Measuring the Effects of Multi-Sensory Stimuli in the Mixed

Reality Environment for Tourism Value Creation.

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DECLARATION

I declare that this thesis has been composed solely by myself and the work has not been submitted, in whole or in part, for any other degree or professional qualification. I confirm that the work submitted is my own.

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ABSTRACT

This thesis explores the impact of technology-enhanced multisensory stimuli on visitors' value judgments and behavioural intentions at tourist attractions. The study is based on the Tourism Value Framework (Smith and Colgate, 2007), which examines the influence of tourism environment and experience cues on tourist behaviour. To achieve the objective, four key areas were critically reviewed: 1) value creation in attraction-based tourism, 2) multisensory experience literature including experiencescape research, 3) immersion, and 4) mixed-reality technology (Objective 1).

Primary data collection involved two research phases. The first phase included ten semi-structured focus group interviews with visitors at two multisensory mixed-reality tourism locations in Finland (Objective 2). These interviews provided insights into visitors' perspectives on value formation, immersive experiences, and mixed-reality technologies. Thematic analysis of the data revealed five themes and seventeen subthemes, including context-specific subthemes, which contributed to understanding the multisensory tourism experience and technology-enhanced experience.

Based on ten hypotheses, a qualitative S-I-V-A value creation framework was developed for technology-enhanced multisensory mixed reality tourism environments. The second phase aimed to examine and validate the proposed model by collecting survey responses from 317 visitors to a multisensory mixed reality tourist environment. Covariance-based Structural Equation Modelling (CB-SEM) was used for data analysis (Objective 3). The research's significant achievement is the creation of the S-I-V-A value creation framework for technology-enhanced multisensory mixed reality tourist environments, derived from the study's discoveries (Objective 4).

The thesis concludes by summarizing the theoretical contributions of this research and offering recommendations to developers and designers in the tourism and mixed-reality sectors. It acknowledges the study's limitations and suggests potential directions for future research.

ABBREVIATIONS

VR =	Virtual Reality
AR =	Augmented Reality
MR =	Mixed Reality
XR =	Extended Reality
SAR =	Spatial Augmented Reality
ILE =	Immersive Learning Environment
MRE =	Mixed Reality Environment
VE =	Virtual Environment
S-O-R =	Stimulus-Organism-Response
WOM =	Word-of-mouth
DMO =	Destination Management Organisation
AV =	Augmented Virtuality
HMD =	Head-Mounted Display
eWOM =	Electronic Word-of-Mouth
TAM =	Technology Acceptance Model
TPB =	Theory of Planned Behaviour
SEM =	Structural Equation Modelling
PLS =	Partial Least Squares
CB =	Covariance Based
PLS-SEM =	Partial Least Squares Structural Equation Modelling
CB-SEM =	Covariance Based Structural Equation Modelling
AVE =	Average Variance Extracted

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Overall, none of the measurement items were removed at this stage, resulting in 54 measurement items remaining. Table 7.2 presents the final Cronbach's alpha scores for each construct and the items that were retained.

Chapter 1 – Introduction

1.1.   Introduction

The objective of this thesis is to explore the enhancement of tourists' value by engaging multiple senses within mixed reality environments. Moving forward, the tourism industry must adapt to various transformations as it competes with alternative recreational options, such as cost-effective next-generation consumer devices, multisensory online experiences, and immersive virtual environments (Petit et al., 2019). Consecutively, experiences are perceived a more important source of value creation in tourism context. This relates to the complicated lives and fluid identities of tomorrow's tourists, and how the consumer preferences are changing from the functional value of services to their experiential and symbolic value (Sørensen et al., 2020). Although many organizations in the travel industry prioritize the creation of emotional value, the factors that contribute to this value are still not fully understood. According to Kotler (1973), certain environmental elements, such as pleasant music, refreshing scents, ambient lighting, or soft materials, elicit desire, which in turn influences intentions to loyalty, purchase willingness, revisit intentions, and recommendations. The customer's satisfaction in a leisure service setting, such as a restaurant, hotel, amusement park, or rock concert, is influenced by the perceived quality of the built environment. This, in turn, impacts the length of their stay and their behavioural intentions. Likewise, Pine and Korn (2011) expressed that future advancements in tourism's new service development should revolve around crafting sensory experiences and designs that ignite consumer engagement and drive service purchases. Nevertheless, small and medium-sized businesses often miss out on leveraging the potential of advanced technologies like augmented reality (AR), as highlighted by Cranmer et al. (2021). Furthermore, immersive technologies are reshaping and redefining the way experiences are presented and the collaborative creation of value, thus impacting customer experience management. However, there is a scarcity of research that delves into the involvement of immersive technology in managing customer experiences and generating value, as noted by tomDieck and Han (2022). Recognizing the shifts in consumer behaviour and the progress of technology, this chapter will examine

the research background and provide a more comprehensive presentation of the study's objectives.

1.2. Research Background and Justification of the Study

Despite the various efforts on developing typologies for customer value and value creation (e.g., Holbrook, 2005; Parasuram, 1997, Payne et al., 2008; Smith and Colgate, 2007; Sørensen and Jensen, 2015; Ulaga 2003; Woodall 2003; Zeithaml 1988), the existing literature lacks a concise approach in addressing this issue. Initially, value creation research established a distinct differentiation between the roles of consumers and companies involved in the production of goods and services. Likewise, during the early stages of conceptualizing customer value and value creation, the market was primarily perceived as a realm dedicated to transactions, existing independently from the value creation process itself (Kotler, 2002). Consequently, the market was traditionally seen as playing a passive role without actively contributing to the generation of value. Over the years, research has consistently concluded that customer value, as perceived by the customer, is the correlation between the benefits they receive and the sacrifices they must make (Zeithaml, 1988). In the last thirty years, customer value has gained significant recognition as a vital element in marketing (Woodruff, 1997) and serves as the bedrock for all marketing activities (Holbrook, 1994). Scholars like Slater (1997) and subsequently Woodall (2003) have proposed that customer value stands as the primary goal for organizations, plays a critical role in establishing a strong market position, and acts as a crucial determinant of customer loyalty and satisfaction.

According to Boksberger and Melsen (2011), the absence of clear explanations for customer value and value creation stems from their overlapping usage in consumer behaviour research, service management, and marketing research. As a result, it becomes imperative to differentiate between the demand and supply perspectives when discussing customer value and value creation. When engaging in premeditated purchases, customers assess and make judgments about the value they perceive in the product or service. Substantial research has demonstrated that consumers' value

perceptions play a pivotal role in determining their readiness to proceed with the transaction or explore substitute choices (Zeithaml, 1988). Informed and digitally connected consumers are actively discovering innovative methods to extract value. As managers acknowledge the inevitable shift in power from companies to consumers, scholars are concurrently redefining the concept of value and the processes involved in value creation (Prahalad and Ramaswamy, 2004).

The tourism industry is witnessing unforeseen changes which will impact the future of the industry (Whittington, 2014). Considering the intricate lifestyles and ever-changing identities of prospective tourists, coupled with the shifting consumer preferences that give precedence to experiential and symbolic value rather than the utilitarian value of services, Sørensen and Jensen (2015) contend that experiences have gained acknowledgment as a fundamental pathway for value creation within the tourism sector. Recently, Minerbo and Brito (2021), stated that the literature still does not provide a concise approach for value creation. During its initial phases, the research on value creation established a definite demarcation, highlighting the distinct roles of consumers and companies in the production of goods and services. This demarcation elucidated the contrasting functions and responsibilities undertaken by consumers and companies, respectively, in the intricate process of value creation. In parallel, during the initial conceptualizations of customer value and value creation, the market was predominantly regarded solely as a transactional space, detached from the actual process of value creation (Kotler and Gertner, 2002). As a result, the market was considered to have no active involvement in the generation of value. Over decades, research findings consistently affirmed that customer value, as perceived by the customer, stems from the interplay between what they receive (benefit) and what they sacrifice (Zeithaml, 1988).

In recent years, the customer journey has undergone a significant transformation, embracing more captivating and immersive experiences due to advancements in information and communication technology. This evolution is attributed to the emergence of mixed reality (MR) or, as it is more commonly known now, extended reality (XR) (Hoyer et al., 2020). Both MR (Mixed Reality) and XR (Extended Reality) encompass similar

components, albeit with variations in terminology. MR is often understood to comprise virtual reality (VR) and augmented reality (AR), while XR encompasses AR, VR, and MR (Santoso et al., 2021). MR (Mixed Reality) and XR (Extended Reality) encompass computer technology and wearable devices, seamlessly merging virtual and real environments while facilitating human-machine interactions. In their extensive analysis of existing literature, Santoso et al. (2021) discovered numerous instances where these technologies have been applied in diverse domains, including cultural and historical tourism (Gherardini et al., 2018; Zhang et al., 2016), nature and ecotourism (Marchiori et al., 2017), attraction and amusement parks (Wei et al., 2019a), and hotels (Santoso et al., 2021; Lo and Cheng, 2020; Loureiro et al., 2020; Bogicevic et al., 2019). Noteworthy, XR technology presents a captivating and innovative approach for individuals to engage with and explore tourism attractions in an immersive manner. The XR technology has profoundly altered the tourist experience. The absence of comprehensive research in exploring the application of XR technology in the experience journey of tourists is emphasized by Jingen Liang and Elliot (2021), as well as Santoso et al. (2021). Furthermore, existing studies and frameworks have not extended their focus beyond handheld or wearable XR solutions. Within the realm of tourism, sensory stimuli, including sights, sounds, textures, and scents, play a vital role in crafting immersive experiences within the service setting. Simultaneously, in the interpersonal context, individuals and their behaviours serve as sources of sensory stimuli. Kotler (1973) suggests that emotional elements in the environment, such as pleasant music, invigorating scents, ambient lighting, or comfortable fabrics, can evoke longing in individuals, influencing various aspects of consumer behaviour including engagement, transaction readiness, revisit intention, and likelihood of recommendation. From a facility planning and management point of view, the interior layout and design, therefore the built environment, is the most important element of a successful service setting as it effects customer satisfaction and length of stay and intention to revisit (Wakefield and Blodgett, 2016:687). Extensive research has been conducted on the 'servicescape' concept introduced by Bitner (1992), validating its influence on customer behaviour in diverse service settings such as hotels, casinos, restaurants, cafes, sports stadiums, and events (Durna et al.,

2015). However, the impact of the physical environment on customer behaviour has yet to be examined in multi-sensory mixed reality environments.

While numerous researchers have emphasized the significance of sensory stimulation, the intangible nature of tourism services necessitates the development of more intricate, multidimensional, and innovative environments and communication techniques. Furthermore, the theory of servicescape (Bitner, 1992), the concept of sensory dimensions (Agapito et al., 2013), and the potential application of the "multisensory marketing model to tourism" (Pawaskar and Goel, 2014:263) have not been empirically examined in the context of MR environments for tourism-related products. As a result, the implications of these constructs remain undisclosed within this specific context. Additionally, it should be acknowledged that the conclusions drawn by Addis and Holbrook (2001) and Gilmore and Pine (2002), regarding the communication of distinctive attributes of services or destinations through sensory and themed experiences, may no longer be applicable in contemporary contexts.

Therefore, there is a demand for additional research to investigate the influence of sensory cues on tourist satisfaction levels, as well as their impact on value perceptions and behavioural intentions (Agapito et al., 2020; 2017). Furthermore, because of its importance in drawing a diverse range of domestic and foreign tourists to the specific location, this study focused on the MR tourism appeal. Consequently, it is crucial to investigate the integration and development of immersive technologies in modern tourism attractions, exploring new approaches to utilize these technologies and effectively combine them with traditional attraction features and qualities. Such study will not only be valuable for industry, but it will also contribute conceptually to various research streams, including spatial AR, technology-enhanced multimodal stimuli and immersion, tourist environment design, tourism value generation, and technology adoption.

