subjective experience with an amalgam of products and services. There is not a single product that conforms to the outcomes that define many industries. Different industries have other characteristics and can vary significantly. It is well worth validating the effects of IoT on individual subjective well-being using data from other industrial sectors such as retailing, education and healthcare. Thus, future research could test this study's model in different sectors or industries. A research project could explore whether there are any significant impacts of IoT adoption on consumers' subjective well-being in other contexts.

Second, although UK and China are satisfactory representatives of western and eastern cultures and are developed and developing countries, respectively. This sample is limited to only two countries of 200+ countries around the world. Thus, future studies should replicate this study with other countries and other settings and use other theoretical perspectives to extend the generalizability of this study's results. Moreover, the findings can be further validated and generalized with other data analysis methods such as sentiment analytics and image analysis.

Third, this research investigated only two of Hofstede's cultural dimensions, individualism and uncertainty avoidance which are most relevant given the context of the study. However, different cultural dimensions have their own characteristics which may have different influences on other aspects of an individual's subjective well-being. Thus, exploring the effects of other cultural dimensions could be a research track for future studies. Doing so, would provide a further understanding of an individual's well-being in the ever-evolving era of IoT.

Fourth, despite the fact that the sample is homogeneous (city break travellers), the degree of perceived value, confirmation of expectations, and SWB are different depending on demographic information and the personality types of the participants. For example, people travelling alone may rely more on the use of technologies than those travelling in a group, and thus they might have different perceptions of the use of technologies. Thus, this study suggests that future studies may wish to integrate other potential constructs of interest pertinent to consumer well-being. Such research will aid the development of an even more comprehensive framework. For instance, considering 'travel-style' as a control variable upon traveller well-being associated with technology usage.

Finally, we focused on subjective well-being, which refers to the well-being perceived by an individual. Thus, future studies should take both subjective and objective notions into consideration by examining a consumer's well-being in another context. Both approaches can provide crucial insights into the understanding of how technology affects well-being.

REFERENCES

ABTA (2022) Travel Trends report (online) https://www.abta.com/system/files/media/uploads/Travel%20Trends_digital%2026112018.pdf (accessed 24th June 2022)

Afshan, S., & Sharif, A. (2016). Acceptance of mobile banking framework in Pakistan. *Telematics and Informatics*, *33*(2), 370-387.

Agarwal, R. & Prasad, J. (1998). A conceptual and operational definition of personal innovativeness in the domain of information technology. *Information Systems Research*, *9*(2), 204-215.

Ahn, J., & Back, K. J. (2018). Influence of brand relationship on customer attitude toward integrated resort brands: a cognitive, affective, and conative perspective. *Journal of Travel & Tourism Marketing*, *35*(4), 449-460.

Ajayi, S., Loureiro, S. M. C., & Langaro, D. (2022). Internet of things and consumer engagement on retail: state-of-the-art and future directions. *EuroMed Journal of Business*.

Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, *50*(2), 179-211.

Akhtar, S., Irfan, M., Sarwar, A., & Rashid, Q. U. A. (2019). Factors influencing individuals' intention to adopt mobile banking in China and Pakistan: The moderating role of cultural values. *Journal of Public Affairs*, *19*(1), e1884.

Akdeniz, M. B., & Talay, M. B. (2013). Cultural variations in the use of marketing signals: A multilevel analysis of the motion picture industry. *Journal of the Academy of Marketing Science*, *41*(5), 601-624.

Akdim, K., Casaló, L. V., & Flavián, C. (2022). The role of utilitarian and hedonic aspects in the continuance intention to use social mobile apps. *Journal of Retailing and Consumer Services*, *66*, 102888

Alletto, S., Cucchiara, R., Del Fiore, G., Mainetti, L., Mighali, V., Patrono, L., & Serra, G. (2015). An indoor location-aware system for an IoT-based smart museum. *IEEE Internet of Things Journal*, *3*(2), 244-253.

Alraimi, K.M., Zo, H. & Ciganek, A.P. (2015). Understanding the MOOCs continuance: The role of openness and reputation. *Computers & Education*, 80, 28-38

Alamri, A., & Alamri, S. (2021). Live data analytics with IoT intelligence-sensing system in public transportation for COVID-19 pandemic. *Intelligent Automation and Soft Computing*, 441-452

Al-Maatouk, Q., Othman, M. S., Aldraiweesh, A., Alturki, U., Al-Rahmi, W. M., & Aljeraiwi, A. A. (2020). Task-technology fit and technology acceptance model application to structure and evaluate the adoption of social media in academia. *IEEE Access*, *8*, 78427-78440.

Al-Hattami, H. M. (2021). Determinants of intention to continue usage of online shopping under a pandemic: COVID-19. *Cogent Business & Management*, *8*(1), 1936368

Alhasan, A., Audah, L., Ibrahim, I., Al-Sharaa, A., Al-Ogaili, A. S., & Mohammed, J. M. (2020). A case-study to examine doctors' intentions to use IoT healthcare devices in Iraq during COVID-19 pandemic. *International Journal of Pervasive Computing and Communications*, 11(9).

Alraja, M. (2022). Frontline healthcare providers' behavioural intention to Internet of Things (IoT)-enabled healthcare applications: A gender-based, cross-generational study. *Technological Forecasting and Social Change*, *174*, 121256.

Almobaideen, W., Krayshan, R., Allan, M., & Saadeh, M. (2017). Internet of Things: Geographical Routing based on healthcare centers vicinity for mobile smart tourism destination. *Technological Forecasting and Social Change*, *123*, 342-350.

Ambalov, I. A. (2018). A meta-analysis of IT continuance: An evaluation of the expectation-confirmation model. *Telematics and Informatics*, *35*(6), 1561-1571.

Amer, M., & Alqhtani, A. (2019). IoT applications in smart hotels. *International Journal of Internet of Things and Web Services*, *6*.

Armstrong, J. S., & Overton, T. S. (1977). Estimating nonresponse bias in mail surveys. *Journal of Marketing Research*, *14*(3), 396-402.

Arbuckle, J. L. (2003). *Amos 5.0 User's Guide*. Chicago, IL: SPSS, Inc.

Ashraf, S., Ilyas, R., Imtiaz, M. & Ahmad, S. (2018). Impact of service quality, corporate image and perceived value on brand loyalty with presence and absence of customer satisfaction: A study of four service sectors of Pakistan. *International Journal of Academic Research in Business and Social Sciences*, 8(2), 452-474.

Ashraf, A. R., Tek, N. T., Anwar, A., Lapa, L., & Venkatesh, V. (2021). Perceived values and motivations influencing m-commerce use: A nine-country comparative study. *International Journal of Information Management*, *59*, 102318.

Ashraf, A. R., Thongpapanl, N., Menguc, B., & Northey, G. (2017). The role of m-commerce readiness in emerging and developed markets. *Journal of International Marketing*, *25*(2), 25-51.

Ashton, K. (2009). That 'internet of things' thing. *RFID Journal*, *22*(7), 97-114.

Asghari, P., Rahmani, A. M., & Javadi, H. H. S. (2019). Internet of Things applications: A systematic review. *Computer Networks*, *148*, 241-261.

Atzori, L., Iera, A., & Morabito, G. (2010). The internet of things: A survey. *Computer Networks*, *54*(15), 2787-2805.

Au, Alan Kai-ming, and Peter Enderwick (2000), "A cognitive model on attitude towards technology adoption." *Journal of Managerial Psychology*, 15(4), 266-282

Aw, E. C. X., Basha, N. K., Ng, S. I., & Sambasivan, M. (2019). To grab or not to grab? The role of trust and perceived value in on-demand ridesharing services. *Asia Pacific Journal of Marketing and Logistics*, 31(5), 1442-1465.

Azungah, T. (2018). Qualitative research: Deductive and inductive approaches to data analysis. *Qualitative Research Journal, 18*(4), 383–400.

Babbie, E., Wagner III, W. E., & Zaino, J. (2022). *Adventures in social research: Data analysis using IBM SPSS statistics*. CA: Sage Publications.

Bagozzi, R. P., Yi, Y., & Singh, S. (1991). On the use of structural equation models in experimental designs: Two extensions. *International Journal of Research in Marketing*, *8*(2), 125-140.

Balińska, A. (2020). City break as a form of urban tourism. *Zeszyty Naukowe Małopolskiej Wyższej Szkoły Ekonomicznejw Tarnowie*, 2 (46), 85-95.

Baker, M. (2002). Sampling. *The Market Review*, 3(1), 103-120.

Baldini, G., Skarmeta, A., Fourneret, E., Neisse, R., Legeard, B., & Le Gall, F. (2016). Security certification and labelling in Internet of Things, *IEEE*, 627-632.

Baltuttis, D., Häckel, B., Jonas, C. M., Oberländer, A. M., Röglinger, M., & Seyfried, J. (2022). Conceptualizing and Assessing the Value of Internet of Things Solutions. *Journal of Business Research, 140,* 245-263.

Baptista, G., & Oliveira, T. (2015). Understanding mobile banking: The unified theory of acceptance and use of technology combined with cultural moderators. *Computers in Human Behavior, 50,* 418-430.

Bawack, R. & Ahmad, M. (2021). Understanding business analytics continuance in agile information system development projects: an expectation-confirmation perspective. *Information Technology & People*, 34(6), 1551-1569.

Bec, A., Moyle, B., Schaffer, V., & Timms, K. (2021). Virtual reality and mixed reality for second chance tourism. *Tourism Management*, *83*, 104256.

Behr, D. (2017). Assessing the use of back translation: The shortcomings of back translation as a quality testing method. *International Journal of Social Research Methodology*, *20*(6), 573-584.

Bellini, E., Bellini, P., Cenni, D., Nesi, P., Pantaleo, G., Paoli, I., & Paolucci, M. (2021). An IoE and big multimedia data approach for urban transport system resilience management in smart cities. *Sensors*, *21*(2), 435.

Bell, E., Bryman, A. & Harley, B. (2018). *Business Research Methods*. Oxford university press.

Benckendorff, P. J., Xiang, Z., & Sheldon, P. J. (2019). *Tourism information technology*. Cabi.

Berezan, O., Raab, C., Tanford, S., & Kim, Y. S. (2015). Evaluating loyalty constructs among hotel reward program members using eWOM. *Journal of Hospitality & Tourism Research*, *39*(2), 198-224.

Bethune, E., Buhalis, D., & Miles, L. (2022). Real time response (RTR): Conceptualizing a smart systems approach to destination resilience. *Journal of Destination Marketing & Management*, *23*, 100687.

Bergstad, C. J., Gamble, A., Gärling, T., Hagman, O., Polk, M., Ettema, D., ... & Olsson, L. E. (2011). Subjective well-being related to satisfaction with daily travel. *Transportation*, *38*(1), 1-15.

Bertrandias, L., Ben, L. O. W. E., Sadik-Rozsnyai, O., & Carricano, M. (2021). Delegating decision-making to autonomous products: A value model emphasizing the role of well-being. *Technological Forecasting and Social Change*, *169*, 120846.

Bhattacherjee, A. (2001). Understanding Information Systems Continuance: An Expectation-Confirmation Model. *MIS Quarterly*, 25(3), 351

Bourque, L. & Fielder, E.P. (2003). How to conduct self-administered and mail surveys. Sage.

Bochner, S., & Hesketh, B. (1994). Power distance, individualism/collectivism, and job-related attitudes in a culturally diverse work group. *Journal of Cross-cultural Psychology*, *25*(2), 233-257.

Boto-García, D., & Mayor, M. (2022). Domestic tourism and the resilience of hotel demand. *Annals of Tourism Research*, *93*, 103352.

Bracken, S. (2010). Discussing the Importance of Ontology and Epistemology Awareness in Practitioner Research. *Worcester Journal of Learning and Teaching*, 4(1), 202-332

Bradburn, N. M., & Caplovitz, D. (1965). *Reports on happiness: A pilot study of behavior related to mental health*. Chicago: Aldine Publishing Company.

Bryman, A. (2015). *Social Research Methods*. Oxford: Oxford University Press.

Bryman, A. & Bell, E. (2015). *Business research methods*. 4th ed. Oxford: Oxford University Press, 397-400

Bryman, A. (2017). Quantitative and qualitative research: further reflections on their integration. In *Mixing methods: Qualitative and quantitative research* (pp. 57-78). Routledge.

Buhalis, D., & Amaranggana, A. (2015). Smart tourism destinations enhancing tourism experience through personalisation of services. In *Information and communication technologies in tourism 2015* (pp. 377-389). Springer, Cham.

Buhalis, D. (2022). E Tourism. In *Encyclopedia of Tourism Management and Marketing*. Edward Elgar Publishing.

Buhalis, D. (2019). Technology in tourism-from information communication technologies to eTourism and smart tourism towards ambient intelligence tourism: a perspective article. *Tourism Review*.

Buhalis, D., Harwood, T., Bogicevic, V., Viglia, G., Beldona, S., & Hofacker, C. (2019). Technological disruptions in services: lessons from tourism and hospitality. *Journal of Service Management*.

Busseri, M. A., & Sadava, S. W. (2013). Subjective well-being as a dynamic and agentic system: Evidence from a longitudinal study. *Journal of happiness studies*, *14*(4), 1085-1112.

Byrne, B. M. (2013). *Structural equation modeling with Mplus: Basic concepts, applications, and programming*. Routledge.