1.3.   Research Aim and Objectives

This study will be of considerable importance to small- and medium-sized tourism organisations in, by providing evidence-based information that includes the ability to implement new ways of value creation within reasonable budget. With these considerations in mind, the objective of this PhD research is to establish a comprehensive theoretical framework for studying value creation in multi-sensory, mixed reality environments within the context of tourism. The specific objectives of the study are as follows:

1. To critically review literature on value creation theory, multi-sensory experience and mixed reality within the tourism context;
2. To identify the diverse roles of sensory experiences and mixed reality in tourism context;
3. To explore antecedents of tourism value creation in the mixed reality environment; and
4. To further develop and test the proposed value creation framework for a multisensory, mixed reality environment within the tourism context.

To achieve the objective, the first necessary step was to define the subject areas that may together inform this research project. Accordingly, three major topics were investigated, including value creation, technology-enhanced multisensory experiences, immersive technologies (Objective 1). Thus, it was discovered that there is minimal study examining the effect of mixed-reality tourism environment cues and specifically technology-enhanced multisensory experiences (Objective 2). To evaluate the suitability of the theories employed in this study within the specific research context and, more importantly, to identify context-specific variables that contribute to value creation in tourism, a qualitative exploratory method was utilized (Objective 3). This approach allowed for the development of a conceptual framework that could be further tested through data collection. To ensure the validity of the model and the generalizability of the findings, a quantitative validation of the proposed qualitative model was conducted. As a

result, a final S-I-V-A value creation model for multisensory mixed-reality tourist environments was formulated, representing the primary contribution of this study (Objective 4).

1.4. Structure of the Study

The thesis is divided into two major sections. The first section entails an extensive review of the existing research in the field, while the second section is dedicated to the collection and analysis of primary data. The thesis consists of nine chapters, and a brief overview of each chapter is presented below for the convenience of the reader.

Chapter 1: Introduction

The introduction served the purpose of providing background information, explaining the rationale behind the investigation, and outlining the aims and objectives of the research. It also justified the need for the chosen research methodologies to achieve the study's goals. Additionally, the thesis framework was presented, which included a concise summary of each of the nine chapters.

Chapter 2: Value Creation

The primary objective of the second chapter was to establish a conceptual framework for the thesis by examining the significance of value creation in the realm of tourism. The initial section of this chapter delved into the concept of value creation paradigms and explored the existing understanding of value co-creation and how consumers perceive and interpret value. Furthermore, the chapter discussed the classification of various forms of value in the service industry, with a specific focus on the tourism sector. Notably, this chapter introduced the Tourist Value Framework (Smith and Colgate, 2007) as a dominant framework in research that explores visitors' behavioural reactions to diverse cues within tourism environments.

Chapter 3: Technology Enhanced Multi-Sensory Experience

Since immersion and immersive technologies are going to be the focus of this research, the goal of this chapter was to present an overview of sensory experiences and immersive technologies before moving on to examine immersion and immersive technologies in greater detail. In addition, the aim of this chapter was to examine and delineate the fundamental aspects that distinguish spatial augmented reality and non-wearable multisensory mixed-reality experiences from earlier analogue environments and more recent virtual reality and mixed reality technologies. These aspects include immersion and narrative, as well as an increased simulation of human senses. More specifically, the concluding sections of this chapter highlighted how drawing on a dominant knowledge of mixed-reality technologies and game immersion could help to achieve the goal of this study, which was to investigate the influence of tourism environment cues on visitor's value perceptions and behavioural response within the context of a technology-enhanced multisensory tourism attraction.

Chapter 4: Tourism and Service Industry in Finland

The objective of the fourth chapter was to present an overview of the sector as a whole, as well as the specific locations in which the research was carried out. To be more precise, the first part of this chapter is dedicated to providing a more in-depth analysis of Finland's service sectors, notably the tourist business. Furthermore, this chapter offers a depiction of two technology-enhanced multimodal tourist attractions and discusses how these attractions are designed to attract tourists. This chapter draws from the key research streams identified in the previous literature chapters to explain the technology-enhanced multisensory tourism experience that was studied. Given the unexplored study context and the uncommon approach to the design of tourism experiences, this chapter is particularly important.

Chapter 5: Methodology

Chapter five of the thesis elucidated the approaches employed to gather primary data for the research study. It commenced by establishing the research's philosophical stance, followed by an outline of the research methodologies. The primary objective of this chapter was to offer an in-depth description and justification of the methodologies used in each of the research phases. In all, two research stages were used to acquire primary data. First, interviews were conducted with visitors to two technology-enhanced multisensory mixed-reality attractions (Research Phase 1). Subsequently, quantitative survey data was collected using a technology-enhanced multisensory mixed-reality attraction (Research Phase 2). The methodology for data collection in each phase of the study is comprehensively explained, including the design of the survey instrument, the target population, the sampling method, and the analysis approach. Furthermore, this chapter examines the reliability and validity of the data, discusses the limitations of the study, and addresses ethical considerations associated with different aspects of the research design.

Chapter 6: Focus Group Interviews Analysis

The sixth chapter is a qualitative examination of focus group interviews with visitors to two technology-enhanced multisensory mixed-reality attractions. The interviews aided in the achievement of research aim three, which was to evaluate the antecedents of value development in two technology-enhanced multisensory mixed-reality environments. During this phase of data collection, participants engaged in discussions on topics derived from the literature and experienced a technology-enhanced multisensory mixed-reality attraction that was created specifically for this study. This was followed by the second part of the focus group interview, where participants were encouraged to share their perspectives and insights regarding value development and the significance of sensory stimuli, narrative, and immersion in the context of two technology-enhanced multisensory mixed-reality attractions. The focus group interviews aimed to identify emergent themes and sub-themes that were specific to the context of the study. The chapter begins by introducing the analysis of the focus group interviews and highlighting the novel and relevant themes and sub-themes that surfaced. After formulating hypotheses based on the qualitative findings, they were presented at the end of each subsection in this chapter. These hypotheses then guided the development of the qualitative S-I-V-A value creation framework, while the data collected served as the foundation for the subsequent survey. In the second phase of the research, which involved quantitative analysis, the hypotheses were tested to validate the proposed model.

Chapter 7: Quantitative Data Analysis

Chapter seven presents the analysis of the quantitative data. The chapter starts by providing an overview of the analysis techniques employed. The descriptive analysis and demographic profile of survey respondents are then provided, followed by the results of the measurement model analysis. This chapter, in particular, covers an exploratory variation of covariance-based Structural Equation Modelling that was utilised in combination with a sequential double-phase research design that incorporated both exploratory and more explanatory research. The chapter concludes with a structural

model analysis, describing how the S-I-V-A value creation Model was produced using covariance-based structural equation modelling (CB-SEM).

Chapter 8: Discussion

The objective of this chapter was to integrate the primary and secondary data, along with the new findings derived from the primary data collection. The insights gathered from the visitor interviews were combined with the survey data and existing literature to provide a comprehensive understanding of the final S-I-V-A value creation Model within the context of technology-enhanced multisensory mixed-reality tourism. The significant findings are structured around the essential components of the developed model, and each section examines the outcomes of the hypotheses and explores the direct and indirect relationships between various constructs.

Chapter 9: Conclusions

The accomplishment of the goals and aims of this study is discussed in length at the beginning of the last chapter. Afterward, an evaluation of the knowledge advancements and practical implications for both tourism and MR developers, as well as destination managers and designers, ensues. Ultimately, the study concludes by discussing its limitations and providing recommendations for future research and the development of new attractions.

Chapter 2 - Value Creation

2.1.   Introduction

The following chapter covers existing literature on value formation and creation. The objective of this chapter is to demonstrate the existing conception of value creation by examining, contrasting, and extending the similarities among previous studies. The following sub-sections will present the existing knowledge and frameworks regarding customer value, perceived value, and value production. Furthermore, an analysis will be conducted on the co-creation of tourism value, exploring overlapping conceptual frameworks, misconceptions, and deficiencies. Moreover, the subsequent sections will examine the diverse techniques utilized in the literature pertaining to value creation. Towards the end of this chapter, a more detailed exploration and evaluation will be undertaken on the customer value creation framework proposed by Smith and Colgate (2007). This evaluation will be conducted in relation to contemporary frameworks and typologies centred around experience-related value creation, specifically within the context of tourism.

2.2.   Definition of customer value

To date, customer value research has faced challenges in reaching a consensus regarding the terminology, framework, and definitions (Opute et al., 2020; Ranjan and Read, 2016; Minkiewicz et al., 2014). Addressing these difficulties, Sørensen et al. (2020) propose that the subjective and ambiguous nature of value contributes to this lack of agreement, particularly when considering the dynamic evolution of customer value over time. In the field of management and organizational research, the concept of value creation has gained considerable importance, despite the lack of a precise definition for customer value. Extensive studies have been conducted on value creation, exploring its dynamics among individuals, groups, organizational theories, and strategic management (Opute et al., 2020).

Marketers and managers must acquire a systematic understanding of the ambiguous concept of customer value (Oh and Jeong, 2003) due to the significant role of value creation as a variable in the development of the long-term strategies of the company (Parasuraman, 1997). However, it is worth noting that certain strategy scholars argue that comprehending consumer behaviour and utility is essentially inconsequential to the overarching objectives of the strategy field. Despite their reluctance to recognize the dynamics of consumer willingness to buy, these individuals persist in the notion that a company's success solely hinges on the value derived from the market (Priem, 2007). Conversely, business managers worldwide are actively pursuing growth and exploring avenues to enhance customer value within ecosystems that are transitioning from a product- and firm-centric approach to personalized consumer experiences (Prahalad and Ramaswamy, 2004). Given the transformations in the distribution and presentation of entertainment and information, understanding the pivotal role of digital technologies in designing and delivering tourism services (Santoso et al., 2021; Opute et al., 2020; Wei, 2019) becomes imperative. Additionally, customer interaction serves as a means to augment value creation and experiential outcomes for tourism consumers. In addition, Opute et al. (2020) emphasize that the value of a product or service extends beyond its inherent features and encompasses elements such as active consumer engagement, effective communication with service providers, and its broader cultural impact.

To gain a deep understanding of how value is created, it is essential to grasp the core concept of customer value. Early interpretations of customer value, as outlined by Butz and Goodstein (1996), Gale (1994), and Zeithaml (1988), describe it as the outcome, encompassing emotions and sentiments, that emerges from the benefits, quality, significance, and usefulness that customers derive from acquiring and using a product or service. This definition emphasizes the contrast between what customers gain and what they invest, including factors like price, expenses, and concessions. This assessment of the transaction leads to an opinion or emotional connection towards the product or brand, which can be utilized in the future when comparing offerings from competitors (Gale, 1994). When studying competitive advantages in the realm of business, Woodruff

(1997:141) formulated the definition of customer value as follows: '*a customer's perceived preference for, and evaluation of, those product attributes, attribute performances, and consequences arising from use that facilitates (or blocks) achieving the customer's goals and purposes in use situations.*' Sinha and DeSarbo (1998) echoed a similar perspective and put forth the idea that when the benefits obtained outweigh the sacrifices made, a sense of 'significant worth' is created between the buyer and the seller. At the end of the day, both sides feel they are in an ideal situation because each gets something more helpful to him or her than what he or she has given up. One argument suggests that the utilitarian perspective of the value concept is considered one of the most significant factors influencing repeat purchase behaviour (Zeithaml 1988). Expanding on this notion, Woodall (2003) asserted that the term "customer value" encompasses multiple interpretations, with two particular descriptions standing out: "value for the customer," which pertains to the perceived or received value by the customer, and "value for the firm," which relates to the customer's lifetime value for the company.