Byrne, B. M. (2001). Structural equation modeling: Perspectives on the present and the future. *International Journal of Testing*, *1*(3-4), 327-334.

Castellacci, F., & Tveito, V. (2018). Internet use and well-being: A survey and a theoretical framework. *Research Policy*, *47*(1), 308-325.

Cai, R., & Leung, X. Y. (2020). Mindset matters in purchasing online food deliveries during the pandemic: The application of construal level and regulatory focus theories. *International Journal of Hospitality Management*, *91*, 102677.

Canaviri, J. A. (2016). Measuring the concept of “wellbeing”: A first approach for Bolivia. *International Journal of Wellbeing*, *6*(1).

Carson, D., Gilmore, A., Perry, C., & Gronhaug, K. (2001). *Qualitative marketing research*. Sage

Casaló, L. V., Flavián, C., & Ibáñez-Sánchez, S. (2017). Understanding consumer interaction on instagram: The role of satisfaction, hedonism, and content characteristics. *Cyberpsychology, Behavior, and Social Networking*, *20*(6), 369-375

Car, T., Stifanich, L. P., & Šimunić, M. (2019). Internet of things (IoT) in tourism and hospitality: Opportunities and challenges. *Tourism in South East Europe*, *5*, 163-175.

Cardon, P. W., & Marshall, B. A. (2008). National culture and technology acceptance: The impact of uncertainty avoidance. *Issues in Information Systems*, *9*(2), 103-110.

Cavana, R. Y., Delahaye, B. L., Sekaran, U. (2000) Applied Business Research: Qualitative and Quantitative Methods, John Wiley & Sons Australia Ltd., Australia.

Celik, A., Salama, K. N., & Eltawil, A. M. (2021). The internet of bodies: A systematic survey on propagation characterization and channel modeling. *IEEE Internet of Things Journal*, *9*(1), 321-345.

Charterina, J., & Aparicio, G. (2015). A comparison of antecedents of satisfaction in city break traveling. *Revista Española de Investigación de Marketing ESIC*, *19*(2), 71-82.

Chatterjee, U., Bhunia, G. S., Mahata, D., & Singh, U. (2021). Smart Cities and Their Role in Enhancing Quality of Life. In *Quality of Life* (pp. 127-143). CRC Press.

Chatterjee, S., & Mandal, P. (2020). Traveler preferences from online reviews: Role of travel goals, class and culture. *Tourism Management*, *80*, 104108.

Chen, S., Tian, D., Law, R., & Zhang, M. (2022). Bibliometric and visualized review of smart tourism research. *International Journal of Tourism Research*, *24*(2), 298-307.

Chen, Y. S., & Huang, S. Y. (2017). The effect of task-technology fit on purchase intention: The moderating role of perceived risks. *Journal of Risk Research*, *20*(11), 1418-1438.

Chen, S. C., & Lin, C. P. (2019). Understanding the effect of social media marketing activities: The mediation of social identification, perceived value, and satisfaction. *Technological Forecasting and Social Change*, *140*, 22-32.

Chen, T., & Chiu, M. C. (2018). Smart technologies for assisting the life quality of persons in a mobile environment: a review. *Journal of Ambient Intelligence and Humanized Computing*, *9*(2), 319-327.

Chen, S., Law, R., Zhang, M., & Si, Y. (2021). Mobile Communications for Tourism and Hospitality: A Review of Historical Evolution, Present Status, and Future Trends. *Electronics*, *10*(15), 1804.

Cheng, E. W. (2001). SEM being more effective than multiple regression in parsimonious model testing for management development research. *Journal of Management Development*, 20(7), 650-667.

Cheng, Y. M. (2019). How does task-technology fit influence cloud-based e-learning continuance and impact?. *Education+ Training*, *61*(4), 480-499.

Cheng, Y. M. (2020). Understanding cloud ERP continuance intention and individual performance: a TTF-driven perspective. *Benchmarking: an International Journal*, *27*(4), 1591-1614.

Choudrie, J., & Dwivedi, Y. K. (2005). Investigating the research approaches for examining technology adoption issues. *Journal of Research Practice*, 1(1), D1-D1.

Chiu, W., Cho, H., & Chi, C. G. (2020). Consumers' continuance intention to use fitness and health apps: an integration of the expectation–confirmation model and investment model. *Information Technology & People*, 34 (3), 978-998

Chin, W. W. (1998). The partial least squares approach to structural equation modeling. *Modern Methods for Business Research*, *295*(2), 295-336.

Chi, X., & Han, H. (2021). Emerging rural tourism in China's current tourism industry and tourist behaviors: The case of Anji County. *Journal of Travel & Tourism Marketing*, *38*(1), 58-74.

Choi, B., Lee, I., & Kim, J. (2006). Culturability in mobile data services: A qualitative study of the relationship between cultural characteristics and user-experience attributes. *International Journal of Human-Computer Interaction*, *20*(3), 171-203.

Chung, N., Lee, H., Kim, J. Y., & Koo, C. (2018). The role of augmented reality for experience-influenced environments: The case of cultural heritage tourism in Korea. *Journal of Travel Research*, *57*(5), 627-643.

Cimbaljević, M., Stankov, U., & Pavluković, V. (2019). Going beyond the traditional destination competitiveness–reflections on a smart destination in the current research. *Current Issues in Tourism*, *22*(20), 2472-2477.

Clewlow, R., & Mishra, G. S. (2017). *Shared mobility: Current adoption, use, and potential impacts on travel behavior* (No. 17-05729).

Collis, J. and Hussey, R. (2014). *Business research: A practical guide for undergraduate and postgraduate students*. New York: Palgrave Macmillan.

Costello, A. B., & Osborne, J. (2005). Best practices in exploratory factor analysis: Four recommendations for getting the most from your analysis. *Practical assessment, research, and evaluation*, *10*(1), 7.

Coves-Martínez, Á. L., Sabiote-Ortiz, C. M., & Frías-Jamilena, D. M. (2022). Cultural intelligence as an antecedent of satisfaction with the travel app and with the tourism experience. *Computers in Human Behavior*, *127*, 107049.

Cranmer, E. E., Papalexi, M., tom Dieck, M. C., & Bamford, D. (2022). Internet of Things: Aspiration, implementation and contribution. *Journal of Business Research*, *139*, 69-80.

Creswell, W. J. (2003). *Research Design, Qualitative, Quantitative and Mixed Methods Approaches.* London: Sage.

Creswell, W. J. (2009). Quantitative, Qualitative, and Mix Methods Approach.

Churchill, G. A. (1999). *Marketing Research: Methodological Foundations.* Chicago: Dryden.

Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, 319-340.

Davis, D. (2005). *Business Research for Decision Making*, Australia, Thomson South-Western.

Dash, G., & Paul, J. (2021). CB-SEM vs PLS-SEM methods for research in social sciences and technology forecasting. *Technological Forecasting and Social Change*, *173*, 121092.

D'Ambra, J., Wilson, C. S., & Akter, S. (2013). Application of the task-technology fit model to structure and evaluate the adoption of E-books by Academics. *Journal of the American society for information science and technology*, *64*(1), 48-64.

D'ambra, J., & Wilson, C. S. (2004). Use of the World Wide Web for international travel: Integrating the construct of uncertainty in information seeking and the task-technology fit (TTF) model. *Journal of the American Society for Information Science and Technology*, *55*(8), 731-742.

Deci, E. L. (1971). Effects of externally mediated rewards on intrinsic motivation. *Journal of Personality and Social Psychology*, *18*(1), 105.

De Vaus, DA. (2002). *Surveys in Social Research (5th edn).* Routledge.

De Vos, J., Schwanen, T., Van Acker, V., & Witlox, F. (2013). Travel and subjective well-being: A focus on findings, methods and future research needs. *Transport Reviews*, *33*(4), 421-442.

Demirel, E., Karagöz Zeren, S., & Hakan, K. (2022). Smart contracts in tourism industry: a model with blockchain integration for post pandemic economy. *Current Issues in Tourism*, *25*(12), 1895-1909.

Deng, D. J., & Benslimane, A. (2022). Innovation and Application of Internet of Things for Smart Cities. *Mobile Networks and Applications*, *27*(1), 1-2.

Diallo, M. F., Diop-Sall, F., Djelassi, S., & Godefroit-Winkel, D. (2018). How shopping mall service quality affects customer loyalty across developing countries: The moderation of the cultural context. *Journal of International Marketing*, *26*(4), 69-84.

Dickinger, A., Arami, M. & Meyer, D. (2008). The role of perceived enjoyment and social norm in the adoption of technology with network externalities. *European Journal of Information Systems*, 17(1), 4-11.

Diener, E., Oishi, S., & Lucas, R. E. (2003). Personality, culture, and subjective well-being: Emotional and cognitive evaluations of life. *Annual Review of Psychology*, *54*(1), 403-425.

Diener, E. (1994). Assessing subjective well-being: Progress and opportunities. *Social indicators research*, *31*(2), 103-157.

Diener, E. (2009). Subjective well-being. *The science of well-being*, 11-58.

Dolnicar, S., Yanamandram, V., & Cliff, K. (2012). The contribution of vacations to quality of life. *Annals of tourism research*, *39*(1), 59-83.

Dunne, G., Flanagan, S., & Buckley, J. (2011). Towards a decision-making model for city break travel. *International Journal of Culture, Tourism and Hospitality Research*.

Durach, C. F., & Wiengarten, F. (2017). Exploring the impact of geographical traits on the occurrence of supply chain failures. *Supply Chain Management: An International Journal*.

Dykins, R. (2022). Leyeju smart hotels offer entirely touch-free stays in China. Retrieved 21 August 2022, from https://globetrender.com/2020/08/24/leyeju-smart-hotels-touch-free-stays-china/

Egger, I., Lei, S. I., & Wassler, P. (2020). Digital free tourism–an exploratory study of tourist motivations. *Tourism Management*, *79*, 104098.

Eisenhardt, K. (1989). Building Theory from Case Study Research. *Academy of Management Review*, 14(40), 532-550.

El-Masri, M., Al-Yafi, K., & Kamal, M. M. (2022). A Task-Technology-Identity Fit Model of Smartwatch Utilisation and User Satisfaction: A Hybrid SEM-Neural Network Approach. *Information Systems Frontiers*, 1-18.

El-Adly, M. I. (2019). Modelling the relationship between hotel perceived value, customer satisfaction, and customer loyalty. *Journal of Retailing and Consumer Services*, *50*, 322-332.

El-Haddadeh, R., Weerakkody, V., Osmani, M., Thakker, D. and Kapoor, K.K. (2019). Examining citizens' perceived value of internet of things technologies in facilitating public sector services engagement. *Government Information Quarterly*, *36*(2), 310-320.

Erdem, A., & Şeker, F. (2022). Tourist Experience and Digital Transformation. In *Handbook of Research on Digital Communications, Internet of Things, and the Future of Cultural Tourism* (pp. 103-120). IGI Global.

Escobar-Rodríguez, T. & Carvajal-Trujillo, E. (2014). Online purchasing tickets for low-cost carriers: An application of the unified theory of acceptance and use of technology (UTAUT) model. *Tourism Management, 43*, 70-88.

Faul, F., Erdfelder, E., Buchner, A., & Lang, A. G. (2009). Statistical power analyses using G* Power 3.1: Tests for correlation and regression analyses. *Behavior Research Methods*, *41*(4), 1149-1160.

Fabrigar, L. R., Wegener, D. T., MacCallum, R. C., & Strahan, E. J. (1999). Evaluating the use of exploratory factor analysis in psychological research. *Psychological Methods*, *4*(3), 272.

Falk, R. F., & Miller, N. B. (1992). *A primer for soft modeling*. University of Akron Press.

Fang, Y., Tang, T., Li, Y., Hou, C., Wen, F., Yang, Z., & Lee, C. (2021). A high-performance triboelectric-electromagnetic hybrid wind energy harvester based on rotational tapered rollers aiming at outdoor IoT applications. *IScience*, *24*(4), 102300.

Festinger, L. (1962). Cognitive dissonance. *Scientific American*, *207*(4), 93-106.

Featherman, M., Jia, S. J., Califf, C. B., & Hajli, N. (2021). The impact of new technologies on consumers beliefs: Reducing the perceived risks of electric vehicle adoption. *Technological Forecasting and Social Change*, 169, 120847

Field, A. (2005). *Discovering Statistics Using SPSS*. London: Sage Publications Ltd.

Field, A. P. (2000). *Discovering Statistics Using SPSS for Windows: Advanced Techniques for the Beginner*. London: Sage Publications.

Finstad, K. (2010). Response interpolation and scale sensitivity: Evidence against 5-point scales. *Journal of Usability Studies*, *5*(3), 104-110.

Fishbein, M. (1979). A theory of reasoned action: some applications and implications.

Fowler Jr, F. J., & Cosenza, C. (2009). Design and evaluation of survey questions. *The SAGE handbook of Applied Social Research Methods, 2,* 375-412.

Fornell, C. & Larcker, D. F. (1981). Evaluating Structural Equations with Unobservable Variables and Measurement Error. *Journal of Marketing Research,* 18, 39-50

Franque, F. B., Oliveira, T., & Tam, C. (2022). Continuance intention of mobile payment: TTF model with Trust in an African context. *Information Systems Frontiers,* 1-19.

Gaberli, Ü. (2022). Cultural Tourism, Internet of Things, and Smart Technologies in Museums. In *Handbook of Research on Digital Communications, Internet of Things, and the Future of Cultural Tourism* (pp. 260-270). IGI Global.

Gan, C., & Wang, W. (2017). The influence of perceived value on purchase intention in social commerce context. *Internet Research*.

Gan, C., Li, H., & Liu, Y. (2017). Understanding mobile learning adoption in higher education: An empirical investigation in the context of the mobile library. *The Electronic Library*.

Gao, M., & Potwarka, L. (2021). Investigating the role of family travel and family functioning in promoting Chinese adolescents' subjective wellbeing. *Journal of Leisure Research*, *52*(4), 487-507.

García-Milon, A., Olarte-Pascual, C., & Juaneda-Ayensa, E. (2021). Assessing the moderating effect of COVID-19 on intention to use smartphones on the tourist shopping journey. *Tourism Management*, *87*, 104361.

Gaskin, J., & Lim, J. (2016). Model fit measures. *Gaskination's StatWiki*, 1-55.

Gelter, J., Lexhagen, M., & Fuchs, M. (2021). A meta-narrative analysis of smart tourism destinations: implications for tourism destination management. *Current Issues in Tourism*, *24*(20), 2860-2874.

Gilbert, N. (2001) *Researching Social Life*, 2nd edn, Sage, London.

Golets, A., Farias, J., Pilati, R., & Costa, H. (2021). COVID-19 pandemic and tourism: The impact of health risk perception and intolerance of uncertainty on travel intentions. *Current Psychology*, 1-14.

Goodhue, D. L., & Thompson, R. L. (1995). *Task-technology fit and individual performance*. *MIS Quarterly*, 213-236.

Goodhue, D. L. (1998). Development and measurement validity of a task-technology fit instrument for user evaluations of information system. *Decision Sciences*, *29*(1), 105-138.

Gretzel, U. (2022). The Smart DMO: A new step in the digital transformation of destination management organizations. *European Journal of Tourism Research*, *30*, 3002-3002.

Griffith, D. A., Dean, T., & Hoppner, J. J. (2021). Choices and consequences: Recommendations for an improved understanding of cultural distance in international marketing research. *Journal of International Marketing*, *29*(3), 23-42.

Griffith, D. A., & Rubera, G. (2014). A cross-cultural investigation of new product strategies for technological and design innovations. *Journal of International Marketing*, *22*(1), 5-20.

Griffith, D.A. and Rubera, G. (2014). A cross-cultural investigation of new product strategies for technological and design innovations. *Journal of International Marketing*, *22*(1), 5-20.

Gretzel, U., Sigala, M., Xiang, Z., & Koo, C. (2015). Smart tourism: foundations and developments. *Electronic Markets, 25*(3), 179-188.

Gretzel, U., & Stankov, U. (2021). ICTs and well-being: challenges and opportunities for tourism. *Information Technology & Tourism*, *23*(1), 1-4.

Gretzel, U., & Koo, C. (2021). Smart tourism cities: a duality of place where technology supports the convergence of touristic and residential experiences. *Asia Pacific Journal of Tourism Research*, *26*(4), 352-364.

Guan, S.S.A., Chiang, J.J., Sherman, L.E., Nguyen, J., Tsui, Y. & Robles, T.F. (2017). Culture moderates the effect of social support across communication contexts in young adult women in the United States. *Computers in Human Behavior*, 75, 775-784.

Guba, E.G. & Lincoln, Y.S. (1994). Competing paradigms in qualitative research in Handbook of Qualitative Research, eds. NK. Denzin & YS. Lincoln, Sage, Thousand Oaks, 105-117

Gummesson, E. (2000). *Qualitative methods in management research*. Sage Publications, Inc.

Gurin, G., Veroff, J., & Feld, S. (1960). *Americans view their mental health*. New York: Basic Books.

Guillemin, P., & Friess, P. (2009). Internet of Things-Strategic Research Roadmap, European Commission. *Europe: Rivers publishers series in communications*.

Guo, X., Wang, Y., Mao, J., Deng, Y., Chan, F. T., & Ruan, J. (2022). Towards an iot enabled tourism and visualization review on the relevant literature in recent 10 years. *Mobile Networks and Applications*, *27*(3), 886-899.

Gupta, A., Yousaf, A. and Mishra, A. (2020). How pre-adoption expectancies shape post-adoption continuance intentions: An extended expectation-confirmation model. *International Journal of Information Management, 52*, 102094.

Hair, Joseph F., William C. Black, & Anderson Babin. (2006). *Multivariate data analysis* (6^{th} ed.), New Jersey: Pearson Prentice Hall

Hair, J., Black, W., Babin, B., Anderson, R. & Tatham, R. (2010). *Multivariate Data Analysis*. 7th edn. Englewood Cliffs, NJ: Prentice-Hall.

Hair Jr, J. F., Sarstedt, M., Ringle, C. M., & Gudergan, S. P. (2017). *Advanced issues in partial least squares structural equation modeling*. saGe publications.

Hair Jr, J. F., & Sarstedt, M. (2021). Data, measurement, and causal inferences in machine learning: opportunities and challenges for marketing. *Journal of Marketing Theory and Practice*, *29*(1), 65-77.

Hailey Shin, H., Jeong, M., & Cho, M. H. (2021). The impact of smart tourism technology and domestic travelers' technology readiness on their satisfaction and behavioral intention: A c ross-country comparison. *International Journal of Tourism Research*, *23*(5), 726-742.

Haralambos, M., & Heald, R. M. (2009). *Sociology, themes and perspectives*. Oxford University Press.

Hassan A. (2022). *Digital Transformation and Innovation in Tourism Events.* Abington: Taylor and Francis.

Herrera-Quintero, L. F., Vega-Alfonso, J. C., Banse, K. B. A., & Zambrano, E. C. (2018). Smart its sensor for the transportation planning based on iot approaches using serverless and microservices architecture. *IEEE Intelligent Transportation Systems Magazine*, *10*(2), 17-27.

Hidayat, D., Pangaribuan, C. H., Putra, O. P. B., & Irawan, I. (2021). Contemporary Studies of Task-Technology Fit: A Review of the Literature. , *International Conference on Information Management and Technology (ICIMTech).*

Hilton New Room. (2022). Hilton Introduces Industry-Leading Tech Enhancements. Online https://stories.hilton.com/releases/hilton-debuts-industry-leading-tech-enhancements (access 30th Agust 2022)

Howard, M. C., & Davis, M. M. (2022). A meta-analysis and systematic literature review of mixed reality rehabilitation programs: Investigating design characteristics of augmented reality and augmented virtuality. *Computers in Human Behavior*, 107197.

Holm, M. R., Lugosi, P., Croes, R. R., & Torres, E. N. (2017). Risk-tourism, risk-taking and subjective well-being: A review and synthesis. *Tourism Management*, *63*, 115-122.

Holdack, E., Lurie-Stoyanov, K., & Fromme, H. F. (2020). The role of perceived enjoyment and perceived informativeness in assessing the acceptance of AR wearables. *Journal of Retailing and Consumer Services*, 102259

Hong, J. C., Lin, P. H., & Hsieh, P. C. (2017). The effect of consumer innovativeness on perceived value and continuance intention to use smartwatch. *Computers in Human Behavior*, *67*, 264-272.

Hong, Y. Y., Morris, M. W., Chiu, C. Y., & Benet-Martinez, V. (2000). Multicultural minds: A dynamic constructivist approach to culture and cognition. *American Psychologist*, *55*(7), 709.

Hoyle, R. H. (1995). *Structure Equation Modeling: Concepts, Issues, and Applications, Thousand Oaks,* Calif and London; Sage Publications.

Hofstede, G. (1980). Motivation, leadership, and organization: do American theories apply abroad?. *Organizational Dynamics*, 9(1), 42-63.

Hofstede, G. (1983). The cultural relativity of organizational practices and theories. *Journal of International Business Studies*, *14*(2), 75-89.

Hofstede, G., & Minkov, M. (2010). Long-versus short-term orientation: new perspectives. *Asia Pacific Business Review*, *16*(4), 493-504.

Hofstede, G. (2001). Culture's consequences: Comparing values, behaviors, institutions and organizations across nations. Sage publications.

Hofstede, G. (2019). 'The 6-D model of national culture'. Retrieved February, 4, p.2019.

Hofstede, G.H., Hofstede, G.J. & Minkov, M. (2005). Cultures and organizations: Software of the mind (Vol. 2). New York: Mcgraw-hill.

Houston III, L., Grandey, A. A., & Sawyer, K. (2018). Who cares if "service with a smile" is authentic? An expectancy-based model of customer race and differential service reactions. *Organizational Behavior and Human Decision Processes*, *144*, 85-96.

Howard, M. C., & Rose, J. C. (2019). Refining and extending task–technology fit theory: Creation of two task–technology fit scales and empirical clarification of the construct. *Information & Management*, *56*(6), 103134.

Hsu, M. J., Ting, H., Lui, T. W., Chen, S. C., & Cheah, J. H. (2022). Guest editorial: Challenges and prospects of AIoT application in hospitality and tourism marketing. *Journal of Hospitality and Tourism Technology*, *13*(3), 349-355.

Hsu, C. L., & Lin, J. C. C. (2016). An empirical examination of consumer adoption of Internet of Things services: Network externalities and concern for information privacy perspectives. *Computers in Human Behavior, 62*, 516-527.

Hu, M. Y., Pantano, E., & Stylos, N. (2021). How does Internet of Things (IOT) affect travel experience?. In *Tourism marketing in Western Europe* (pp. 9-25). Wallingford UK: CABI.

Huang, C. D., Goo, J., Nam, K., & Yoo, C. W. (2017). Smart tourism technologies in travel planning: The role of exploration and exploitation. *Information & Management*, *54*(6), 757-770.

Huang, N., Burtch, G., Hong, Y., & Polman, E. (2016). Effects of multiple psychological distances on construal and consumer evaluation: A field study of online reviews. *Journal of Consumer Psychology*, *26*(4), 474-482.

Huang, C. E., & Liu, C. H. (2018). The creative experience and its impact on brand image and travel benefits: The moderating role of culture learning. *Tourism Management Perspectives*, *28*, 144-155.

Hussey, J. & Hussey, R. (1997) *Business Research: A Practical Guide for Undergraduate and Postgraduate Students*, Macmillan, London.

Hwang, J., & Lyu, S. O. (2015). The antecedents and consequences of well-being perception: An application of the experience economy to golf tournament tourists. *Journal of Destination Marketing & Management*, *4*(4), 248-257.

ITU-T Recommendation database. (2022). Retrieved 22 August 2022, from https://www.itu.int/ITU-T/recommendations/rec.aspx?rec=11559&lang=en

Ivlevs, A. (2017). Happy hosts? International tourist arrivals and residents' subjective well-being in Europe. *Journal of Travel Research*, *56*(5), 599-612.

Jamal, S. A., Othman, N. A., & Muhammad, N. M. N. (2011). Tourist perceived value in a community-based homestay visit: An investigation into the functional and experiential aspect of value. *Journal of Vacation Marketing*, *17*(1), 5-15.

Javaid, M., & Khan, I. H. (2021). Internet of Things (IoT) enabled healthcare helps to take the challenges of COVID-19 Pandemic. *Journal of Oral Biology and Craniofacial Research*, *11*(2), 209-214.

Jeyaraj, A. (2022). A meta-regression of task-technology fit in information systems research. *International Journal of Information Management*, *65*, 102493.

Jeong, M., & Shin, H. H. (2020). Tourists' experiences with smart tourism technology at smart destinations and their behavior intentions. *Journal of Travel Research*, *59*(8), 1464-1477.

Joo, S., & Choi, N. (2016). Understanding users' continuance intention to use online library resources based on an extended expectation-confirmation model. *The Electronic Library*.

Johnson, A. G. (2022). Why are smart destinations not all technology-oriented? Examining the development of smart tourism initiatives based on path dependence. *Current Issues in Tourism*, 1-13.

Junaid, M., Hussain, K., Akram, U., Asghar, M. M., Zafar, S., & Hou, F. (2020). Brand love: the emotional bridge between tourists' perceived value and well-being. *Asia Pacific Journal of Tourism Research*, *25*(12), 1329-1342

Kahneman, D., Diener, E., & Schwarz, N. (Eds.). (1999). *Well-being: Foundations of hedonic psychology*. Russell Sage Foundation.

Kahneman, D., & Krueger, A. B. (2006). Developments in the measurement of subjective well-being. *Journal of Economic Perspectives*, *20*(1), 3-24.

Kahneman, D., & Riis, J. (2005). Living, and thinking about it: Two perspectives on life. *The science of well-being*, *1*, 285-304.

Kahneman, D., & Deaton, A. (2010). High income improves evaluation of life but not emotional well-being. *Proceedings of the National Academy of Sciences*, *107*(38), 16489-16493.

Kaiser, H. F. (1974). An index of factorial simplicity. *Psychometrika*, *39*(1), 31-36.

Kansakar, P., Munir, A., & Shabani, N. (2019). Technology in the hospitality industry: Prospects and challenges. *IEEE Consumer Electronics Magazine*, *8*(3), 60-65.

Karl, M. (2018). Risk and uncertainty in travel decision-making: Tourist and destination perspective. *Journal of Travel Research*, *57*(1), 129-146.