Holbrook (2005:46) conducted a study on the hedonic and experiential aspects of consumption in service encounters and determined that customer value encompasses an "interactive, relativistic preference and experience." In a comprehensive analysis conducted by Ulaga and Eggert (2005), four key characteristics of customer value were identified: (1) It is a subjective concept. (2) It involves a compromise between benefits and sacrifices. (3) Benefits and sacrifices can have multiple dimensions. (4) Value perceptions are relative to competition.

Due to the individual and situation-dependent nature of the customer value definition, and despite numerous efforts, there is still a lack of consensus among scholars. They find it equally challenging to agree on (1) the concept of value creation, (2) the process by which value is generated, and (3) the mechanisms that enable value creators to capture the value (Lepak et al., 2007:180). As a result, researchers such as Boksberger and Melsen (2011) persisted in their efforts to gain a comprehensive understanding of consumer value that could be measured and assessed before, during, and after a purchase or the utilization of a service, regardless of the type or source of value. Due to its

multidisciplinary nature, the field of management encompasses a wide array of goals and approaches in defining value creation. Various disciplines within the academic realm, such as strategic management, strategic human resource management, marketing, and entrepreneurship, tend to emphasize value creation for business owners, stakeholders, or customers. Conversely, scholars specializing in human resources management or organizational behaviour are more inclined towards valuing creation for individual employees, employee groups or teams, and organizations. Similarly, researchers from sociological or economic backgrounds are primarily concerned with value creation in the context of society or nations (Lepak et al., 2007).

Value creation involves a range of activities, such as interaction, communication (knowledge transfer), and innovation, which are designed to establish or improve the consumer's perceived value of the benefits derived from consumption, thereby enhancing its use value. Once value has been created, the buyer may demonstrate a willingness to pay for novel features, accept a higher price for perceived superior quality or features, or select an existing feature at a lower cost, often resulting in increased quantities or higher volumes of purchases (Priem, 2007:220).

The challenges in defining the customer value and value creation will most likely remain, and depending on what kind of value is created, how the actors perceive it as valuable, and how that value is created, the definitions will be expected to fluctuate substantially. The extent of value fluctuation is influenced by the underlying foundation or level of analysis that generates the value, as well as the theoretical approach embraced by the academic field that examines the source or level of analysis (Lepak et al., 2007). Taking into account the various interpretations and overlapping definitions (summarized in Table 2.1), this study adopts the overarching viewpoint put forth by Grönroos and Voima (2013), which asserts that tourism Value emerges through specific interactions between service providers and customers, where both parties contribute to its co-creation. Additionally, it recognizes the role of firms in enabling the subjective and personalized creation of value for the recipients.

In the past four decades, various reviews of value have been conducted. In many ways, these reviews are valuable and shed light into the phenomena, and specifically highlight the challenges the scholars face while trying to compare and explain the dynamics of value creation and value formation. However, these reviews have certain limitations. Firstly, they fail to consider the phenomenological aspect of value as determined by individual experiences (Gummerus, 2013). Secondly, they do not provide comprehensive coverage of the literature pertaining to the processes involved in value creation. The following table (2.1) summarises the main value- and value creation related literature.

Table 2.1 A summary of key value creation related literature and value definitions (amended and extended from Minkiewicz, Evans, and Bridson, 2014 and Vargo and Lusch, 2016).

Approach		Authors	Value concept
Value creation process			
	Firm creation		
		Grönroos (2017)	The supplier prepares the consumer for value creation, but since the user produces value-in-use, no real value is created. The company produces a product that customers may consume and turn into value.
		Norman and Ramirez (1998)	Value emerges from [firm] activities made by the management (e.g., transforming raw diamond into a branded jewellery)
		Porter (1985)	Value chain processes and firm activities determine the value.
		Stabel and Fjeldstad (1998)	The generic models of value configuration (including the value chain, the value shop, and the value network) serve as tools for comprehending and analysing the logic of value creation at the firm level, spanning various industries and types of businesses.
	Co-creation	McColl-Kennedy et al. (2012)	Value is achieved through the integration of resources via activities and interactions involving participants.
		Lavie (2007)	Value-creation is a collective process resulting shared benefits.
		Lusch and Vargo (2006)	Value can exclusively be co-created and ascertained by the user during the consumption process and through active utilization, commonly known as value in use.
		Minkiewicz, Evans, and Bridson (2014)	From a value perspective, co-creation continues to be explored, but essential questions regarding the exact nature of what is being co-created remain unanswered.
		Normann and Ramirez (1998)	The traditional distinction between products and services is dissolved, as they are integrated into activity-based offerings that empower customers to generate value for themselves.
		Payne, Storbacka and Frow (2008)	Value creation occurs when customers engage in a series of activities aimed at achieving a desired outcome.
		Prahalad and Ramaswamy (2000; 2004)	The essence of value lies in the experiences of consumers. The overall co-creation experience within the network yields value that is personalized and distinct for each individual.
		Prebensen and Foss (2011)	Consumers actively engage in both the consumption and production of value within their own unique experiences.
		Ranjan and Read (2016)	Value co-creation occurs through joint production and the context-specific utilization, representing an extended exchange process involving both the production and consumption of value.

		Rihova et al. (2013)	The shared relationships, and different types of [value] co-creation is protuberant.
		Saarijärvi, Kannan, and Kuusela (2013)	The multidimensional aspect of value co-creation arises from diverse perspectives on its determinants, co-creation elements, and the concept itself. Hence, it is crucial to identify and comprehend the specific value being co-created, for whom, utilizing which resources, and through which mechanisms.
		Tynan, McKechnie and Chhuon (2010)	In luxury brand experiences, the co-creation of value is fostered through meaningful dialogue, intricate interactions, and active engagement.
		Vargo and Lusch (2004; 2011; 2016)	Co-creation unfolds through customer-service provider activities, where value emerges from interconnected processes involving all actors. It entails integrating the resources of multiple participants and represents the primary objective of exchange.
		Yi and Gong (2014)	Co-creation behaviour has two dimensions: participation and citizenship, each with four sub-dimensions. Customer participation includes seeking information, sharing information, responsible behaviour, and personal interaction. Customer citizenship involves feedback, advocacy, helping, and tolerance.
	Customer value creation	Cova and Dalli (2009)	Consumers have the ability to enhance the value of market offerings beyond the control of producers. However, under specific circumstances, companies can capture this value when it transitions to the second level of sociality, which is the market.
		Grönroos (2017)	The consumer solely produces value in the customer sphere. When a consumer engages with peers, social value co-creation can occur without the provider's involvement.
		Grönroos and Voima (2013)	Co-creation is exclusively achieved through specific and personalized interactions between service providers and customers. In all other instances, firms can only facilitate the subjective and individual creation of value for the customer.
		Heinonen et al. (2009; 2010)	Focusing on customer choices/what customer does with services
		Korkman (2006)	Customer engages in practices to create subjective value.
		Prebensen et al. (2013b)	Experience value is based on tourists' own motivation, involvement, and knowledge, and through interactions immerses the tourist in experience value creation.
		Schau et al. (2009)	The "anatomy" of value-creating practices consists of three essential components: (1) general procedural understandings and rules (explicit, discursive knowledge), (2) skills, abilities, and culturally appropriate consumption projects (tacit, embedded knowledge or how-to), and (3) emotional

			commitments expressed through actions and representations.
		Toffler (1980)	Prosumers take on both roles, contributing their skills and resources to customize products according to their specific needs or preferences.
Value outcome			
	Value as ratio of benefits/sacrifice	Bolton and Drew (1991)	Customers' prior experiences and expectations play a crucial role in evaluating service performance, overall quality, and value. Their assessments of quality and value are primarily based on disconfirmation, which arises from disparities between their anticipated and perceived levels of performance.
		Lepak, Smith, and Taylor (2007)	The realization of value creation hinges on the subjective assessment of value by the "target" and their willingness to exchange the perceived value for a monetary value.
		Patterson and Spreng (1997)	Satisfaction fully mediates the relationship between perceived value and repurchase intentions.
		Zeithaml (1988)	The consumer's overall assessment of a product's value is based on their perceptions of the benefits received and the sacrifices made. It reflects their holistic evaluation of the product's utility.
		Whittaker, Ledden and Kalafatis (2007)	An analysis of costs and benefits underlies the creation of customer value. The benefits represent what the customer receives, while the costs refer to what the customer gives up.
	Value as means ends	Baier (1966)	The satisfaction level of the recipient in terms of the need fulfilment or benefits derived from a good, service, or activity.
		Gutman (1982)	To manage the multitude of products and services available, individuals categorize and group them based on their needs, simplifying the decision-making process.
		Kim, Kim, and King (2016)	The most valuable attributes for value formation are a well-structured atmosphere followed by self-development, self-discovery, self-renewal, self-reliance or personal advancement.
		Woodruff (1997)	By incorporating customer value data, organizations can transform their understanding of customer value into actionable strategies, internal processes, managerial needs, and measurement techniques.
		Woodalll (2003)	Value for the Customer (VC) represents the customer's subjective assessment of the advantages acquired through their engagement with an organization's offering. It encompasses the resulting derived value from the outcomes and experiences associated with utilizing the product or service.

	Value as experience	Helkulla, Kelleher and Pihlstrom (2012)	The lived experiences of individual customers encompass their subjective encounters with value. These experiences are shaped by their perceptions, preferences, and evaluations of the benefits and outcomes derived from interactions with products or services.
		Holbrook (1996)	Value is a dynamic and subjective preference experience that is influenced by interactive and relative factors. The determination of value is intricately tied to the perceived experiences and evaluations of individuals.
		Holbrook and Hirschmann (1982)	The consumption experience is focused on the pursuit of fantasies, emotions, and enjoyment, making it challenging to measure its value using traditional methods such as cost or sacrifice.
		Sandstrom, Edvardsson, Kristensson and Magnusson (2008)	Value in use involves assessing the overall service experience, considering both functional and emotional outcomes.
	Value as phenomena	Heikkula and Kelleher (2010)	Value in the experience is an ongoing, iterative process of individual and collective customer sense-making, extending beyond isolated service encounters. It encompasses diverse ways in which customers perceive value within their lifeworld contexts, beyond the influence of the service organization.

2.3.   Value creation paradigm

Political economy and philosophy have described the concept of value in a wide-ranging sense. Rokeach (1973) identified that in the realm of political economy, the concepts of 'use value' and 'exchange value', while distinct yet interconnected, shape the fundamental underlying assumptions of how value is commonly understood. Woodall (2003) suggests that a more profound comprehension of how choices related to value are made can be attained by examining the utilitarian discourse of the 18th century, which focuses on the equilibrium between 'pleasure' and 'pain'. In the field of philosophy, significant insights emerged in the early 1970s that shed light on the mechanisms and motivations behind consumer choices and the prioritization of available options (Rokeach, 1973). These two early concepts offer initial insights into the dynamics of value creation.

The paradigm of customer value and the theory of the firm, represented by scholars such as Zeithaml et al. (2020), Choi and Kandampully (2019), Slater (1997), Porter (1980), and Hunt (1977), assert that companies are fundamentally driven by the objective of creating value for others, highlighting the economic and business aspects of this notion. Despite the substantial growth and vitality of customer value research (Woodruff, 1997), a significant portion of the literature has primarily focused on consumer goods (e.g., Leroi-Werelds, 2021; An and Han, 2020; Vargo and Lusch, 2016; Loureiro et al., 2014). Concurrently, the predominant approach in value research has predominantly embraced a practical and utilitarian perspective, assessing value as the disparity between advantages and expenses (Zeithaml et al., 2020; Williams and Soutar, 2009).