Kavetsos, G., & Koutroumpis, P. (2011). Technological affluence and subjective well-being. *Journal of Economic Psychology*, *32*(5), 742-753.

Kebete, Y., & Wondirad, A. (2019). Visitor management and sustainable destination management nexus in Zegie Peninsula, Northern Ethiopia. *Journal of Destination Marketing & Management*, *13*, 83-98.

Khan, I., & Fatma, M. (2021). Online destination brand experience and authenticity: Does individualism-collectivism orientation matter?. *Journal of Destination Marketing & Management*, *20*, 100597.

Khan, I. U., Hameed, Z., Yu, Y., Islam, T., Sheikh, Z., & Khan, S. U. (2018). Predicting the acceptance of MOOCs in a developing country: Application of task-technology fit model, social motivation, and self-determination theory. *Telematics and Informatics*, *35*(4), 964-978.

Kheiri, J., & Nasihatkon, B. (2015). Evaluating the effects of social media usage on tourist's behavior based on different phases of travel process. *SIT Journal of Management*, *5*(2), 21-40.

Kim, Y. H., Kim, D. J., & Wachter, K. (2013). A study of mobile user engagement (MoEN): Engagement motivations, perceived value, satisfaction, and continued engagement intention. *Decision Support Systems*, *56*, 361-370.

Kim, J. J., & Han, H. (2022). Hotel Service Innovation with Smart Technologies: Exploring Consumers' Readiness and Behaviors. *Sustainability*, *14*(10), 5746.

Kim, H.W., Chan, H.C. & Gupta, S. (2007). Value-based adoption of mobile internet: an empirical investigation. *Decision Support Systems*, *43*(1), 111-126.

Kim, H., Woo, E. & Uysal, M. (2015) .Tourism experience and quality of life among elderly tourists. *Tourism Management*, *46*, 465-476.

Kim, Y., Kim, C.K., Lee, D.K., Lee, H.W. & Andrada, R.I.T. (2019). Quantifying nature-based tourism in protected areas in developing countries by using social big data. *Tourism Management*, 72, 249-256.

Kim, J., & Stavrositu, C. (2018). Feelings on Facebook and their correlates with psychological well-being: The moderating role of culture. *Computers in Human Behavior*, *89*, 79-87.

Kirkpatrick, L.A. (2015). *A Simple Guide to IBM SPSS Statistics-Version 23.0*. Cengage Learning.

Kline, R. B. (2005). *Principles and practice of structural equation modeling*. New York: Guilford Press.

Ko, T. S., Kim, B. J., & Jwa, J. W. (2022). Smart Tourism Information System and IoT Data Collection Devices for Location-based Tourism and Tourist Safety Services. *International Journal of Advanced Culture Technology*, *10*(1), 310-316.

Komarraju, M., Dollinger, S. J., & Lovell, J. L. (2008). Individualism-collectivism in horizontal and vertical directions as predictors of conflict management styles. *International Journal of Conflict Management*, *19*(1), 20-35.

Kothari, C. R. (2004). *Research methodology: Methods and techniques (2nd ed.).* New Delhi: New Age International.

Kowalczyk-Anioł, J., Grochowicz, M., & Pawlusiński, R. (2021). How a tourism city responds to COVID-19: A CEE perspective (Kraków case study). *Sustainability*, *13*(14), 7914.

Korte, A., Tiberius, V., & Brem, A. (2021). Internet of Things (IoT) technology research in business and management literature: results from a co-citation analysis. *Journal of Theoretical and Applied Electronic Commerce Research*, *16*(6), 2073-2090.

Ko, E., Kim, H., & Lee, J. (2021). Survey data analysis on intention to use shared mobility services. *Journal of Advanced Transportation*, 1-10.

Krotov, V. (2017). The Internet of Things and new business opportunities. *Business Horizons*, *60*(6), 831-841.

Lee, Inseong, Boreum Choi, Jinwoo Kim, & Se-Joon Hong. (2007). Culture-technology fit: Effects of cultural characteristics on the post-adoption beliefs of mobile Internet users. *International Journal of Electronic Commerce*, 11(4), 11-51.

Lee, D. H. (2021). Linkages among extended service quality, distinct perceived value and satisfaction in the exhibition trust-building process. *Asia Pacific Journal of Marketing and Logistics*, *34*(4), 817-842.

Lee, H., Lee, J., Chung, N., & Koo, C. (2018). Tourists' happiness: are there smart tourism technology effects?. *Asia Pacific Journal of Tourism Research*, *23*(5), 486-501.

Lee, Y., & Kwon, O. (2011). Intimacy, familiarity and continuance intention: An extended expectation–confirmation model in web-based services. *Electronic Commerce Research and Applications*, *10*(3), 342-357.

Leguina, A. (2015). A primer on partial least squares structural equation modeling (PLS-SEM).

Leminen, S., Rajahonka, M., Westerlund, M., & Wendelin, R. (2018). The future of the Internet of Things: toward heterarchical ecosystems and service business models. *Journal of Business & Industrial Marketing*, 33 (6), 749-767.

Li, S., Xu, L. D., & Zhao, S. (2015). The internet of things: a survey. *Information systems frontiers*, *17*(2), 243-259.

Li, J., Gopal, R., & Sigappi, A. N. (2021). IoT in a museum for interactive experience design. *Annals of Operations Research*, 1-21.

Li, Y., Hu, C., Huang, C., & Duan, L. (2017). The concept of smart tourism in the context of tourism information services. *Tourism Management*, *58*, 293-300.

Lin, J., Yu, W., Zhang, N., Yang, X., Zhang, H., & Zhao, W. (2017). A survey on internet of things: Architecture, enabling technologies, security and privacy, and applications. *IEEE Internet of Things Journal*, *4*(5), 1125-1142.

Lin, T., Wu, S., Hsu, J. & Chou, Y. (2012). The integration of value-based adoption and expectation–confirmation models: An example of IPTV continuance intention. *Decision Support Systems*, 54(1), 63-75.

Lin, H. C., Han, X., Lyu, T., Ho, W. H., Xu, Y., Hsieh, T. C. & Zhang, L. (2020). Task-technology fit analysis of social media use for marketing in the tourism and hospitality industry: a systematic literature review. *International Journal of Contemporary Hospitality Management*, 17(1), 1-13.

Lin, W. & Wang, C. (2012). Antecedences to continued intentions of adopting e-learning system in blended learning instruction: A contingency framework based on models of information system success and task-technology fit. *Computers & Education*, 58(1), 88-99.

Lin, K. Y., & Lu, H. P. (2011). Why people use social networking sites: An empirical study integrating network externalities and motivation theory. *Computers in Human Behavior, 27*(3), 1152-1161.

Lin, L. P. L., & Hsieh, W. K. (2022). Exploring how perceived resilience and restoration affected the wellbeing of Matsu pilgrims during COVID-19. *Tourism Management*, *90*, 104473.

Lindberg, K., Munanura, I. E., Kooistra, C., Needham, M. D., & Ghahramani, L. (2022). Understanding effects of tourism on residents: A contingent subjective well-being approach. *Journal of Travel Research*, *61*(2), 346-361.

Ling, H. C., Chen, H. R., Ho, K. K., & Hsiao, K. L. (2021). Exploring the factors affecting customers' intention to purchase a smart speaker. *Journal of Retailing and Consumer Services*, *59*, 102331.

Litvin, Stephen W., John C. Crotts, & Frank L. Hefner . (2004). Cross-cultural tourist behaviour: a replication and extension involving Hofstede's uncertainty avoidance dimension. *International Journal of Tourism Research*, 6(1), 29-37.

Liu, X., Li, J., & Kim, W. G. (2017). The role of travel experience in the structural relationships among tourists' perceived image, satisfaction, and behavioral intentions. *Tourism and Hospitality Research*, *17*(2), 135-146.

Lliev, D. (2021). Consumption, motivation and experience in dark tourism: a conceptual and critical analysis. *Tourism Geographies*, *23*(5-6), 963-984.

Loureiro, S. M. C., Stylos, N., & Miranda, F. J. (2020). Exploring how mindfulness may enhance perceived value of travel experience. *The Service Industries Journal*, *40*(11-12), 800-824.

Loannou, A., Tussyadiah, I., & Miller, G. (2021). That's private! Understanding travelers' privacy concerns and online data disclosure. *Journal of Travel Research*, *60*(7), 1510-1526.

Loannou, A., Tussyadiah, I., & Lu, Y. (2020). Privacy concerns and disclosure of biometric and behavioral data for travel. *International Journal of Information Management*, *54*, 102122.

Lu, H. P., & Yang, Y. W. (2014). Toward an understanding of the behavioral intention to use a social networking site: An extension of task-technology fit to social-technology fit. *Computers in Human Behavior, 34*, 323-332.

Lu, J., Xiao, X., Xu, Z., Wang, C., Zhang, M., & Zhou, Y. (2022). The potential of virtual tourism in the recovery of tourism industry during the COVID-19 pandemic. *Current Issues in Tourism*, *25*(3), 441-457.

Lu, Y., Papagiannidis, S., & Alamanos, E. (2018). Internet of Things: A systematic review of the business literature from the user and organisational perspectives. *Technological Forecasting and Social Change*, *136*, 285-297.

Lv, Q., & Xie, X. (2017). Community involvement and place identity: the role of perceived values, perceived fairness, and subjective well-being. *Asia Pacific Journal of Tourism Research*, *22*(9), 951-964.

Lyu, J., Mao, Z., & Hu, L. (2018). Cruise experience and its contribution to subjective well-being: A case of Chinese tourists. *International Journal of Tourism Research*, *20*(2), 225-235.

Ma, Y. J., Gam, H. J., & Banning, J. (2017). Perceived ease of use and usefulness of sustainability labels on apparel products: application of the technology acceptance model. *Fashion and Textiles*, *4*(1), 1-20.

MacKinnon, D. P., & Luecken, L. J. (2008). How and for whom? Mediation and moderation in health psychology. *Health Psychology*, *27*(2S), S99.

Malik, G., & Rao, A. S. (2019). Extended expectation-confirmation model to predict continued usage of ODR/ride hailing apps: Role of perceived value and self-efficacy. *Information Technology & Tourism*, *21*(4), 461-482.

Marlina, E., & Natalia, D. A. (2017). Land transportation and tourism development. *Journal of Economic & Management Perspectives*, *11*(2), 542-554.

Manchanda, M., & Deb, M. (2022). Effects of multisensory virtual reality on virtual and physical tourism during the COVID-19 pandemic. *Current Issues in Tourism*, *25*(11), 1748-1766.

Matzler, K., Strobl, A., Stokburger-Sauer, N., Bobovnicky, A., & Bauer, F. (2016). Brand personality and culture: The role of cultural differences on the impact of brand personality perceptions on tourists' visit intentions. *Tourism Management, 52,* 507-520.

Mayer, I. (2015). Qualitative research with a focus on qualitative data analysis. *International Journal of Sales, Retailing & Marketing*, *4*(9), 53-67.

Mercan, S., Cain, L., Akkaya, K., Cebe, M., Uluagac, S., Alonso, M., & Cobanoglu, C. (2020). Improving the service industry with hyper-connectivity: IoT in hospitality. *International Journal of Contemporary Hospitality Management*.

Meadow, H. L., & Sirgy, M. J. (2008). Developing a measure that captures elderly's well-being in local marketplace transactions. *Applied Research in Quality of Life*, *3*(1), 63-80.

McCabe, S., & Johnson, S. (2013). The happiness factor in tourism: Subjective well-being and social tourism. *Annals of Tourism Research*, *41*, 42-65.

McCoy, S., Galletta, D. F., & King, W. R. (2005). Integrating national culture into IS research: The need for current individual level measures. *Communications of the Association for Information Systems*, *15*(1), 12.

McDougall, G. H., & Levesque, T. (2000). Customer satisfaction with services: putting perceived value into the equation. *Journal of services marketing*, 14, 392-410.

McGill, T. J., & Klobas, J. E. (2009). A task–technology fit view of learning management system impact. *Computers & Education*, *52*(2), 496-508.

Michalkó, G., Kiss, K., Kovács, B., & Sulyok, J. (2009). The impact of tourism on subjective quality of life among Hungarian population. *Hungarian Geographical Bulletin*, 58(2), 121–136.

Milman, A. (1998). The impact of tourism and travel experience on senior travelers' psychological well-being. *Journal of Travel Research*, 37(2), 166–170.

Miles, M. B. & Huberman, A. M. (1994). *Qualitative data analysis: an expanded sourcebook.* Thousand Okas, Calif.; London, Saga.

Minkov, M., & Hofstede, G. (2011). The evolution of Hofstede's doctrine. *Cross cultural management: An international journal*, *18*(1), 10-20.

Mingers,J.(2003). A classification of the philosophical assumptions of management science methods. *Journal of the Operational Research Society*, 54(6), 559-570.

Mizrachi, I., & Gretzel, U. (2020). Collaborating against COVID-19: bridging travel and travel tech. *Information Technology & Tourism*, *22*(4), 489-496.

Moser, C., & Deichmann, D. (2021). Knowledge sharing in two cultures: the moderating effect of national culture on perceived knowledge quality in online communities. *European Journal of Information Systems, 30*(6), 623-641.

Morgeson III, F. V., Sharma, P. N., & Hult, G. T. M. (2015). Cross-national differences in consumer satisfaction: mobile services in emerging and developed markets. *Journal of International Marketing*, *23*(2), 1-24.