Further developing his early value chain model, which was one of the earliest and has become one of the most famous concepts ever presented in the field of value creation, Porter (2003) concluded that the value chain thinking helps researchers in the identification, and in the analysis, of the specific activities to create value for customers and achieve competitive advantages. Alongside Porter's micro value chain, the notion of macro value chain has emerged (Romero and Tejada 2011). The original micro value chain considered the producer of the value as an independent actor. The macro value chain entails a series of value-added activities involving various actors, spanning from the initial concept development and design stage to the ultimate delivery of the product or service to end consumers, and even extending to subsequent stages such as recycling, re-use, or final disposal (Romero and Tejada, 2011). The relationship amongst participating players is emphasised in the macro value chain. In the macro value chain, the focus of all actors is on maximizing the sales of use value, while also aiming to attain the exchange value and achieve profitability. This profit should ideally surpass the total costs incurred throughout the value chain activities (Romero and Tejada, 2011). Nevertheless, Normann and Ramirez (1998) argue that the connections among actors within the value chain have grown more intricate, signalling a heightened level of complexity in comparison to the time of industrial mass production. In today's connected world, the shared relationships and different types of co-productions, compared to adding value after another in the value chain, is even more protuberant (Rihova et al., 2013).

While addressing the need for a multidimensional value perspective, researchers attempted to define consumer value and characterise the value generation process. Scholars have examined the connection between customer value and related concepts such as satisfaction and behavioural objectives, utilizing diverse frameworks, measurement scales, and research instruments (Gallarza and Saura 2006; Oh 2003; Petrick 2002). Figure 2.1 depicts the most often used post-consumption frameworks and perceived value scales.
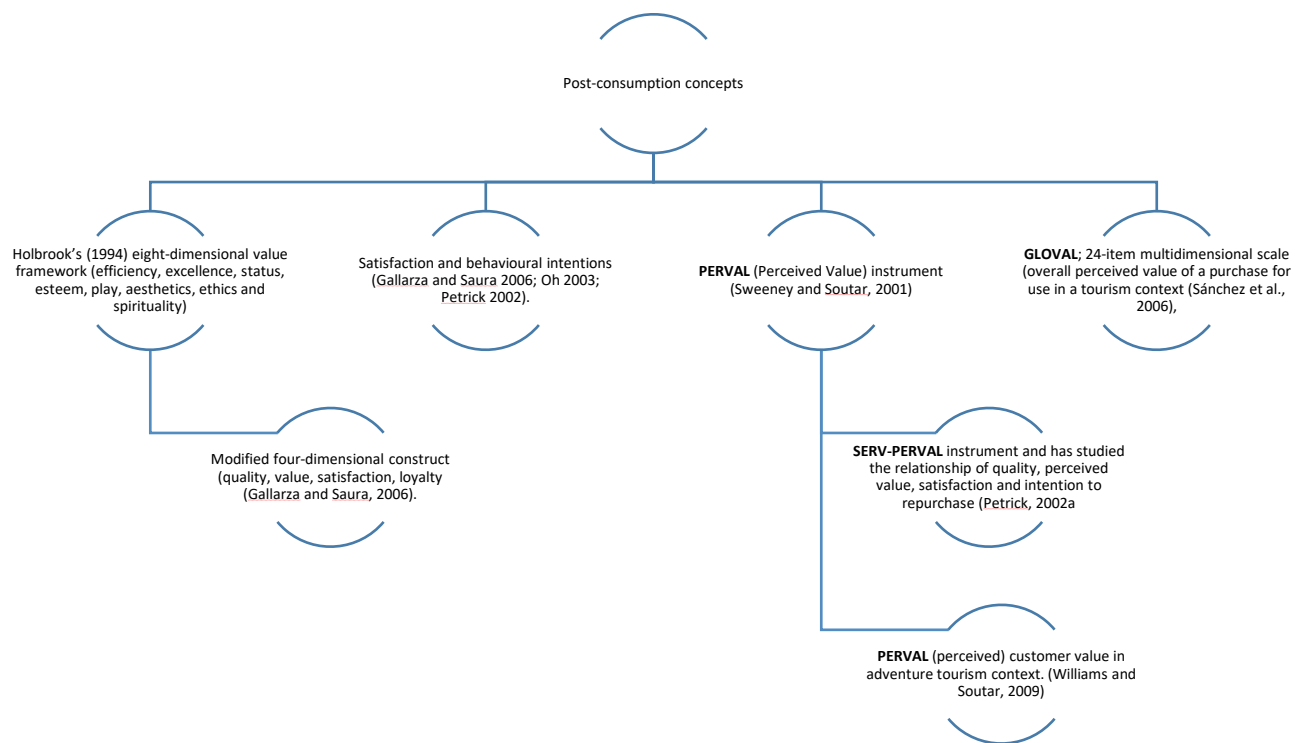
Figure 2.1 Studies, measurement scales and frameworks concerning the association within consumer value and post-consumption behaviour (Source: Author's own)

Holbrook's (1994) eight-dimensional value framework, which has its roots in the service quality literature (Parasuraman et al., 1988), has proven to be a valuable resource for researchers in evaluating customer value, specifically in the context of post-hoc perceived

value (PERVAL) within the tourism industry. The PERVAL, GLOVAL, and SERV-PERVAL instruments assess functional value and value for money, while also incorporating dimensions such as social value, epistemic value, and emotional value. Despite the widespread application of the instruments (PERVAL, GLOVAL, and SERV-PERVAL) in research investigating the associations between quality, perceived value, satisfaction, and repurchase intention, Prebensen et al. (2012) found limited or non-significant statistical correlations and encountered difficulties in operationalizing certain constructs within these instruments.

2.3.1. Co-creation of value

Normann and Ramirez (1989) were the pioneers to consider the potential of co-production for value creation. However, it was Prahalad and Ramaswamy (2004) who introduced the concept of value co-creation (VCC) as the future of competitive advantage, emphasizing its significance in delivering unique, personalized experiences to individual customers. Building upon Vargo and Lusch's ground-breaking research on the co-creative service-dominant logic (SDL) of marketing (Vargo and Lusch, 2004), current studies on value co-creation adopt multiple approaches. These approaches delve into the dynamic process of value co-creation and its significance across various contexts. However, as the theoretical and empirical landscape has broadened, the original theoretical underpinnings of value co-creation have become less distinct (Ranjan and Read, 2016). In the pursuit of ascertaining the fundamental nature of the value co-creation (VCC) concept, the extensive array of research publications has given rise to an intricate panorama of categorizations, viewpoints, and elucidations regarding the collaborative generation of value by customers, firms, and other actors (Saarijärvi et al., 2013).

The Service Dominant-logic (SDL) paradigm was initially introduced by Vargo and Lusch (2004), highlighting the collaborative nature of value creation involving organizations and customers. Payne et al. (2008) further emphasized that value co-creation extends beyond interactions between suppliers and customers, encompassing a diverse network of stakeholders. This perspective enables networked interactions that emphasize many-to-

many relationships among organizations. It recognizes that all participants play dynamic and active roles in the value creation process. SDL has been criticized for lacking the precision and conceptual clarity. In addition, scholars such as Achrol and Kotler (2006) have raised concerns regarding the suitability of the term "service" in capturing the essence of a new dominant logic. They have questioned its adequacy in encompassing the broader scope of value creation beyond traditional notions of service-oriented activities. Motivated by the criticism, Vargo and Lusch (2011, 2016) and numerous other scholars have been driven to refine the initial concept of value co-creation. As a result, the Service Dominant Logic (SDL) has gained significant traction as a recognized paradigm for understanding value creation, particularly within the realms of marketing and information systems research (Cabiddu, Lui, & Piccoli, 2013). The original Service Dominant Logic (SDL) has undergone numerous expansions, leading to a wide range of modifications and amplifications. One notable modification is the inclusion of value-in-context, proposed by Chandler and Vargo (2011), which shifts the focus from value-in-use to considering the contextual factors influencing value. Additionally, the concept has been further amplified through the incorporation of value-in-social-context, as highlighted by Edvardsson et al. (2011). Another perspective, introduced by Baron and Harris (2008) and Arnould et al. (2006), is the logic of 'value-in-context', emphasizing the impact of social resources on customers' empirical value outcomes within specific contexts. Furthermore, Rihova et al. (2013) expanded the understanding by introducing customer-dominant (CD) logic, contributing to a multifaceted exploration of value co-creation and perceived value. In their CD -logic, Rihova et al. (2013) accentuated the customers' social networks and emphasised the networked nature of value, and multi-layered dynamics of consumption. The research on SDL has covered a range of topics including value co-creation, value propositions, and brands. Payne et al. (2008) focused on the co-creation of value, while Chandler and Lusch (2015) explored value propositions. Merz et al. (2009) and Payne et al. (2009) investigated the relationship between SDL and brands. Furthermore, studies have examined the implications of adopting a broader ecosystems perspective (Vargo and Lusch, 2011), the application of SDL as a foundational framework for service science (Maglio and Spohrer, 2008), and its extensions and applications in the field of hospitality management (Shaw et al., 2011) and other related domains. More

recently, the concept of value co-creation has found extensive application in the examination and characterization of behaviours associated with tourism (Assiouras et al., 2019), loyalty towards destinations (Zu et al., 2021), brand equity and satisfaction (González-Mansilla et al., 2019), as well as the assessment of experiential value in museum settings (Antón et al., 2018). In their work, Vargo and Lusch (2016) have put forward the idea that the SDL could serve as the underlying framework for the future development of market theory, marketing theory, and even aspects of economic and societal theories. Vargo and Lusch (2016) made a notable contribution by differentiating and providing additional clarity on the concepts of co-production and value co-creation. They emphasized that co-production involves activities related to the creation of the value proposition, such as design and production, while value co-creation involves the collective and often unconscious contributions of multiple participants towards the perceived value. This distinction highlighted the distinct roles and dynamics of these two concepts in the overall process of value creation. Vargo and Lusch (2016:10) put forth the notion that actors are not solely responsible for delivering value, but rather engage in the creation and provision of value propositions. Consequently, value is not a static entity, but rather a fluid and contingent construct that can manifest unpredictably within the subject, the object, and the interactions among actors. This perspective underscores the interactive and context-specific nature of value within the broader framework of value creation.

Drawing from the perspectives of Grönroos and Voima (2013) regarding the limited moments of consumer-service provider interaction and the continuous nature of services (Chandler and Lusch, 2015), Storbacka et al. (2016) propose an actor engagement (AE) framework. This framework seeks to capture the complexity of interactions and engagement among various actors involved in the process of value creation. The AE framework addresses the difficulty of empirically observing value co-creation by providing a tangible and manageable approach. It encompasses the nature of actors' engagement, the activities involved in engagement, and the interactive processes of resource integration within a service ecosystem, making it observable, designable, and manageable (Storbacka et al., 2016). Taking into account the increasing presence of smart machines in service interactions, there is a need to incorporate technologies and

intelligent machines into this conceptualization. With the emergence of technology-to-technology interfaces and personalized forms of human-to-machine interactions, smart technologies provide promising opportunities for reshaping actor engagement and collaboration. In certain cases, they may even replace interactions that were previously reliant on human involvement (Storbacka et al., 2016). Recently, the emergence of immersive technologies has provided fresh opportunities for examining the co-creation of value and exploring the ways in which actor engagement can be facilitated through interactive technology. This has led researchers to investigate the dynamics of value generation and its existence within the individual, the object, and the collaborations among actors (Kirova, 2021).