Mortimer, G., Neale, L., Hasan, S. F. E., & Dunphy, B. (2015). Investigating the factors influencing the adoption of m-banking: a cross cultural study. *International Journal of Bank Marketing*, *33*(4), 545-570.

Mohseni, S., Jayashree, S., Rezaei, S., Kasim, A., & Okumus, F. (2018). Attracting tourists to travel companies' websites: the structural relationship between website brand, personal value, shopping experience, perceived risk and purchase intention. *Current Issues in Tourism*, *21*(6), 616-645.

Mohamad, M. A., Hanafiah, M. H., & Radzi, S. M. (2021). Understanding tourist mobile hotel booking behaviour: Incorporating perceived enjoyment and perceived price value in the modified Technology Acceptance Model. *Tourism & Management Studies*, *17*(1), 19-30

Mrňa, D., Badánik, B., & Novák, A. (2021). Internet of things as an optimization tool for smart airport concept. *European Transport-Trasporti Europei*, *82*.

Mubarak, A. S., Ameen, Z. S. I., Tonga, P., & Al-Turjman, F. (2021). Smart Tourism: A Proof of Concept For Cyprus Museum of Modern Arts In The IoT Era. *2021 International Conference on Artificial Intelligence of Things (ICAIoT)*, 49-53

Mueller, R.O. & Hancock, G.R. (2019). *Structural equation modeling*. Routledge/Taylor & Francis Group.

Muijs, D. (2022). Doing Quantitative Research in Education with IBM SPSS Statistics. *Doing Quantitative Research in Education with IBM SPSS Statistics*, 1-100.

Muñoz-Carril, P. C., Hernández-Sellés, N., Fuentes-Abeledo, E. J., & González-Sanmamed, M. (2021). Factors influencing students' perceived impact of learning and satisfaction in Computer Supported Collaborative Learning. *Computers & Education*, *174*, 104310

Nachmias, C. & Nachmias, D. (2000). *Research in Methods in the Social Sciences*, (6th) New York: Worth Publishers.

Nachtigall, C., Kroehne, U., Funke, F., & Steyer, R. (2003). Pros and cons of structural equation modeling. *Methods Psychological Research Online*, *8*(2), 1-22.

Nam, H., & Kannan, P. K. (2020). Digital environment in global markets: Cross-cultural implications for evolving customer journeys. *Journal of International Marketing*, *28*(1), 28-47.

Nascimento, B., Oliveira, T. and Tam, C., 2018. Wearable technology: What explains continuance intention in smartwatches?. *Journal of Retailing and Consumer Services*, *43*, pp.157-169.

Navío-Marco, J., Ruiz-Gómez, L. M., & Sevilla-Sevilla, C. (2018). Progress in information technology and tourism management: 30 years on and 20 years after the internet-Revisiting Buhalis & Law's landmark study about eTourism. *Tourism management*, *69*, 460-470.

Nawijn, J. (2010). The holiday happiness curve: A preliminary investigation into mood during a holiday abroad. *International Journal of Tourism Research*, *12*(3), 281-290.

Neal, J. D., Sirgy, M. J., & Uysal, M. (1999). The role of satisfaction with leisure travel/tourism services and experience in satisfaction with leisure life and overall life. *Journal of Business Research*, *44*(3), 153-163.

Neal, J. D., Uysal, M., & Sirgy, M. J. (2007). The effect of tourism services on travelers' quality of life. *Journal of Travel Research*, *46*(2), 154-163.

Neuman, W. L. (2013). *Social Research Methods: Qualitative and Quantitative Approaches,* (4th) Boston Mass and London: Allyn and Bacon.

Neuhofer, B., Buhalis, D., & Ladkin, A. (2012). Conceptualising technology enhanced destination experiences. *Journal of Destination Marketing & Management*, *1*(1-2), 36-46.

Neuhofer, B., Buhalis, D., & Ladkin, A. (2015). Smart technologies for personalized experiences: a case study in the hospitality domain. *Electronic Markets*, *25*(3), 243-254.

Noar, S.M. (2003). The role of structural equation modeling in scale development. *Structural Equation Modeling*, *10*(4), 622-647.

Nunnally, J. C. (1994). *Psychometric theory 3E*. Tata McGraw-hill education.

Ofori, K. S., Anyigba, H., Adeola, O., Junwu, C., Osakwe, C. N., & David-West, O. (2021). Understanding post-adoption behaviour in the context of ride-hailing apps: the role of customer perceived value. *Information Technology & People*.

Oghuma, A. P., Libaque-Saenz, C. F., Wong, S. F., & Chang, Y. (2016). An expectation-confirmation model of continuance intention to use mobile instant messaging. *Telematics and Informatics*, *33*(1), 34-47.

Oliver, R. L. (2014). *Satisfaction: A behavioral perspective on the consumer*. Routledge.

Oliver, R. L. (1980). A cognitive model of the antecedents and consequences of satisfaction decisions. *Journal of Marketing Research*, 17(4), 460-469.

Omotayo, F. O., & Haliru, A. (2020). Perception of task-technology fit of digital library among undergraduates in selected universities in Nigeria. *The Journal of Academic Librarianship*, 46(1), 102097.

Ong, M. H. A., & Puteh, F. (2017). Quantitative data analysis: Choosing between SPSS, PLS, and AMOS in social science research. *International Interdisciplinary Journal of Scientific Research*, 3(1), 14-25.

Oriade, A., & Schofield, P. (2019). An examination of the role of service quality and perceived value in visitor attraction experience. *Journal of Destination Marketing & Management*, *11*, 1-9.

Ouyang, Y., Tang, C., Rong, W., Zhang, L., Yin, C., & Xiong, Z. (2017). Task-technology fit aware expectation-confirmation model towards understanding of MOOCs continued usage intention.

Pai, C., Kang, S., Liu, Y., & Zheng, Y. (2021). An examination of revisit intention based on perceived smart tourism technology experience. *Sustainability*, *13*(2), 1007.

Pai, C. K., Liu, Y., Kang, S., & Dai, A. (2020). The role of perceived smart tourism technology experience for tourist satisfaction, happiness and revisit intention. *Sustainability*, *12*(16), 6592.

Palmaccio, M., Dicuonzo, G., & Belyaeva, Z. S. (2021). The internet of things and corporate business models: A systematic literature review. *Journal of Business Research*, *131*, 610-618.

Pal, D., & Patra, S. (2021). University students' perception of video-based learning in times of COVID-19: A TAM/TTF perspective. *International Journal of Human–Computer Interaction*, 37(10), 903-921.

Pandža Bajs, I. (2015). Tourist perceived value, relationship to satisfaction, and behavioral intentions: The example of the Croatian tourist destination Dubrovnik. *Journal of Travel Research*, *54*(1), 122-134.

Pantano, E., & Stylidis, D. (2021). New technology and tourism industry innovation: evidence from audio-visual patented technologies. *Journal of Hospitality and Tourism Technology*, 12 (4), 658-671.

Pandža Bajs, I. (2015). Tourist perceived value, relationship to satisfaction, and behavioral intentions: The example of the Croatian tourist destination Dubrovnik. *Journal of Travel Research*, *54*(1), 122-134..

Pappas, N., Caputo, A., Pellegrini, M. M., Marzi, G., & Michopoulou, E. (2021). The complexity of decision-making processes and IoT adoption in accommodation SMEs. *Journal of Business Research*, *131*, 573-583.

Papagiannidis, S., Bourlakis, M., Alamanos, E., & Dennis, C. (2017). Preferences of smart shopping channels and their impact on perceived wellbeing and social inclusion. *Computers in Human Behavior*, *77*, 396-405

Park, E. (2020). User acceptance of smart wearable devices: An expectation-confirmation model approach. *Telematics and Informatics*, *47*, 101318.

Patel, D., Narmawala, Z., Tanwar, S., & Singh, P. K. (2019). A systematic review on scheduling public transport using IoT as tool. *Smart Innovations in Communication and Computational sciences*, 39-48.

Payne, G. and Williams, M. (2011). *Teaching quantitative methods: Getting the basics righ*t. Sage Publications, Inc.

Pavot, W., & Diener, E. (2008). The satisfaction with life scale and the emerging construct of life satisfaction. *The Journal of Positive Psychology*, *3*(2), 137-152.

Petersen, J. A., Kushwaha, T., & Kumar, V. (2015). Marketing communication strategies and consumer financial decision making: The role of national culture. *Journal of Marketing*, *79*(1), 44-63.

Pinsonneault, A. and Kraemer, K. (1993). Survey research methodology in management information systems: an assessment. *Journal of Management Information Systems*, 10(2), 75-105.

Ping Jr, R. A. (1995). A parsimonious estimating technique for interaction and quadratic latent variables. *Journal of Marketing Research*, *32*(3), 336-347.

Pizzi, G., Vannucci, V., & Aiello, G. (2020). Branding in the time of virtual reality: Are virtual store brand perceptions real?. *Journal of Business Research*, *119*, 502-510

Podsakoff, P. M., MacKenzie, S. B., Lee, J. Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: a critical review of the literature and recommended remedies. *Journal of Applied Psychology*, *88*(5), 879.

Postma, A., & Schmuecker, D. (2017). Understanding and overcoming negative impacts of tourism in city destinations: conceptual model and strategic framework. *Journal of Tourism Futures*.

Polančič, G., Heričko, M., & Pavlič, L. (2011). Developers' perceptions of object-oriented frameworks–An investigation into the impact of technological and individual characteristics. *Computers in Human Behavior*, *27*(2), 730-740

Pratisto, E. H., Thompson, N., & Potdar, V. (2022). Immersive technologies for tourism: a systematic review. *Information Technology & Tourism*, 1-39.

Prebensen, N. K., Woo, E., Chen, J. S., & Uysal, M. (2013). Motivation and involvement as antecedents of the perceived value of the destination experience. *Journal of travel research*, *52*(2), 253-264.

Qualtrics XM // The Leading Experience Management Software. (2022). Retrieved 19 August 2022, from https://www.qualtrics.com/uk/

Rahimizhian, S., & Irani, F. (2020). Contactless hospitality in a post-Covid-19 world. *International Hospitality Review*.

Rahi, S., Mansour, M. M. O., Alharafsheh, M., & Alghizzawi, M. (2021). The post-adoption behavior of internet banking users through the eyes of self-determination theory and expectation confirmation model. *Journal of Enterprise Information Management*.

Rahman, M. K., & Hassan, A. (2021). Tourist Experience and Technology Application in Bangladesh. In *Technology Application in the Tourism and Hospitality Industry of Bangladesh* (pp. 319-332). Springer, Singapore.

Ramos, V., Yamaka, W., Alorda, B., & Sriboonchitta, S. (2021). High-frequency forecasting from mobile devices' big data: An application to tourism destinations' crowdedness. *International Journal of Contemporary Hospitality Management*.

Rajapaksha, A., & Jayasuriya, N. (2020). Smart airport: a review on future of the airport operation. *Global Journal of Management and Business Research*

Robson, C. (2002). *Real World Research* . Oxford: Blackwell.

Rust, R. T. (2020). The future of marketing. *International Journal of Research in Marketing*, *37*(1), 15-26.

Saarikko, T., Westergren, U. H., & Blomquist, T. (2017). The Internet of Things: Are you ready for what's coming?. *Business Horizons*, *60*(5), 667-676.

Saayman, M., Li, G., Uysal, M., & Song, H. (2018). Tourist satisfaction and subjective well-being: An index approach. *International Journal of Tourism Research*, *20*(3), 388-399.

Salem, I. E., Elbaz, A. M., Elkhwesky, Z., & Ghazi, K. M. (2021). The COVID-19 pandemic: The mitigating role of government and hotel support of hotel employees in Egypt. *Tourism Management*, *85*, 104305.

Sale, J.E., Lohfeld, L.H. & Brazil, K. (2002). Revisiting the quantitative-qualitative debate: Implications for mixed-methods research. *Quality and Quantity*, *36*(1), 43-53.

Sánchez-Fernández, R., & Iniesta-Bonillo, M. Á. (2007). The concept of perceived value: a systematic review of the research. *Marketing theory*, *7*(4), 427-451.

Saunders, M., Lewis, P. & Thornhill, A. (2016). *Research Methods for Business Students (7th edn)*. London: Prentice Hall.

Saunders, M., Lewis, P. & Thornhill, A. (2009). *Research Methods for Business Students*. Essex England: Pearson Education Limited.

Sekaran, U. and Bougie, R. (2016). Research Methods for Business: A Skill Building Approach. John Wiley & Sons.

Seo, S., Kim, K. & Jang, J. (2018). Uncertainty avoidance as a moderator for influences on foreign resident dining out behaviors. *International Journal of Contemporary Hospitality Management*, 30 (2), 900-918

Sequeiros, H., Oliveira, T., & Thomas, M. A. (2021). The impact of IoT smart home services on psychological well-being. *Information Systems Frontiers*, 1-18.

Shavitt, S., Lalwani, A. K., Zhang, J., & Torelli, C. J. (2006). The horizontal/vertical distinction in cross-cultural consumer research. *Journal of consumer psychology*, *16*(4), 325-342

Sheth, J. N., Newman, B. I., & Gross, B. L. (1991). Why we buy what we buy: A theory of consumption values. *Journal of Business Research*, *22*(2), 159-170.