2.3.2. Perceived value

The concept of customer value is intricately connected to the discourse surrounding perceived value. While perceived value has become a popular area of research, there is still a lack of consensus among academics regarding its interpretations and definitions (Minerbo and Brito, 2021). However, scholars generally concur that perceived value arises from consumers' evaluations of the quality and price of a product, primarily focusing on the product's quality and the price paid (Zeithaml, 1988). Zeithaml's (1988:14) widely accepted definition of perceived value highlights that it encompasses the consumer's overall assessment of a product's utility, considering what is received in terms of product quality and what is given in terms of price paid. This definition emphasizes the importance of both factors in shaping the perceived value experienced by consumers. Additionally, numerous studies (e.g., Cronin et al., 2000; Oh, 2000) have consistently shown that perceived value is frequently a more powerful predictor of repurchase intentions than satisfaction or quality alone. Correspondingly, the research instruments, self-reported unidimensional measures (Gale, 1994), and multidimensional scales are generally approved (Petrick and Backman, 2001; Sheth et al., 1991). Table 2.2 provides an overview of the commonly referenced definitions of perceived value, accompanied by details regarding the research context and the approach adopted in the studies.

Table 2.2Most cited definitions and research approaches of perceived value in different tourism and hospitality research contexts.

Perceived value		
Definition/approach	**Context**	**Author**
Consumer's assessment of a product's utility based on received product quality and given price.	Consumer goods; beverages	Zeithaml, 1988:14.
May provide more accurate predictions of repurchase intentions than either satisfaction or quality alone.	Retail service environment	Cronin et al., 2000; Oh, 2000.
Self-reported unidimensional measures as the traditional research instruments.	Manufacturing; market-perceived quality	Gale, 1994.
Multidimensional scales are commonly endorsed for assessing perceived value.	Golf travellers	Petrick and Backman, 2001; Sheth et al., 1991.
The concept is formed through two steps: evaluating the benefits received and considering the sacrifices made by the customer.	Hospitality and tourism; Destination marketing	Bigné et al., 2003; Oh, 2003; Murphy et al., 2000; Oh and Jeong, 2003.
Perceived value research traditionally focused on cognitive factors, neglecting emotional and hedonic aspects.	Luxury hotels	Dumand and Mattila, 2005.
Perceived value shows significant correlations with service quality, emotional response, monetary price, behavioural price, and reputation.	Golf travellers	Petrick, 2002a; 2005.
In the restaurant industry, perceived value is influenced by brand, price, and risk factors.	Restaurants	Kwun, 2004.
Affective factors, such as hedonic experiences and pleasure, are vital to cruise vacationers' value perception.	Cruise vacation	Dumand and Mattila, 2005.
The interplay of experience quality, perceived value, and satisfaction predicts future behavioural intentions.	Heritage tourism; Golf travellers; upscale hotels; dining experience	Chen and Chen, 2010; Hutchinson et al., 2009; Oh, 2000; Sánchez et al., 2006.

A diverse customer value framework including utilitarian and socio-psychological perspectives helps understand perceived experiences in adventure tourism.	Adventure tourism	Williams and Soutar, 2009.
The perception of value is primarily shaped by the perceived value of the experience.	Various Hospitality and Tourism contexts.	Al-Sabbahy, Ekinci, and Riley, 2004; Petrick and Backman, 2001; Dumand and Mattila, 2005; Oh, 2000; Sànchez et al., 2006; Williams and Soutar, 2009; Sànchez et al., 2006; Chen and Chen, 2010.
Experience value is based on tourist's own motivation, involvement, and knowledge, and through continuous interactions immerses the tourist in experience value creation.	Adventure tourism	Prebensen et al., 2013a.
Perceived value can be measured using a multidimensional approach, such as a five-dimensional construct incorporating functional, emotional, epistemic, and cost/sacrifice responses.	Heritage tourism	Chen and Chen, 2010.
Service providers must embrace customer interaction in order to ensure that their service offerings meet, and surpass, consumers' expectations as a proactive way for boosting the service experience and perceived value of tourism customers.	Tourism destinations and marketing organisations	Opute et al., 2020

However, perceived value research has led to two major approaches which corroborate with previously discussed value creation paradigms. First, perceived value is a concept that is often described as a dual process, encompassing both the benefits received and the sacrifices made by the customer (Zeithaml, 1988; Bigné et al., 2003; Oh, 2003). Secondly, in customer value research, a multidimensional construct has gained popularity as an alternative approach (Williams and Soutar, 2009; Rust et al., 2004; Petrick and

Backman, 2001; Sheth et al., 1991). While earlier studies focused mainly on cognitive factors when predicting perceived value (Dumand and Mattila, 2005), there has been a growing recognition of the importance of emotional and hedonic factors. However, Petrick (2002a) provides an exception by demonstrating the significant correlations between perceived value and factors such as service quality, emotional response, monetary price, behavioural price, and reputation. Subsequent research by Petrick (2005) further confirms the influence of all five antecedents on perceived value. The multidimensional model in perceived value research addresses the limitations of early studies that primarily focused on economic utility. It reflects the theoretical advancements in consumer behaviour research and highlights the significance of emotions and feelings in purchasing and consumption behaviours. By considering a broader range of dimensions, this model provides a more comprehensive understanding of perceived value. The frequent utilization of the multidimensional model stems from customers' experiences of uncertainty and the risks involved in service comparisons (Petrick, 2005).

Perceived value has been a subject of extensive research among hospitality and tourism scholars, leading to various approaches employed in studying this concept. Some studies have followed the line of research focused on utility value and cost sacrifice, examining factors such as brand, price, and risk in specific contexts like the restaurant industry (Kwun, 2004). Other research has taken a multidimensional perspective, recognizing the importance of affective factors, particularly hedonic and pleasure aspects, in shaping the perception of value among cruise vacationers (Dumand and Mattila, 2005). These diverse approaches contribute to a comprehensive understanding of perceived value in the hospitality and tourism domain. In their research, Chen and Chen (2010) examined various dimensions, including the experience quality, the perception of value, the level of satisfaction, and the post-purchase intentions. They explored the interplay among these factors to gain a comprehensive understanding of the subject under investigation. Similarly, Williams and Soutar (2009) conducted a study focusing on adventure tourism, where they investigated a range of factors such as the quality of experiences, the perceived value, the level of satisfaction, and the behavioural intentions of individuals. Their research shed light on the intricate dynamics and complexity of perceived

experiences within the realm of adventure tourism. Together, these studies demonstrate the importance of considering multiple facets when analysing and interpreting perceived experiences in the field of tourism. Likewise, Hutchinson et al., (2009) in the golf tourism context, Oh (2000) in dining experiences, and Sánchez et al., (2006) in vacation purchase situations, evaluated the multidimensional relationship of perceived value, quality, and satisfaction.

The concept of experience value, closely linked to perceived value and the management of value creation processes, has gained significant prominence in hospitality and tourism research (Prebensen et al., 2013a). Serving as both an empirical construct and a theoretical framework, it has emerged as a prominent approach to understanding the essence of value from the perspective of customer experiences. This concept has been widely recognized and applied in various aspects of the industry.

Extensive attention has been devoted to investigating the concept of experience value in the field of hospitality and tourism. Researchers have explored its relevance in general hospitality and tourism settings (Al-Sabbahy, Ekinci, and Riley 2004), as well as in specific domains such as golf tourism (Petrick and Backman 2001), cruise experiences (Dumand and Mattila 2005), dining experiences (Oh 2000), vacation purchase situations (Sànchez et al. 2006), adventure tourism (Williams and Soutar 2009), and heritage tourism (Chen and Chen 2010). These diverse studies have collectively contributed to a comprehensive understanding of perceived experience value across different segments of the hospitality and tourism industry. Drawing upon this extensive body of research, Prebensen et al. (2013a) propose that experience value is intimately intertwined with tourists' motivation, involvement, and knowledge. It is through continuous interactions that actively engage tourists in the process of value creation, where the concept of experience value emerges and shapes their overall perception of value.

Both the cost/sacrifice and multidimensional approaches have been subjects of research, although the reliability of single-dimensional measures in assessing perceived value has faced criticism. This criticism arises from the assumption that consumers possess a

uniform understanding of value. To overcome these validity concerns, researchers have turned to multidimensional research instruments as a promising solution. These instruments incorporate multiple dimensions, including social, emotional, functional, epistemic, and cost/sacrifice responses, enabling a more comprehensive and nuanced operationalization of perceived value. This multidimensional perspective facilitates a more accurate assessment of the intricate nature of perceived value, addressing some of the limitations associated with unidimensional measures (Staphit et al., 2019).

2.4.   Customer value frameworks

Porter's (1980) value chain model is one of the earliest frameworks and maybe the most popular idea ever introduced in the field of value creation. Yet, building a more holistic and multidimensional framework has gained popularity amongst the scholars from several different disciplines. In a recent study, Lindman et al. (2016) list eight significant authors that has published notable frameworks for value creation which are demonstrated in table 2.3.

Table 2.3 Customer value creation frameworks based on Carvalho et al., 2021.

Customer value creation frameworks		
Focus	**Types/ dimensions of value**	**Author**
Four value categories encompassing the product's functional performance, associations with target groups, emotional and curiosity appeal, and contextual impact on product/service utility.	Functional; social; emotional; and conditional.	Sheth et al., 1991
Customers assessment of value based on four value dimensions.	Accuracy; timeliness; appropriateness; economy.	Heard, 1993
The hierarchical connections between product attributes, performance, usage consequences, and their impact on customers' goal attainment.	Attributes, and the performance of a product, the consequences of the product use, and the resulting effects on the customers' goals achievement.	Woodruff, 1997
The classification of eight values into categories of "extrinsic vs intrinsic," "self-oriented vs other-oriented," and "active vs reactive."	Aesthetics, efficiency, ethics, excellence, esteem, play, spirituality, and status.	Holbrook, 1999
Five types of value describing the balance of benefits and sacrifices, outcomes that derive from the use or experience, product attributes, reduction of sacrifice, difference between a price that is considered to be fair and a benchmark price.	Derived value, marketing value, net value, rational value, and sale value.	Woodall, 2003
Value types are categorized into two primary groups: (1) concrete, transaction-based, and utilitarian value types, and (2) abstract, interaction-based, and hedonic value types. Similarly, the framework categorizes companies as price-oriented firms, solution-oriented firms, experience-oriented firms, and meaning-oriented firms.	Customer value can be categorized into economic and functional value, as well as emotional and symbolic value. Companies are classified based on their focus on these different types of value.	Rintamäki et al., 2007
There are four perceived value types that encompass minimizing costs and sacrifices, product usefulness and performance, creating positive experiences and emotions, and psychological associations for customers.	Cost-sacrifice value; functional-instrumental; experiential-hedonic value; and symbolic-expressive value.	Smith and Colgate, 2007
Framework contains five sources of value, and the processes, resources and practices adopted to achieve a certain	Products, information, interactions, environment, ownership/possession transfer, and value-creating processes	Payne et al., 2008

goal, and manage the business and the relationships with stakeholders.	are key components in understanding customer value.	
The value creation spheres model illustrates the progressive chain of spheres in the value creation process.	The value creation spheres consist of the provider sphere (facilitating value), the joint sphere (co-creating value), and the customer sphere (utilizing value).	Grönroos and Voima, 2013
Co-creation involves the collaborative generation of value within interactive system-environments facilitated by interactive platforms. This process necessitates the coordination of engagements and the organization of entities involved.	Interactive platforms serve as instrumental tools that enable the generation of potential value interactions at various stages of value co-creation, as perceived by the participating actors.	Ramaswamy and Ozcan, 2018
Tourism's multisensory and engaging nature necessitates new methods of defining co-creation and advertising immersive experiences.	Interaction, engagement, participation and personalization as value formation elements.	Carvalho, Kastenholz, and Carneiro, 2021

These frameworks utilize multidimensional typologies and variables to capture the complex nature of value. While the sociological and psychological aspects of consumption are considered significant, the continuous and dynamic interplay between producers and consumers, as well as the unique nature of service experiences, necessitate a multidimensional value perspective and corresponding frameworks (Ramaswamy and Ozcan, 2018; Petrick, 2002; Sweeney and Soutar, 2001). In service contexts, functional value alone may be inadequate for understanding experiences (Baker and Crompton, 2000), as the presence of uncertainty and risk distinguishes them from tangible goods (Zeithaml, 1981).

The categorization presented by Park et al. (1986) defines three fundamental requirements that manifest the value dimensions of consumers - functional necessities, symbolic necessities, and experiential necessities. However, this framework falls short in encompassing the cost and sacrifice elements of customer value and fails to capture other essential aspects of functional, experiential, and symbolic value.

In contrast, Sheth et al. (1991) introduce a more comprehensive framework that identifies five value types as pivotal drivers of consumer choice: functional, social, emotional,

epistemic, and conditional values. Functional value represents the perceived utility of a substitute based on its ability to meet utilitarian or physical purposes. Social value signifies the association or dissociation of an option with preferred demographic, financial, and socio-ethnic reference groups.

By considering these diverse value types, Sheth et al.'s framework provides a more holistic comprehension of consumer choice and value. It acknowledges the multifaceted nature of customer value, considering not only functional aspects but also social, emotional, and epistemic factors. Emotional value expresses the value received by an option accordingly to its capacity to stimulate or propagate emotions or sensitive states of mind, for example, comfort, security, fervour, sentiment, enthusiasm, dread, or blame. Epistemic value is the value outcome of an option's capacity to excite interest, give curiosity, or fulfil crave for information. At last, in the value creation framework of Sheth et al. (1991a), conditional value is the value obtained by an option due to the explicit circumstance or the physical or social setting confronted by the consumer.

Holbrook and Hirschman's (1982) ideas, supported by Sheth et al. (1991) and Sweeney and Soutar (2001), emphasize the active role of consumers in co-creating hedonic and utilitarian experience value. These frameworks recognize that consumers, driven by personal desires and situational factors, make choices based on diverse dimensions of value. In line with this perspective, Sheth, Newman, and Gross (1991) propose that consumers, with their individual needs and specific circumstances, select options based on various value aspects.

In addition to these frameworks, Holbrook (1994) introduces a comprehensive typology that classifies customer value into eight distinct categories: efficiency, excellence, status, esteem, play, aesthetics, ethics, and spirituality. Holbrook's concept incorporates both extrinsic and intrinsic factors, considering external and internal elements in the value creation process. Notably, Holbrook's framework also incorporates the role of consumer activity, allowing consumers to actively participate in the creation of value. However, it is important to note that despite its strong conceptual foundation, this typology primarily

focuses on consumer outcomes and meaning, and may not fully encompass the entirety of the customer value construct. Whilst some authors consider Holbrook's (1994, 1999) framework a detailed and comprehensive description of perceived value, it lacks critical reflection (Boksberger and Melsen, 2011). Mathwick et al. (2001) stands as the sole study to incorporate Holbrook's typology of experiential value in their examination of catalogue and internet shopping environments. In a different context, Sanchez-Fernandez et al. (2009) adopted Holbrook's typology by focusing on the dimensions of efficiency and quality in their analysis of economic aspects within retail strategies.

Woodall (2003:17) introduced a value creation (VC) framework that recognizes five primary value dimensions experienced by customers. These dimensions encompass net VC, derived VC, marketing VC, sale VC, and rational VC. Each dimension represents a unique facet of the customer's perception and assessment process. Woodall's framework is widely recognized for its extensive coverage among preceding works. However, it does exhibit some overlap, as certain outcomes and benefits are found in multiple dimensions within the framework. Additionally, the framework does not fully encompass the higher-order value realm, and certain sub-dimensions of customer value are not adequately addressed (Ruiz et al., 2008). Furthermore, the frameworks put forth by Woodall and Holbrook, along with existing typologies of customer value, neglect to address key factors highlighted by Menon et al. (2005). These factors encompass the origin of motivation underlying value evaluation (intrinsic or extrinsic), the bias of the evaluation (self-centred or other-oriented), and the timing/nature of the evaluation (proactive or reactive). These deficiencies pose obstacles when employing these frameworks for purposes such as business growth, marketing initiatives, strategic guidance, or the formulation of comprehensive metrics for customer value dimensions.

In their examination of multiple frameworks on customer value creation, Smith and Colgate (2007) emphasized the lack of a universally agreed upon definition of customer value and the absence of a conclusive conceptualization, framework, or typology in this domain. Despite several attempts to develop frameworks for customer value, none of them effectively serve as tools for developing new products and services, devising

marketing strategies, or establishing comprehensive measures of customer value. Each framework has its own strengths, but there is a lack of a universally accepted approach in these areas (Smith and Colgate, 2007). The customer value creation strategy framework (Table 2.4) developed by Smith and Colgate (2007) offers valuable tools for organizations to devise effective strategies for value creation. It helps in identifying possibilities for introducing new propositions that create value. The framework exemplifies brand and organizational positioning and suggests improvements to existing value propositions. Drawing from various authors and typologies, it is built upon five fundamental elements of customer value: environment, information, products, interactions, and possession. The attainment of values is accomplished through a multitude of procedures and actions along the 'value-chain,' involving interactions within and between organizations and multiple actors (Smith and Colgate, 2007). Grönroos and Voima (2013) build upon Smith and Colgate's (2007) framework and explore the concept of value actualisation within three interconnected spheres: the provider sphere, the joint sphere, and the consumer sphere. These spheres represent different stages in the value creation process. The provider sphere focuses on facilitating value, the joint sphere emphasizes co-creating value, and the consumer sphere highlights the utilization of value by customers. Moreover, providing additional viewpoints to Smith and Colgate's framework, Ramaswamy and Ozcan (2018) presented the standpoint of experiencing actors (e.g. visitors), and that interactive platforms are "means" for generating potential value interactions at any site of value co-creation. Also, providing new dimensions to Smith and Colgate's framework, Carvalho, Kastenholz, and Carneiro (2021) accentuated the role of interaction, engagement, involvement, and personalisation as factors of value formation. Therefore, this study utilised the Smith and Colgate's framework as starting point while acknowledging the changes in e.g., technology and communication, and the possibilities that the recent value creation frameworks provide for analysing the value creation in technology-enhanced multisensory tourism environment.

Table 2.4 Customer Value Creation Framework of Smith and Colgate (2007)

	Types of Value			
Source of Value	Functional/Instrumental Value	Experiential/Hedonic Value	Symbolic/Expressive Value	Cost/Sacrifice Value
	• Attributes that are correct and precise. • Performances that are suitable and fitting. • Outcomes that are suitable and desirable.	• Sensory • Emotional • Social/relational • Epistemic	• Self-identity/worth • Personal meaning • Self-expression • Social meaning • Conditional meaning	• Economic • Psychological • Personal investment • Risk
Information	Provides information, imparts knowledge, and contributes to achieving performance and outcomes.	Creativity has the potential to offer or enrich sensory, emotional, relational, and epistemic experiences.	Places a product/service in a particular position, facilitates identification with the product/service, and aids in the association and interpretation of meaning.	Assists in assessing alternatives, reduces stress associated with decision-making, and occasionally contributes to lower prices through competition.
Products	Enables performances and outcomes by providing features, functions, and characteristics.	Offers experiences that engage the senses, emotions, and intellect.	Elevate consumer self-concepts, deliver personal significance, enable self-expression, and confer social significance.	Taking price and augmented product factors into account assists in minimizing costs and sacrifices.
Interaction	The interactions with service and responsiveness, as well as interactions with systems, facilitate or amplify the achievement of desired performance and outcomes.	Service attributes give rise to sensory, emotional, relational, and epistemic experiences among customers, encompassing service recovery and customer support as well.	Interactions can enhance customers' self-esteem and offer personal significance, including aspects like status and prestige. Similarly, equity policies can elevate sociocultural meaning.	Interactions with people and systems affect costs and personal investment.
Environment	The atmosphere and characteristics of the consumption environment contribute to value by amplifying or diminishing product performances and outcomes.	The music, ambiance, and atmosphere within the consumption environment can evoke sensory, emotional, and intellectual experiences.	The location and environment have the capacity to offer personal, social, or sociocultural significance, as well as elevate self-esteem and self-expression.	Impacts the economic and psychological costs, personal investment, and risk associated with a product or service.
Ownership/ Possession	Precise and punctual completion processes deliver crucial value to customers.	The fulfilment of delivery commitments and the chosen delivery method have the potential to elevate	The delivery process, method, and the status of the delivery agent have the ability to	Enhancements can encompass payment conditions, delivery

		the customer experience, foster a sense of pride in ownership or experience, and enhance the effectiveness of the product or service.	generate additional symbolic value.	alternatives, return guidelines, precise invoicing, and prospective post-purchase support and customer service protocols.

Within the Smith and Colgate's (2007:15) Customer Value Framework (Table 2.4.), advertising, public relations, and brand management creates information. Therefore, the generation of information plays a crucial role in delivering value to customers. It encompasses functional/instrumental value by advising and educating customers, experiential/hedonic value through creative advertising that evokes sensory and emotional responses, symbolic/expressive value by establishing connections and conveying significance, and cost/sacrifice value by helping consumers comprehend products or services and make informed decisions. Moreover, Smith and Colgate (2007:15) propose in their framework that goods and services deliver various types of value. These encompass functional/instrumental value, such as safety; experiential/hedonic value, such as a resort holiday offering sensory, emotional, and epistemic experiences; symbolic/expressive value, which relates to the personal association with a company; and cost/sacrifice value, which considers both the actual cost and its impact on investment and perceived risk.

In the context of services, value chain activities play a crucial role in establishing and improving interactions between customers and an organization's employees or systems. These activities encompass recruitment and training, daily management and supervision of procedures, and the focus on service quality. Within these interactions, functional/instrumental value (like timeliness of service); experiential/hedonic value (like interpersonal ties); symbolic/expressive value (like VIP status/treatment); and finally, cost/sacrifice value (like lowering the investment required to obtaining or use a product on individual level), is created. (Smith and Colgate, 2007.) In addition, the framework

highlights the significance of the ambiance and attributes of the consumption environment in relation to different dimensions of value. Specifically, these factors play a role in shaping functional/instrumental value by either enhancing or detracting from product performance and outcomes. They also contribute to experiential/hedonic value by creating sensory, emotional, and epistemic experiences. Moreover, they contribute to symbolic/expressive value by providing personal, social, or sociocultural meaning and by enhancing self-worth and self-expression. Lastly, they influence cost/sacrifice value by affecting the economic and psychological costs, personal investment, and perceived risk associated with a product or service.

In their framework, Smith and Colgate (2007) reach the conclusion that the transfer of ownership and possession yields distinct forms of value. These encompass functional/instrumental value, such as the provision of timely delivery; experiential/hedonic value, exemplified by customer satisfaction throughout the transaction process; and symbolic/expressive value, which is enhanced by elements like stylish packaging or gift wrapping, adding a heightened sense of meaning. The framework proposed by Smith and Colgate (2007) has garnered recognition from various academics, such as Lindman et al. (2016) and Yang and Mattila (2017), who have commended its effectiveness. In their thorough analysis of value creation frameworks, Lindman et al. (2016) highlight three primary justifications for the validity and practicality of Smith and Colgate's (2007) framework. According to Lindman et al. (2016), they assert that Smith and Colgate's framework stands out due to its foundation on the established strengths of previous research, effectively addressing many of their limitations. Furthermore, Lindman et al. (2016) emphasize that the framework combines a wide range of value types and incorporates relevant value sources (such as information, interaction, and purchase environment), thus providing a comprehensive perspective on value creation.

In addition, the framework recognizes and discusses various value creation activities that contribute to or enhance each type of value. This aspect further strengthens the validity of Smith and Colgate's framework. Yang and Mattila (2017) also support the framework, stating that it explicitly describes the dynamic nature of hedonic/experiential value by

considering sensory, emotional, epistemic, and social factors as antecedents to value creation. The following sections will further analyse the dimensions of Smith and Colgate's customer value framework's four categories and reflect on related literature.