Sheng, H., Nah, F. F. H., & Siau, K. (2008). An experimental study on ubiquitous commerce adoption: Impact of personalization and privacy concerns. *Journal of the Association for Information Systems*, *9*(6), 1.

Shin, H. H., Jeong, M., So, K. K. F., & DiPietro, R. (2022). Consumers' experience with hospitality and tourism technologies: Measurement development and validation. *International Journal of Hospitality Management*, *106*, 103297.

Shishakly, R., Sharma, A., & Gheyathaldin, L. (2021). Investigating the effect of learning management system transition on administrative staff performance using task-technology fit approach. *Management Science Letters*, 11(3), 711-718.

Shokouhyar, S., Shokoohyar, S., Sobhani, A., & Gorizi, A. J. (2021). Shared mobility in post-COVID era: New challenges and opportunities. *Sustainable Cities and Society*, *67*, 102714.

Sidel, J. L., Bleibaum, R. N., & Tao, K. C. (2018). Quantitative descriptive analysis. *Descriptive Analysis in Sensory Evaluation*, *287*.

Simanjuntak, M. (2022). An Adoption of IoT in tourism industry using the SDL analysis approach An Integrative review. *Journal of Applied Technology and Informatics Indonesia*, *2*(1), 1-9.

Sinha, A., Kumar, P., Rana, N. P., Islam, R., & Dwivedi, Y. K. (2019). Impact of internet of things (IoT) in disaster management: a task-technology fit perspective. *Annals of Operations Research*, *283*(1), 759-794.

Sirgy, M. Joseph, P. Stephanes Kruger, Dong-Jin Lee, & Grace B. Yu. (2011). How does a travel trip affect tourists' life satisfaction?. *Journal of Travel Research,* 50(3), 261-275.

Siriwardhana, Y., De Alwis, C., Gür, G., Ylianttila, M., & Liyanage, M. (2020). The fight against the COVID-19 pandemic with 5G technologies. *IEEE Engineering Management Review*, *48*(3), 72-84.

Solakis, K., Pena-Vinces, J., & Lopez-Bonilla, J. M. (2022). Value co-creation and perceived value: A customer perspective in the hospitality context. *European Research on Management and Business Economics*, *28*(1), 100175.

Solomon, M. R. (1999). Consumer behaviour: Buying, having and being (4th ed.). Upper Saddle River, NJ: Prentice Hall.

Spachos, P., & Plataniotis, K. N. (2020). BLE beacons for indoor positioning at an interactive IoT-based smart museum. *IEEE Systems Journal*, *14*(3), 3483-3493.

Srite, Mark, & Elena Karahanna. (2006). The role of espoused national cultural values in technology acceptance. *MIS Quarterly*, 30(3), 679-704.

Stankov, U., & Filimonau, V. (2019). Reviving calm technology in the e-tourism context. *The Service Industries Journal*, *39*(5-6), 343-360.

Stocker, A., & Shaheen, S. (2018). Shared automated mobility: early exploration and potential impacts. *Road Vehicle Automation*, *4*, 125-139.

Stylos, N., Bellou, V., Andronikidis, A., & Vassiliadis, C. A. (2017). Linking the dots among destination images, place attachment, and revisit intentions: A study among British and Russian tourists. *Tourism Management*, *60*, 15-29.

Stylos, N., Zwiegelaar, J., & Buhalis, D. (2021). Big data empowered agility for dynamic, volatile, and time-sensitive service industries: the case of tourism sector. *International Journal of Contemporary Hospitality Management*.

Stylos, N., & Zwiegelaar, J. (2019). Big data as a game changer: how does it shape business intelligence within a tourism and hospitality industry context?. In *Big data and innovation in tourism, travel, and hospitality* (pp. 163-181). Springer, Singapore.

Su, L., Swanson, S. R., & Chen, X. (2016). The effects of perceived service quality on repurchase intentions and subjective well-being of Chinese tourists: The mediating role of relationship quality. *Tourism Management*, *52*, 82-95.

Su, L., Pan, L., Wen, J., & Phau, I. (2022). Effects of tourism experiences on tourists' subjective well-being through recollection and storytelling. *Journal of Vacation Marketing*, 13567667221101414.

Suhr, D. D. (2006). Exploratory or confirmatory factor analysis?.

Sumalee, A., & Ho, H. W. (2018). Smarter and more connected: Future intelligent transportation system. *Iatss Research*, *42*(2), 67-71.

Suess, C., Baloglu, S., & Busser, J. A. (2018). Perceived impacts of medical tourism development on community wellbeing. *Tourism Management*, *69,* 232-245.

Sutton, J., & Austin, Z. (2015). Qualitative research: Data collection, analysis, and management. *The Canadian Journal of Hospital Pharmacy*, *68*(3), 226.

Tabachnick, Barbara G. & Linda S. Fidell (2007). Using Multivariate Statistics. Boston: Pearson Education.

Talay, M. B., Akdeniz, M. B., Obal, M., & Townsend, J. D. (2019). Stock market reactions to new product launches in international markets: The moderating role of culture. *Journal of International Marketing*, *27*(4), 81-98.

Tam, C., & Oliveira, T. (2016). Understanding the impact of m-banking on individual performance: DeLone & McLean and TTF perspective. *Computers in Human Behavior, 61*, 233-244.

Tam, C., & Oliveira, T. (2019). Does culture influence m-banking use and individual performance?. *Information & Management*, *56*(3), 356-363.

Tang, L. (2017). Mine your customers or mine your business: the moderating role of culture in online word-of-mouth reviews. *Journal of International Marketing*, *25*(2), 88-110.

Taherdoost, H. (2016). Sampling methods in research methodology: How to choose a sampling technique for research. *International Journal of Academic Research in Management*, 5(2), 18-27.

Tao, D., Li, W., Qin, M., & Cheng, M. (2022). Understanding Students' Acceptance and Usage Behaviors of Online Learning in Mandatory Contexts: A Three-Wave Longitudinal Study during the COVID-19 Pandemic. *Sustainability*, *14*(13), 7830.

Tashakkori, A., & Teddlie, C. (2010). Putting the human back in ‘‘human research methodology’’: The researcher in mixed methods research. *Journal of Mixed Methods Research,* 4(4), 271-277.

Tavitiyaman, P., Qu, H., Tsang, W. S. L., & Lam, C. W. R. (2021). The influence of smart tourism applications on perceived destination image and behavioral intention: The moderating role of information search behavior. *Journal of Hospitality and Tourism Management*, *46*, 476-487.

Taylor, S. J. & Bogdan, R. (1984). Introduction to qualitative research methods: 7he search for meanings. (2nd ed.), New York: John Wiley.

Thongpapanl, N., Ashraf, A. R., Lapa, L., & Venkatesh, V. (2018). Differential effects of customers' regulatory fit on trust, perceived value, and m-commerce use among developing and developed countries. *Journal of International Marketing*, *26*(3), 22-44.

Thompson, F. M., & Chmura, T. (2015). Loyalty programs in emerging and developed markets: the impact of cultural values on loyalty program choice. *Journal of International Marketing*, *23*(3), 87-103.

Thong, J. Y., Hong, S. J., & Tam, K. Y. (2006). The effects of post-adoption beliefs on the expectation-confirmation model for information technology continuance. *International Journal of human-computer studies*, 64(9), 799-810.

Tien, N. H., Anh, D. B. H., Duc, L. D. M., Trang, T. T. T., & Ngoc, P. B. (2021). Subjective well-being in tourism research. *Psychology and Education*, *58*(5), 3317-3325.

Tigre, PB & Dedrick, J. (2004). E-commerce in Brazil: Local Adaptation of a Global Technology. *Electronic Markets*, *14*(1),36-47.

Tom Dieck, M. C., & Jung, T. (2018). A theoretical model of mobile augmented reality acceptance in urban heritage tourism. *Current Issues in Tourism*, *21*(2), 154-174.

Touni, R., Kim, W. G., Haldorai, K., & Rady, A. (2022). Customer engagement and hotel booking intention: The mediating and moderating roles of customer-perceived value and brand reputation. *International Journal of Hospitality Management*, *104*, 103246

Tram, N. L. N. (2021). Influence of consumer engagement on word-of-mouth: Empirical evidence from the tourism industry in Vietnam. *Journal of Tourism Management Research*, *8*(1), 101-116.

Triandis, H. C. (2001). Individualism-collectivism and personality. *Journal of Personality*, *69*(6), 907-924.

Triandis, H. C., & Gelfand, M. J. (1998). Converging measurement of horizontal and vertical individualism and collectivism. *Journal of Personality and Social Psychology, 74*(1), 118.

Trochim, W.M.K. & Donnelly, J.P. (2001). Research methods knowledge base. Atomic Dog Publ.

Tsurumi, T., Yamaguchi, R., Kagohashi, K., & Managi, S. (2021). Are cognitive, affective, and eudaimonic dimensions of subjective well-being differently related to consumption? Evidence from Japan. *Journal of Happiness Studies*, *22*(6), 2499-2522.

Turoń, K., Kubik, A., & Chen, F. (2021). Electric shared mobility services during the pandemic: Modeling aspects of transportation. *Energies*, *14*(9), 2622

Tussyadiah, I. P., Jung, T. H., & tom Dieck, M. C. (2018). Embodiment of wearable augmented reality technology in tourism experiences. *Journal of Travel research*, *57*(5), 597-611.

Tussyadiah, I. P., & Zach, F. J. (2012). The role of geo-based technology in place experiences. *Annals of Tourism Research*, *39*(2), 780-800.

Um, J., & Yoon, S. (2021). Evaluating the relationship between perceived value regarding tourism gentrification experience, attitude, and responsible tourism intention. *Journal of Tourism and Cultural Change*, *19*(3), 345-361.

Um, T., & Chung, N. (2021). Does smart tourism technology matter? Lessons from three smart tourism cities in South Korea. *Asia Pacific Journal of Tourism Research*, *26*(4), 396-414.

Ushakov, D., Dudukalov, E., Kozlova, E., & Shatila, K. (2022). The Internet of Things impact on smart public transportation. *Transportation Research Procedia*, *63*, 2392-2400.

Uysal, M., Berbekova, A., & Kim, H. (2020). Designing for quality of life. *Annals of Tourism Research*, *83*, 102944.

Uysal, M., Sirgy, M. J., Woo, E., & Kim, H. L. (2016). Quality of life (QOL) and well-being research in tourism. Tourism Management, 53,244–261.

Van Teijlingen, E. and Hundley, V. (2002). The importance of pilot studies. *Nursing Standard (through 2013)*, *16*(40), 33.

Van Everdingen, Y. M., & Waarts, E. (2003). The effect of national culture on the adoption of innovations. *Marketing Letters*, *14*(3), 217-232.

Van Birgelen, M., de Ruyter, K., de Jong, A., & Wetzels, M. (2002). Customer evaluations of after-sales service contact modes: An empirical analysis of national culture's consequences. *International Journal of Research in Marketing*, *19*(1), 43-64.

Veeramootoo, N., Nunkoo, R., & Dwivedi, Y. K. (2018). What determines success of an e-government service? Validation of an integrative model of e-filing continuance usage. *Government Information Quarterly*, *35*(2), 161-174.

Venkatesh, V. (2000). Determinants of Perceived Ease of Use: Integrating Control, Intrinsic Motivation, and Emotion into the Technology Acceptance Model. *Information Systems Research*, 11(4), 342-365.

Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. *MIS Quarterly*, 425-478.

Venkatesh, V., & Davis, F. D. (2000). A theoretical extension of the technology acceptance model: Four longitudinal field studies. *Management Science*, *46*(2), 186-204.

Venkatesh, V., Thong, J. Y., & Xu, X. (2012). Acceptance and use of information technology: extending the unified theory of acceptance and use of technology. *MIS Quarterly*, 157-178.

Verma, A., & Shukla, V. (2019). Analyzing the influence of IoT in Tourism Industry. In *Proceedings of International Conference on Sustainable Computing in Science, Technology and Management (SUSCOM), Amity University Rajasthan, Jaipur-India*.

Viswanathan, M., Sudman, S. & Johnson, M. (2004). Maximum versus meaningful discrimination in scale response: Implications for validity of measurement of consumer perceptions about products. *Journal of Business Research*, *57*(2), 108-124.

Voorhees, C. M., Brady, M. K., Calantone, R., & Ramirez, E. (2016). Discriminant validity testing in marketing: an analysis, causes for concern, and proposed remedies. *Journal of the Academy of Marketing Science*, *44*(1), 119-134.

Wang, X., Wong, Y. D., Chen, T., & Yuen, K. F. (2021). Adoption of shopper-facing technologies under social distancing: A conceptualisation and an interplay between task-technology fit and technology trust. *Computers in Human Behavior, 124*, 106900.

Wang, X., Li, X. R., Zhen, F., & Zhang, J. (2016). How smart is your tourist attraction?: Measuring tourist preferences of smart tourism attractions via a FCEM-AHP and IPA approach. *Tourism Mmanagement*, *54*, 309-320.

Wang, E. S. T., & Lin, R. L. (2017). Perceived quality factors of location-based apps on trust, perceived privacy risk, and continuous usage intention. *Behaviour & Information Technology*, *36*(1), 2-10.

Wang, Y., de Almeida Correia, G. H., van Arem, B., & Timmermans, H. H. (2018). Understanding travellers' preferences for different types of trip destination based on mobile internet usage data. *Transportation Research Part C: Emerging Technologies*, *90*, 247-259.