2.5.   Functional and instrumental value

Smith and Colgate (2007) emphasize the significance of functional and instrumental value in informing, educating, and facilitating the achievement of desired performance and outcomes. These types of value encompass a range of features, functions, and characteristics that enable the realization of desired performances and outcomes. Furthermore, interactions between service providers and customers, as well as interactions with delivery or service systems, play a crucial role in providing or enhancing desired performance and outcomes. The environment in which a product or service is acquired or consumed also significantly contributes to its value by either enhancing or detracting from its performance and outcomes. Sheth et al. (1991:160) define functional value as the perceived usefulness derived from an alternative's ability to fulfil functional, utilitarian, or physical requirements, and they suggest that it acts as the primary driver of consumer decision-making. Commonly recognized sources of functional value include quality, reliability, durability, and price. In the hospitality and tourism industry, attributes such as safety, service timeliness, seat comfort, and price greatly influence the perception of functional value. In operation types like adventure tourism, functional value becomes even more critical due to safety considerations and the meticulous planning required to mitigate risks (Williams and Soutar, 2005). Tour operators can enhance functional value by offering convenience in the planning and purchasing phases, as well as ensuring speedy, efficient service delivery and administrative support. These factors contribute to an increased functional value for customers seeking tour operator services.

Functional and instrumental value, also known as utilitarian value, revolves around the extent to which a product, good, or service possesses anticipated features, serves its intended purpose effectively, and accomplishes the expected functions. Smith and Colgate (2007:10) identify three essential sources of functional/instrumental value within

their framework, building upon Woodruff's (1997:143) definition. These sources include ensuring the presence of correct, accurate, or suitable features, functions, attributes, or characteristics, achieving appropriate performances in terms of reliability, performance quality, and service outcomes, and attaining desired outcomes or consequences such as strategic value, effectiveness, operational benefits, and environmental benefits. Starbucks, as an example, strives to establish functional/instrumental value by providing relevant features and attributes, such as high-quality products, personalized offerings, and a strong commitment to environmental and societal responsibility (Smith and Colgate, 2007).

2.6.   Experiential and hedonic value

Ahn et al. (2019) summarise consumer experience and hedonic value as follows: Creativity, ambience, and the mood of the consumption area, together with service qualities that promote sensory, emotional, relational, and epistemic customer experiences, service recovery, and customer support. Meeting delivery and service commitments, as well as product or service potency, can boost customer experience and hedonic value. In hedonic services, the environment influences behaviour. Attractions and services are evaluated based on utilitarian and hedonic variables, and consumers' symbolic perceptions of the surroundings impact their behaviour (Joseph-Mathews et al., 2009). Consumers evaluate service settings (atmosphere, design, layout, and social components) depending on their importance.

Consumer value being a mere measure of functional usefulness is contested by several researchers (Babin and Attaway, 2000; Eroglu, Machleit, and Barr, 2005; Homer, 2008; Lim and Ang, 2008). According to Holbrook and Hirschman (1982:132), consumers actively pursue experiences that encompass elements such as fun, fantasy, arousal, sensory stimulation, and enjoyment. Sheth et al. (1991) introduced the concept of emotional value, which they argue is a multidimensional aspect influenced by social and psychological factors. Emotional value pertains to a product or service's capacity to evoke sentiments and emotions in consumers. Consumers derive satisfaction from both the

utilitarian aspects of necessary, obligatory consumption and the hedonic characteristics of carefree, spontaneous, and frivolous consumption (Ryu et al., 2010). Hedonic value, as described by Babin et al. (1994), is subjective and individual, encompassing feelings of delight and playfulness. Experiential/hedonic value signifies the extent to which a product or service provides immersive experiences, evokes emotions, and elicits sensations for the user. Emotional value demonstrates a service's ability to evoke specific feelings or sentimental states, and it holds a crucial role in the examination of tourist experiences, as emotions fundamentally shape evaluations of satisfaction.

The concept of "perceived value creation" is a fundamental aspect of consumer behaviour that involves individuals' perception and assessment of the value they receive from products, services, or experiences. Researchers Prayag et al. (2015), Pine and Gilmore (1998; 1999), and Duman and Mattila (2005) have explored this concept and its drivers, including social value. Prayag et al. (2015) emphasizes the importance of understanding consumer perception of value in tourism and hospitality contexts. They propose a model that incorporates factors such as functional value, emotional value, social value, and epistemic value. These dimensions interact to influence the process of perceived value creation.

Pine and Gilmore (1998; 1999) introduced the concept of the "experience economy" and argue that value is derived not only from products or services but also from memorable and transformative experiences. They highlight the significance of designing experiences that engage customers emotionally and have personal relevance. According to their perspective, perceived value is created when experiences are inherently valuable and meaningful to individuals. Duman and Mattila (2005) focus on the role of social value in perceived value creation. They emphasize the influence of social interactions and the presence of others on consumers' perception of value. Social value refers to the social benefits and connections derived from a product or service. For instance, attending a concert provides not only the functional value of music enjoyment but also the social value of shared experiences and connections with others in the audience. Duman and Mattila

emphasize that social value can greatly enhance the overall perceived value of an experience.

In addition to the perspectives mentioned, social value is recognized as an integral part of experiential and hedonic value. It refers to the perceived utility individuals derive from a product, service, or experience based on its connection to one or more social groups (Sheth et al., 1991:161). This concept aligns with the notion of conspicuous consumption, where individuals seek products or experiences that fulfil their social bonding needs (Prebensen et al., 2013b; Boksberger and Melsen, 2011). Furthermore, social value extends beyond individual consumption and includes intangible cultural heritage. Intangible cultural heritage encompasses social values, traditions, customs, rituals, spiritual beliefs, and aesthetics (Chiabai et al., 2013:37). In the context of tourism, the connection between cultural heritage and specific places plays a vital role in shaping social value. Promoting this connection establishes inherent and extrinsic territorial values, creating a sense of relevance for the present generation (Fusco et al., 2009).

The growing interest in multimodal, creative, and emotional visitor experience approaches, particularly regarding sensory experiences, has opened up intriguing possibilities in heritage studies and the tourist experience at heritage destinations (Volo, 2021). By emphasizing sensory aspects and creating engaging experiences, heritage destinations can enhance the social value perceived by visitors. These experiences go beyond mere consumption and offer opportunities for individuals to connect with their social groups, engage with cultural heritage, and derive meaning from the experience.

In conclusion, understanding perceived value creation is crucial for businesses and destinations as it involves assessing how consumers perceive and evaluate the value they receive. Social value is an integral aspect of this process, emphasizing social connections and the fulfilment of social bonding needs. Furthermore, social value extends to intangible cultural heritage, highlighting the importance of social values, traditions, and customs associated with specific places. By adopting sensory and multimodal

approaches, heritage destinations can create experiences that enhance visitors' overall perceived value.

Epistemic value, a sub-dimension of experiential and hedonic value, as posited by Williams and Soutar (2009), emerges when a product or service stimulates a consumer's curiosity, demonstrates originality, or fulfils their quest for information. It encompasses the product's ability to evoke interest, create novelty, and satisfy the consumer's desire for knowledge. Epistemic value holds particular importance in shaping consumers' new and unique experiences. Epistemic value ties to accurate beliefs, justified views, knowledge, and understanding and is significant in experience-related consumption (Weber, 2001). Epistemic value further emphasizes the curiosity and inclination of customers to explore and engage in diverse learning experiences (Prebensen et al., 2013a). Given the nature of adventure tourism, which often entails unique activities and destinations, epistemic value holds significant importance. The creation of epistemic value plays a pivotal role in driving the success of tourism products, as it aligns with visitors' experimental and novelty-seeking behaviours (Zuckerman, 1994).

While marketing practitioners have increasingly directed their attention towards the hedonic aspects of consumer experiences and catering to their growing demand for entertainment, academic research has lagged behind in exploring the hedonic dimensions of consumers' consumption experience (Arnold and Reynolds, 2003). Similarly, Ryu et al. (2010: 419) highlight the limited focus that previous research has placed on the "festive side" of value.

Smith and Colgate (2007) provide insights into the strategies employed by different organizations to create experiential and hedonic value. Some restaurants and stores emphasise senses (such as aesthetics, ambiance, aromas, feel) Dining out, enjoying gorgeous décor and good cuisine, is typically hedonistic and resulting in favourable emotional responses (Line et al., 2016). Starbucks tries to give experiential/hedonic value through aesthetics, atmosphere, and smells, according to Smith and Colgate (2007). The senses connect the external environment to the brain, and their interplay affects how

people experience their surroundings. This sensory information creates memories, emotions, and feelings (Bender et al., 2021). In hotels and restaurants, matching style, décor, and offering to aesthetics is crucial since consumer satisfaction, including visual pleasure, is paramount (Tsaur et al., 2015).

Travel and entertainment companies focus on pleasure, play, excitement, adventure, and humour (Smith and Colgate, 2007). Kim (2015) found that perceived hedonic value (pleasure, enjoyment, and fun) enhanced purchase intention in mid- and high-cost airlines. Jung and Han (2014) claim cruise research utilized escape, relaxation, learning, exploration, excitement, self-esteem, social recognition, and connection to analyse travellers' cruise motives. Han and Huyn (2017) discovered that escape and relaxation motivate cruise travel. To properly promote a cruise holiday, all promotion and advertising should portray travellers escaping their usual lives and enjoying freedom and leisure on a cruise (Han and Huyn, 2017). Landscape and environment improve the perceptions and emotions, according to Bender et al. (2021).

Tourism consumer behaviour is an outstanding example of how perceived value should not be quantified or rationalised (Knobloch et al, 2016). Sánchez et al. (2006) emphasize the significance of experiential and hedonic value research in providing novel explanations for visitor assessments and highlighting the key attributes that influence perceived value outcomes, such as satisfaction and loyalty.

Prayag et al. (2015) highlight the need to avoid oversimplifying emotions in the field of tourism research and practice, acknowledging the intricate nature of emotional experiences. In line with this understanding, the present study employs abductive reasoning, a logical inference approach, to uncover the most straightforward and believable explanations for observations (Kennedy, 2018). This investigative approach involves oscillating between induction and deduction, encompassing what is known as abductive thinking. This approach embraces a pragmatic perspective, adeptly surmounting the limitations inherent in both methodologies, as elucidated by Hammond and Wellington (2013). Abduction, in its essence, concerns itself with the exploration of

novel concepts, ideas, and explanations by drawing from unforeseen facts, data, or occurrences that cannot be elucidated by preexisting knowledge, as articulated by Kennedy (2018).

This pursuit will be accomplished through the facilitation of focus group discussions, a platform wherein participants are urged to employ their own linguistic expressions to give voice to their sentiments and emotions. By exploring the implications and outcomes of multisensory mixed-reality environment, as well as examining the responses of tourists within such environments, the study aims to identify the most likely scenarios and enhance our understanding of the subject.

According to Pine and Gilmore (1998; 1999), postmodern forms of consumerism are built on experiences rather than just services and commodities. Experience seeking and hedonic consumerism is demonstrated by solo leisure travel. According to Babin et al. (1994), to comprehend the variations in customer experiences, it is essential to analyse the non-material and emotional costs and benefits, with the ultimate objective of maximizing personal satisfaction. Affective components, including emotions, epistemic value, and social value, should be included in study paradigms to better explain tourist behaviour. According to Havlena and Holbrook (1986), tourist reference groups influence the symbolic values of tourism packages, emphasising the importance of hedonic factors in tourism and leisure. Furthermore, according to Otto and Richie (1996), emotions play an essential, although often overlooked, role in tourism satisfaction surveys. Furthermore, Prebensen et al. (2013b) claimed that fear, hesitation, and uncertainty are antecedents to exhilaration and excitement in adventure tourism, making them important components of value formation. The hedonic component of tourism has been studied empirically, but not the multisensory tourist experience (Huseynov et al., 2020). As a result, academics and attraction managers must focus more on the hedonic dimension of interactions and tourism experiences.