Wang, W., Kumar, N., Chen, J., Gong, Z., Kong, X., Wei, W., & Gao, H. (2020). Realizing the potential of the internet of things for smart tourism with 5G and AI. *IEEE Network*, *34*(6), 295-301.

Ward, G., De Neve, J. E., Ungar, L. H., & Eichstaedt, J. C. (2021). (Un) happiness and voting in US presidential elections. *Journal of Personality and Social Psychology, 120*(2), 370.

Weiss, A. M., & Heide, J. B. (1993). The nature of organizational search in high technology markets. *Journal of Marketing Research*, *30*(2), 220-233.

Wei, Z., Zhang, M. and Ming, Y., 2022. Understanding the effect of tourists' attribute-level experiences on satisfaction–a cross-cultural study leveraging deep learning. Current Issues in Tourism, pp.1-17.

Wen, J., Kozak, M., Yang, S., & Liu, F. (2020). COVID-19: potential effects on Chinese citizens' lifestyle and travel. *Tourism Review*, *76*(1), 74-87.

Wise, N., & Heidari, H. (2019). Developing smart tourism destinations with the Internet of Things. In *Big data and innovation in tourism, travel, and hospitality* (pp. 21-29). Springer, Singapore.

Wong, K. K. K. (2013). Partial least squares structural equation modeling (PLS-SEM) techniques using SmartPLS. *Marketing Bulletin*, *24*(1), 1-32.

Woodruff, R. B. (1997). Customer value: the next source for competitive advantage. *Journal of the Academy of Marketing Science*, *25*(2), 139-153.

Wu, C., Zhou, Y., Wang, R., Huang, S., & Yuan, Q. (2022). Understanding the mechanism between IT identity, IT mindfulness and mobile health technology continuance intention: An extended expectation confirmation model. *Technological Forecasting and Social Change*, *176*, 121449.

Xiang, Z., Tussyadiah, I., & Buhalis, D. (2015). Smart destinations: Foundations, analytics, and applications. *Journal of Destination Marketing and Management*, *4*(3), 143-144.

Xu, L., He, W., & Li, S. (2014). Internet of things in industries: A survey. *IEEE Transactions on Industrial Informatics*, *10*(4), 2233-2243.

Yachin, J. M. (2018). The 'customer journey': Learning from customers in tourism experience encounters. *Tourism management perspectives*, *28*, 201-210.

Yang, H. L., & Lin, S. L. (2015). User continuance intention to use cloud storage service. *Computers in Human Behavior, 52,* 219-232.

Yang, H., Yu, J., Zo, H. & Choi, M. (2016). User acceptance of wearable devices: An extended perspective of perceived value. *Telematics and Informatics*, 33(2), 256-269.

Yang, Z. & Peterson, R.T. (2004). Customer perceived value, satisfaction, and loyalty: The role of switching costs. *Psychology & Marketing*, *21*(10), 799-822.

Yang, L., Yang, S. & Plotnick, L. (2013). How the internet of things technology enhances emergency response operations. *Technological Forecasting and Social Change*, 80(9), 1854-1867.

Yang, H., Song, H., Cheung, C., & Guan, J. (2021). How to enhance hotel guests' acceptance and experience of smart hotel technology: An examination of visiting intentions. *International Journal of Hospitality Management*, *97*, 103000.

Yang, H., Yu, J., Zo, H., & Choi, M. (2016). User acceptance of wearable devices: An extended perspective of perceived value. *Telematics and Informatics*, *33*(2), 256-269.

Yavas, U. (1990). Correlates of vacation travel: some impirical evidence. *Journal of Professional Services Marketing*, *5*(2), 3-18.

Ye, B. H., Ye, H., & Law, R. (2020). Systematic review of smart tourism research. *Sustainability*, *12*(8), 3401.

Yi, X., Fu, X., So, K. K. F., & Zheng, C. (2021). Perceived authenticity and place attachment: new findings from Chinese world heritage sites. *Journal of Hospitality & Tourism Research*, 10963480211027629.

Yin, R.K. (2003) *Applications of case study research* (Vol. 34). Newbury Park, CA: EUA, Sage Publications Inc.

You, J. J., Jong, D., & Wiangin, U. (2020). Consumers' purchase intention of organic food via social media: the perspectives of task-technology fit and post-acceptance model. *Frontiers in Psychology*, *11*, 579274.

Yu, J., Smale, B., & Xiao, H. (2021). Examining the change in wellbeing following a holiday. *Tourism Management*, *87*, 104367.

Yu, J., Lee, H., Ha, I., & Zo, H. (2017). User acceptance of media tablets: An empirical examination of perceived value. *Telematics and Informatics*, *34*(4), 206-223.

Yuksel, A. S., Cankaya, I. A., & Cankaya, S. F. (2020). IoT for hospitality industry: paperless buffet management. In *Securing the Internet of Things: Concepts, Methodologies, Tools, and Applications* (pp. 1388-1408). IGI Global.

Zeithaml, V. A. (1988). Consumer perceptions of price, quality, and value: a means-end model and synthesis of evidence. *Journal of Marketing*, *52*(3), 2-22.

Zhang, H. Q., & Heung, V. C. (2002). The emergence of the mainland Chinese outbound travel market and its implications for tourism marketing. *Journal of Vacation Marketing*, *8*(1), 7-12.

Zhang, S. N., Li, Y. Q., Liu, C. H., & Ruan, W. Q. (2019). How does authenticity enhance flow experience through perceived value and involvement: the moderating roles of innovation and cultural identity. *Journal of Travel & Tourism Marketing*, *36*(6), 710-728.

Zhang, Z., He, Z., & Chen, W. (2022). The relationship between physical activity intensity and subjective well-being in college students. *Journal of American College Health*, *70*(4), 1241-1246.

Zhao, Y., Wang, N., Li, Y., Zhou, R., & Li, S. (2021). Do cultural differences affect users'e-learning adoption? A meta-analysis. *British Journal of Educational Technology*, *52*(1), 20-41.

Zheng, J., Liang, S., Ma, J., Liu, G., & Wu, Y. (2022). Can tourism enhance Chinese subjective well-being?. *Annals of Tourism Research*, *93*, 103372.

Zhou, T., Lu, Y., & Wang, B. (2010). Integrating TTF and UTAUT to explain mobile banking user adoption. *Computers in Human Behavior*, *26*(4), 760-767.

Zhou, C., & Sotiriadis, M. (2021). Exploring and evaluating the impact of ICTs on culture and tourism industries' convergence: Evidence from China. *Sustainability*, *13*(21), 11769

Zikmund, W.G., Babin, B.J., Carr, J.C. & Griffin, M. (2003). *Business research methods 7th ed*. Thomson/South-Western: Appendices.

Zins, A. H., & Ponocny, I. (2022). On the importance of leisure travel for psychosocial wellbeing. *Annals of Tourism Research*, *93*, 103378.

APPENDIX A- CONSENT FORM AND QUESTIONNAIRE (ENGLISH)

Dear participant,

I am Mengyun Hu, a PhD student at the University of Bristol. I am undertaking a research project which examines tourist subjective wellbeing (SWB) with the use of Internet of Things (IoT) in the context of a city break (City break normally refers to a short time city trip in 1-3 days). The Internet of Things refers to a technological solution that connects objects through internet-connected sensors that can exchange information among themselves. In the tourism industry, IoT has been widely used which can help travelers get more useful and real-time information and enabling a memorable travel experience. For example, IoT-based mobile applications (e.g, Google Maps, Uber, Weather, Booking.com, TripAdvisor, Ctrip, WeChat, Alipay) are able to provide more personalized and real-time information and smarter services. In addition, IoT based wearable devices are playing a more and more important role in travel experiences in recent years, such as Pilot Smart Earbuds, Google glasses, smart watches. We are interested in understanding the tourist subjective well-being which is impacted by the use of IoT. Thus, you will be asked to answer some questions about the use of IoT in your city break trips in the last 12 months. Please be assured that your responses will be kept completely confidential.

The main survey should take you around 15 mins to complete. It consists of 3 sections 21 questions in total. In the first section, you will be asked a few questions regarding your experience of city break and IoT usage. In the second section, you will be asked a few questions regarding task characteristic, technology characteristic; task technology fit, perceived privacy; perceived usefulness, perceived enjoyment; confirmation; perceived value of travel experience ,subjective well-being and culture features, in which you could indicate the level of agreement to the statements with the number from 1 (strongly disagree) to 7 (strongly agree). In the last section, you will be asked a few questions regarding your demographic information, such as your age, country, and degree.

There are no foreseeable risks of participating in this survey. Your opinions will be greatly appreciated as it would be a huge help for my research. A potential benefit to yourself would be to offer an opportunity to reflect your own experiences related to Internet of Things technology as a city-break tourist.

This project is co-supervised by Dr Eleonora Pantano (e.pantano@bristol.ac.uk) and Dr Nikolaos Stylos (n.stylos@bristol.ac.uk) in the School of Management, and is approved by the School of Management Ethics Committee (management-ethicscommittee@bristol.ac.uk), University of Bristol. The School of Management Ethics Committee is an independent contact which is not involved in the research. If you have any questions regarding the research, please feel free to contact us. Thank you very much!

By clicking the button below, you acknowledge that your participation in the study is voluntary. To conduct this survey, you need to be aged 18 or over. You may choose to terminate your participation in the study at any time and for any reason.

- ○ I consent, begin the study
- ○ I do not consent, I do not wish to participate

End of Block: Informed Consent

Start of Block: Default Question Block

Q1 How many times do you have city break trips in the last 12 months?

- ○ 0
- ○ 1
- ○ 2-3
- ○ 4-5
- ○ More than 5

Q2 On average, how many times do you have city break trips per year in the last 5 years?

- ○ 0
- ○ 1
- ○ 2-3
- ○ 4-5
- ○ More than 5

Q3 What kind of mobile applications did you usually use for planning your trip?

- ☐ Booking.com/Ctrip/Qunar
- ☐ Google Maps/City Maps/ Baidu Maps
- ☐ Trip advisor/ Tuniu/RED
- ☐ Airbnb/Tujia
- ☐ Uber/DiDi
- ☐ Paypal/Alipay
- ☐ Skyscanner/Ly.com
- ☐ Weather
- ☐ WeChat/Facebook/Instgram
- ☐ Others ____

End of Block: Default Question Block

Start of Block: Main survey questions

Q4 Please express your extent of agreement or disagreement with the city break characteristics:

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
During my city break trips, I need to access travel information anytime and anywhere.	○	○	○	○	○	○	○
During my city break trips, I need to improve my trip schedule management.	○	○	○	○	○	○	○
During my city break trips, I need to ensure my safety.	○	○	○	○	○	○	○
During my city break trips, I need to save money.	○	○	○	○	○	○	○

Q5 Please express your extent of agreement or disagreement with the IoT technology characteristics:

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
IoT provides comprehensive information about its surrounding environment (i.e. hotels, restaurants, public transport etc.)	○	○	○	○	○	○	○
IoT provides the ability to monitor the environment.	○	○	○	○	○	○	○
IoT technology provides real time solution.	○	○	○	○	○	○	○

Q6 Please express your extent of agreement or disagreement with the invidual characteristics:

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
If I heard about a new information technology, I would look for ways to experiment with it.	○	○	○	○	○	○	○
Among my peers, I am usually the first to explore new information technologies.	○	○	○	○	○	○	○
I like to experiment with new information technologies.	○	○	○	○	○	○	○
In general, I am hesitant to try out new information technologies.	○	○	○	○	○	○	○

Q7 Please express your extent of agreement or disagreement with IoT task-technology fit:

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
Using the IoT technologies fits well with my city break trip goals and needs.	○	○	○	○	○	○	○
Using the IoT technologies fits well with the way I like to enhance the time efficiency of my city break trip.	○	○	○	○	○	○	○
Using the IoT technologies fits well with the way I like to budget my city break trip.	○	○	○	○	○	○	○
Using the IoT technologies fits well with the way I like to ensure the safety of my city break trip.	○	○	○	○	○	○	○

Q8 Please express your extent of agreement or disagreement with perceived privacy with IoT:

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
I am concerned the IoT devices collect too much personal information from me.	○	○	○	○	○	○	○
I am concerned the IoT smart devices will use my personal information for other purposes without my authorization.	○	○	○	○	○	○	○
I am concerned the IoT smart devices will share my personal information with other entities without my authorization.	○	○	○	○	○	○	○
I am concerned the unauthorized persons (i.e. hackers) have access to my personal information.	○	○	○	○	○	○	○
I am concerned the privacy of my personal information during a transaction.	○	○	○	○	○	○	○
I am concerned the IoT smart devices will sell my personal information to others without my permission.	○	○	○	○	○	○	○

Q9 Please express your extent of agreement or disagreement with the confirmation of expectation with IoT:

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
My travel experience of city breaks with using IoT technology was better than what I expected.	○	○	○	○	○	○	○
The service level provided by IoT technology was higher than what I expected.	○	○	○	○	○	○	○
Overall, most of my expectations from using Internet of Things technology were confirmed.	○	○	○	○	○	○	○

Q10
Please express your extent of agreement or disagreement with your perceived usefulness with IoT:

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
Using the IoT would improve my city break trip performance.	○	○	○	○	○	○	○
Using the IoT would enhance the effectiveness of my the city break trip	○	○	○	○	○	○	○
Using the IoT would accomplish things more quickly during the city break trip	○	○	○	○	○	○	○
Using the IoT would be useful for my whole city break journey.	○	○	○	○	○	○	○

Q11 Please express your extent of agreement or disagreement with perceived enjoyment:

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
Using IoT is fun	○	○	○	○	○	○	○
Using IoT is enjoyable.	○	○	○	○	○	○	○
Using IoT is very entertaining.	○	○	○	○	○	○	○

Q12 Please express your extent of agreement or disagreement with your perceived value of IoT during city break:

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
Compared to the effort I need to put in, the use of IoT is beneficial to my city break trip.	○	○	○	○	○	○	○
Compared to the time I need to spend, the use of IoT is worthwhile to my city break trip.	○	○	○	○	○	○	○
Overall, the use of IoT delivers good value for my city break trip.	○	○	○	○	○	○	○

Q13 Please express your extent of agreement or disagreement with individualism:

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
I frequently use IoT that express my personality.	○	○	○	○	○	○	○
I do not want to feel like an anonymous member of a group that uses IoT.	○	○	○	○	○	○	○
I frequently use IoT that can differentiate me from other people.	○	○	○	○	○	○	○

Q14 Please express your extent of agreement or disagreement with uncertainty avoidance:

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
Rules and regulations are important because they inform people what the expectations are.	○	○	○	○	○	○	○
Order and structure are very important in any environment	○	○	○	○	○	○	○
It is important to have specific requirements and instructions spelled out in detail so that I always know what I am expected to do	○	○	○	○	○	○	○
It is better to have a bad situation that you know about, than to have an uncertain situation which might be better.	○	○	○	○	○	○	○
Providing opportunities to be innovative is more important than requiring standardised work procedures.	○	○	○	○	○	○	○
People should avoid making changes because things could get worse.	○	○	○	○	○	○	○

Q15 Please express your extent of agreement or disagreement with your subjective well-being:

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
Overall, my experience with this city break trip was memorable having enriched my quality of life.	○	○	○	○	○	○	○
My satisfaction with life in general was increased shortly after the trip.	○	○	○	○	○	○	○
Although I have my ups and downs, in general, I felt good about my life shortly after the city break trip.	○	○	○	○	○	○	○
Overall, I felt happy upon my return from that trip.	○	○	○	○	○	○	○

End of Block: Main survey questions

Start of Block: Demographic

Q16 What is your gender?

○ Male

○ Female

Q17 What is the highest level of school you have completed or the highest degree you have received?

○ Less than high school degree

○ High school graduate (high school diploma or equivalent including GED)

○ Some college but no degree

○ Associate degree in college

○ Bachelor's degree in college

○ Master's degree

○ Doctoral degree

○ Professional degree (JD, MD)

*

Q18 What is your year of birth? (For example: 1995)

____

Q20 In which country do you currently live?

○ UK

○ China

○ Other

End of Block: Demographic

APPENDIX B- CONSENT FORM AND QUESTIONNARE (CHINESE)

知情同意书

尊敬的参与者：

您好！我是一名英国布里斯托大学的在读学生。目前，我正在进行一项关于物联网对游客幸福指数影响的学术研究，主要目的是为了探索物联网在城市短途旅行体验中扮演的角色以及影响（短途城市旅行指的是以城市为目的的短途旅行，通常是 1-3 天）。 物联网是互联网的一种延伸，通过互联网实现物品（商品）的自动识别和信息的交换。 截止至今，物联网技术已经被广泛应用于旅游业，用来帮助游客获得更多有针对性的实时资讯，提升旅行体验。 例如，很多智能 APP 通过应用物联网技术，可以为游客提供更多个性化实时智能的服务，包括 Uber、微信、去哪儿、百度、谷歌地图、 天气预报等。此外，许多 IoT 智能设备也在旅行体验中扮演了越来越重要的角色， 还有智能手机、智能手表、智能耳机、自助服务设备等。 因此，我们想要了解，作为一名游客，您对于物联网应用的主要感受，以及物联网是否有或者如何影响您在旅途过程中的幸福指数。因此， 在该问卷调查中， 您将会被问到 IoT 以及城市短途旅行的相关问题，还有一些简单的个人信息。 本问卷采取了匿名的形式，并且收集到的所有信息都只会被用于学术研究，所以请您放心。 完成该问卷大概需要占用您 10-15 分钟的时间。此问卷主要有三个部分。 第一个部分主要是一些关于您的旅行体验以及物联网的应用经历的相关问题；第二个部分， 您会被问到一些关于物联网能否满足您在短途城市旅行中的需求、是否达到您的期待值以及一些文化特征和主观幸福感的相关问题， 主要通过选择同意/不同意的程度来回答， 从 1（强烈不同意）到 7（强烈同意）；最后一个部分主要是关于您的一些个人信息，性别，年龄学历 以及居住国家等。 完成此问卷不会对您有任何不可预见的风险，您也可以反馈作为一名短途城市旅行的游客，对物联网应用的个人感受。您的宝贵意见对我的研究项目意义重大，感谢您的配合。 该研究由管理学院的 Eleonora Pantano 博士（e.pantano@bristol.ac.uk）和 Nikolaos Stylos 博士（n,stylos@bristol.ac.uk）共同指导，并获得了布里斯托大学管理学院道德委员会的批准 （management-ethicscommittee@bristol.ac.uk). 如果您对该项目有任何疑问，请随时与我们联系。布里斯托管理学院道德伦理委员会是独立的监管机构， 未参与该项目。 如果您同意并确认为自愿参与该调研，请单击以下“同意”按钮。请注意，您必须年满 18 周岁才能参与该调研，参与过程中您可以无理由随时终止该调研。感谢您的配合！

○ 确认同意，开始答题

○ 不同意

End of Block: Informed Consent

Start of Block: Default Question Block

Q1 在过去一年内，您一共有过几次短途的城市旅行经历？

- ○ 从未
- ○ 一次
- ○ 2-3 次
- ○ 4-5 次
- ○ 高于 5 次

Q2 在过去五年里，您平均每年会有几次短途的城市旅行？

- ○ 从未
- ○ 1 次
- ○ 2-3 次
- ○ 3-5 次
- ○ 高于五次

Q3 你在计划短途旅行的时候通常会用哪一些移动 Apps？

- ☐ 缤客/携程/去哪儿
- ☐ 谷歌地图 /城市地图/百度地图
- ☐ 猫途鹰 /途牛/小红书
- ☐ 爱彼迎 /途家
- ☐ 优步 /滴滴打车
- ☐ 支付宝/贝宝
- ☐ 天巡网 / 同程旅游
- ☐ 天气预报
- ☐ 微信 /脸书
- ☐ 其它 ____

End of Block: Default Question Block

Start of Block: Main survey questions

Q4 请选择您对以下关于城市旅行特征描述的同意程度：

	强烈不同意	不同意	轻微不同意	既不同意也不反对	轻微同意	同意	强烈同意
旅行时，我需要随时随地获取旅行的相关信息	○	○	○	○	○	○	○
计划旅行时，我需要提高行程的规划	○	○	○	○	○	○	○
旅行时，我需要保障我的人身安全	○	○	○	○	○	○	○
旅行时，我需要省钱	○	○	○	○	○	○	○

Q5 请选择您对以下关于物联网技术特征描述的同意程度：

	强烈不同意	不同意	轻微不同意	既不同意也不反对	轻微同意	同意	强烈同意
物联网可以提供周边环境相关的综合信息	○	○	○	○	○	○	○
物联网可以具备监控环境的能力	○	○	○	○	○	○	○
物联网可以提供及时的解决方案	○	○	○	○	○	○	○

Q6

请选择您对以下关于您个人特征描述的同意程度：

	强烈不同意	不同意	轻微不同意	既不同意也不反对	轻微同意	同意	强烈同意
假如我听到有关的新科技，会尽量找办法亲身体验。	○	○	○	○	○	○	○
相比其它人，我通常是第一个尝试新技术的人。	○	○	○	○	○	○	○
通常来说，我比较不敢去尝试新科技	○	○	○	○	○	○	○

Q7 请选择您对以下关于物联网任务适配度描述的同意程度：

	强烈不同意	不同意	轻微不同意	既不同意也不反对	轻微同意	同意	强烈同意
使用物联网可以满足我的城市旅行目标和需要	○	○	○	○	○	○	○
使用物联网可以满足我提高时间效率的方式。	○	○	○	○	○	○	○
使用物联网满足我控制旅程预算的需求	○	○	○	○	○	○	○
使用物联网可以满足我保障人身和财产安全的需要.	○	○	○	○	○	○	○

Q8 请选择您对以下关于隐私问题描述的同意程度：

	强烈不同意	不同意	轻微不同意	既不同意也不反对	轻微同意	同意	强烈同意
我担心物联网智能设备会收集太多我的个人信息.	○	○	○	○	○	○	○
我担心物联网智能设备会在未经过我授权的情况下把我的个人信息用作其它用途.	○	○	○	○	○	○	○
我担心物联网智能设备会在未经过我授权的情况下泄露我的个人信息.	○	○	○	○	○	○	○
我担心他人未经本人授权 (例如黑客) 获取我的个人信息	○	○	○	○	○	○	○

我担心在交易过程中我的个人信息的隐私	○	○	○	○	○	○	○
我担心物联网智能设备会在没有我的个人允许的情况下将我的个人信息售卖给第三方	○	○	○	○	○	○	○

Q9 请选择您对以下关于对物联网期望确认描述的同意程度：

	强烈不同意	不同意	轻微不同意	既不同意也不反对	轻微同意	同意	强烈同意
用物联网智能设备后，我城市旅行的体验比我预估要高	○	○	○	○	○	○	○
物联网智能设备提供的服务等级比我预期要高.	○	○	○	○	○	○	○
总得来说，用物联网智能设备的期望都能被满足.	○	○	○	○	○	○	○

Q10 请选择您对以下感知有用性描述的同意程度

	强烈不同意	不同意	轻微不同意	既不同意也不反对	轻微同意	同意	强烈同意
使用物联网设备可以改善我城市旅行的体验	○	○	○	○	○	○	○
使用物联网设备可以提高我城市旅行的有效性	○	○	○	○	○	○	○
物联网设备在我城市旅行全程中都是有用的。	○	○	○	○	○	○	○

Q11 请选择您对以下关于感知物联网趣味性描述的同意程度：

	强烈不同意	不同意	轻微不同意	既不同意也不反对	轻微同意	同意	强烈同意
使用物联网设备是让我开心的	○	○	○	○	○	○	○
使用物联网设备是让我享受的	○	○	○	○	○	○	○
使用物联网设备非常具有娱乐性	○	○	○	○	○	○	○

Q12 请选择您对以下感知物联网价值描述的同意程度

	强烈不同意	不同意	轻微不同意	既不同意也不反对	轻微同意	同意	强烈同意
相比于我本应（为旅行）付出的努力，使用物联网智能设备对我的城市旅行是有益的。	○	○	○	○	○	○	○
相比于我本应（为旅行）花费的时间，使用物联网智能设备对我的城市旅行是值得的。	○	○	○	○	○	○	○
总得来说，使用物联网智能设备为我的城市旅行带来了好的价值。	○	○	○	○	○	○	○

Q13
请选择您对以下关于个人主义描述的同意程度:

	强烈不同意	不同意	轻微不同意	既不同意也不反对	轻微同意	同意	强烈同意
我经常通过物联网设备的使用展示我的个性.	○	○	○	○	○	○	○
使用物联网设备时，我不希望我是默默无闻的.	○	○	○	○	○	○	○
我经常使用物联网设备，它可以让我看起来与别人不一样.	○	○	○	○	○	○	○

Q14
请选择您对以下关于不确定性规避指数描述的同意程度:

	强烈不同意	不同意	轻微不同意	既不同意也不反对	轻微同意	同意	强烈同意
规则和方法是非常重要的因为可以让人们了解他们所期待的成果是什么。							
秩序和结构在任何环境中都是重要的。							
具体的要求和详细介绍在任何环境里都是非常重要的，因为可以让人们了解他们需要做些什么。							

提前了解过的糟糕的情况远比完全无法预期的情况来得好	○	○	○	○	○	○	○
人们应该避免改变，以避免状况变糟。	○	○	○	○	○	○	○

Q15 请选择您对以下关于认知性主观幸福感描述的同意程度:

	强烈不同意	不同意	轻微不同意	既不同意也不反对	轻微同意	同意	强烈同意
总的来说，我城市旅行的体验是值得回忆的，也提高了我的生活质量。	○	○	○	○	○	○	○
我对生活的满意度在总体来说在旅行之后提高了。	○	○	○	○	○	○	○
尽管好坏皆有，但总体来说在城市旅行之后我感受生活是美好的。	○	○	○	○	○	○	○
总得来说，我对那次旅行带来的回报是开心的。	○	○	○	○	○	○	○

End of Block: Main survey questions

Start of Block: Demographic

Q16 您的性别是？

○ 男性

○ 女性

Q17 您目前的最高学位是？

○ 高中以下

○ 高中

○ 职高

○ 大专

○ 本科

○ 硕士

○ 博士

○ 专业学位 (例如：法律硕士，法律博士)

*

Q18 您出生的年份是? (例如：1995)

____

Q19 您目前居住在哪个国家？

○ 英国

○ 中国

○ 其它

End of Block: Demographic