2.7. Symbolic and expressive value

Chen et al. (2016) highlights the significance of symbolic and expressive value in positioning products and services, allowing consumers to establish a sense of connection with them. Furthermore, symbolic, and expressive value plays a crucial role in attributing meaning to the act of consuming a product or service by enhancing consumer self-concepts, facilitating self-expression, and providing personal and social significance. In addition to these aspects, customer interactions with product or service representatives can have a positive impact on self-perception and confer personal significance. These interactions can also contribute to customers' sense of status and prestige. Similarly, equity policies, such as fair and inclusive practices, can enhance the sociocultural meaning associated with a product or service. Furthermore, the location and environment where the product or service is experienced can contribute to personal, social, or sociocultural meaning, thereby enhancing feelings of self-worth and self-expression. Additionally, the delivery process, method, and the status of the delivery agent can create additional symbolic value. Overall, understanding and leveraging the symbolic and expressive value in consumer experiences can lead to deeper connections and meaningful associations with products and services.

Holbrook (1999; 2005) has studied symbolic/expressive value and states that it relates to the extent of customer's psychological associations to a product or a service. Some services (fine dining, for instance) make us feel good about ourselves and therefore appeal to our personal self-concepts and self-worth both in possession (e.g., enjoying the dinner) or in giving (e.g., taking someone out for a dinner). In the realm of products and services, personal meaning can be found in connections to specific individuals, events, or locations that hold significance for an individual, serving as a means of self-expression. For example, a restaurant where a first date took place may evoke sentimental value unique to that particular consumer. Additionally, certain products and services provide individuals with the opportunity to mirror or showcase their personalities, tastes, and values. On the other hand, there are products that place emphasis on social meaning, influencing how others perceive us. These various dimensions of meaning demonstrate

the multifaceted nature of consumer experiences and the ways in which products and services can resonate with individuals on personal and social levels. Symbolic and expressive value, conditional meaning, and personal meaning are all significant factors in consumer behaviour and the success of branded products. Branded products often attract consumers due to their associated image, prestige, or status, serving as a reflection of their desired social identity. These products hold symbolic value in the eyes of consumers, enabling them to express themselves and project a particular image to others. Furthermore, certain products and services derive their meaning from their connection to sociocultural events and traditions. This conditional meaning is deeply rooted in cultural contexts, allowing marketers to leverage strategies that resonate with broad segments of the population (Gil et al., 2017).

In contrast, personal meaning is highly individualistic and specific to each person's unique experiences, preferences, and values. Marketers face challenges in effectively promoting personal meaning, as it requires a deeper understanding of individual consumers and their diverse perspectives. While delivering symbolic and expressive value can be more challenging, it has the potential to create a lasting competitive advantage for brands that successfully tap into the emotional and self-expressive aspects of consumer desires. By strategically addressing both personal and symbolic/expressive dimensions of meaning, marketers can establish stronger connections with their target audience and foster long-term brand loyalty. (Holbrook, 1999; 2005.)

Yang and Mattila (2017:7) challenge the notion that symbolic/expressive value plays a substantial role in the context of luxury hospitality services. While many scholars agree that owning rare luxury products can serve as a means of expressing one's unique self-concept (Gil et al., 2017; Giovannini et al., 2015; Yang and Mattila, 2017), Yang and Mattila propose that consumers may be less inclined to use luxury hospitality experiences for the purpose of expressing their values or signalling their social status. They suggest that the significance of symbolic/expressive value in luxury hospitality consumption may be limited. In contrast, luxury consumption motivations in fashion context, and amongst generation Y consumers, were significantly influenced by public self-consciousness and

self-esteem, hence the symbolic/expressive value (Giovannini et al., 2015). Concurrently, studying Brazilian teenagers, Gil et al. (2017) found that self-concept clarity significantly effects on acceptance, peer pressure, and motivation, which directly affects the perceptions of luxury items. Yang and Mattila (2017) provide further evidence supporting the idea that consumers are more likely to utilize tangible luxury goods rather than intangible luxury hospitality services when it comes to signalling social status or impressing others with their wealth. Their research highlights a preference for material possessions as a means of demonstrating social status and capturing the attention of others.

2.8.   Cost and sacrifice value

Smith and Colgate (2007) argue that cost and sacrifice value encompasses economic, psychological, and personal investment risks. By addressing these risks, service providers play a crucial role in helping consumers assess different alternatives, reducing decision-related stress, and sometimes even facilitating price competition. Price considerations and augmented product features are factors that contribute to minimizing costs and sacrifices. Furthermore, interactions with people and systems can impact the economic and psychological costs associated with a product, as well as influence the level of personal investment required. Enhancing cost and sacrifice value can be achieved through various strategies, such as offering flexible payment terms, providing diverse delivery options, implementing customer-friendly return policies, ensuring billing accuracy, and establishing comprehensive after-sales and customer care procedures.

Cost and sacrifice value have been extensively explored in the realm of customer value, perceived value, and value creation. As Zeithaml (1988) astutely defined, perceived value is the consumer's overall assessment of the utility of a product based on perceptions of what is received, mainly product quality, and what is given, mainly price paid. This widely accepted and empirically tested definition acknowledges the crucial role of evaluating the benefits gained from a product against the costs and sacrifices incurred. By considering both the tangible aspect of product quality and the financial aspect of price paid,

researchers and practitioners gain valuable insights into the intricate dynamics of consumer decision-making and value perception. However, the quest for expanding knowledge in the field of consumer value continues, as researchers such as Boksberger and Melsen (2011) delve into understanding how consumers strive to maximize and realize the benefits derived from a product while simultaneously seeking ways to minimize costs and non-monetary sacrifices associated with its purchase, ownership, and use. At its core, the concept of cost/sacrifice value revolves around the examination of the various costs involved in these transactions. This ongoing exploration sheds light on the intricate dynamics of consumer decision-making and the strategies employed to optimize value outcomes.

However, narrowly focusing on the "price" alone as the primary factor for perceived value fails to acknowledge the intricacy and multidimensionality of pricing (Peppers and Rogers, 2016). While some companies may prioritize minimizing economic costs such as product pricing, operational expenses, switching costs, and opportunity costs, other organizations recognize the significance of addressing diverse aspects. These encompass the convenience of acquisition and the reduction of relational and psychological expenses, including cognitive complexity, stress, search expenditures, learning investments, psychological switching outlays, and relationship costs. Service providers understand that customers invest their time, effort, and energy into the transaction and consumption process. To mitigate risks and enhance perceived value, they employ strategies such as providing assurances, guarantees, flexible return policies, and leveraging endorsements from reputable third parties (Boksberger and Melsen, 2011).

By adopting a comprehensive approach, service providers aim to alleviate customers' personal commitments and mitigate the perceived risks and expenses associated with purchasing, owning, and using a product. This approach goes beyond price considerations and recognizes the broader array of factors that shape customers' perceived value. It acknowledges that customers' assessment of value is influenced by various economic, relational, and psychological elements, all of which contribute to the overall customer experience.

2.9.   Discussion on customer value

There is an abundance of conflicting definitions, conceptualizations, paradigms, and typologies pertaining to customer value, perceived value, and value generation. The discussion surrounding value has been ongoing since Levitt (1969) first introduced the concept of value creation activities. Despite numerous attempts to establish clear definitions and typologies for customer value and value creation, the literature lacks a unified and cohesive framework. However, the pursuit of value creation remains a fundamental objective for many organizations, as reflected in their mission statements and goals (Sweeney and Soutar, 2001). Consequently, research on customer value continues to contribute frameworks and typologies aimed at aiding organizations in understanding the formation and development of value (Ranjan and Read, 2016). These efforts serve to assist organizations in comprehending the intricate processes involved in creating and delivering value to their customers.

This study aimed to examine the potential enhancement of visitor value through the stimulation of multiple senses within mixed reality tourism environments. The literature highlights the importance of experiences in shaping the development of value within the tourism industry (Knobloch et al., 2017; Prebensen et al., 2013a). By exploring the relationship between sensory stimulation and visitor value, this research seeks to shed light on the ways in which immersive experiences can contribute to the overall value perceived by tourists. Besides, consumer preferences are shifting away from the utilitarian use value of services toward their experience and symbolic worth (Sorensen and Jensen, 2015). In addition to hedonic pleasure, the review emphasised that memorable travel experiences are also associated with other emotions (Knobloch et al., 2016; Pine and Gilmore, 1998). Moreover, existing frameworks for customer value creation may be used to tourism service development and the identification of value creation potential (Smith and Colgate, 2007). In order to capture the complexity of the service process, it is important to adopt a holistic perspective that acknowledges the involvement of multiple actors and the dynamic nature of time (Chandler and Lusch, 2015). This calls for an unrestricted understanding of time instability (Gronroos and

Voima, 2013), value co-creation (Prebensen and Xie, 2017; Vargo and Lusch, 2016), actor engagement (Storbacka et al., 2016), and sensory modalities (Bender et al., 2021). By embracing this comprehensive viewpoint, researchers can gain deeper insights into the interplay between various factors that contribute to the service experience and shape value outcomes. Finally, the development of intelligent machines in service interactions necessitates the accumulation of technologies and (intelligent) machines to future value frameworks, in which value propositions invite, shape, and even revolutionise involvement in service (Chandler and Lusch, 2015).

A customer's value creation process involves a dynamic sequence of actions aimed at achieving a desired goal, although it is important to acknowledge certain limitations. Key to this process is the customer's access to and utilization of information, knowledge, skills, and other resources, as these factors significantly contribute to their ability to generate value (Payne et al., 2008). This allows service providers create value in dynamic, collaborative, non-linear, and sometimes unconscious activities. Further, value is entrenched in consumers' actions and that enterprises must create positive interventions and actor engagement opportunities to boost this (embedded) value (Storbacka et al., 2016). Consequently, highlighted by Sweeney and Soutar (2001) consumers appraise products not only in terms of anticipated functionality, cost-effectiveness, and adaptability but also in relation to the pleasure derived from product usage or ownership (emotional value) and the societal implications conveyed by the product's messaging to others (social value).

Table 2.5 Summary of Value Types and Value Sources and VCC -considerations based on Carvalho, Kastenholz and Carneiro (2021); Ramaswamy and Ozcan (2018); Grönroos and Voima (2013); and Smith and Colgate (2007).

Source of Value	Types of Value			
	Functional	**Hedonic**	**Symbolic**	**Sacrifice**
Information	Informs, educates and helps realise outcomes.	Creativity can provide or enhance sensory, emotional, relational, and epistemic experiences.	Helps identify and comprehend a product/service's significance.	Helps assess options, reduces decision-related stress, and (occasionally) lowers prices.
Services	Provide features, functions, and characteristics allowing performances and outcomes.	*Has potential to provide sensory, social, emotional, and epistemic experiences.*	*Provide personal meaning, self-expression, and societal purpose.*	*Price and augmented experience considerations help to reduce perceived costs and sacrifices.*
Interaction	Service interactions and responsiveness, and interactions with systems enhance desired performance	*Stakeholder interaction in/with the experiencescape generate social, emotional, and*	*Make customers feel better about themselves and provide personal meaning to customers; status*	People and systems affect product's economic and psychological cost and personal investment.
Environment	*Experiencescape and attributes impact product/service perceptions and evaluations.*	*The experiencescape utilises sensory stimuli to enable social, emotional, and epistemic*	*The experiencescape can boost self-worth and expressiveness.*	Adds to a product's economic, psychological, personal investment, and risk.
Ownership/ Possession	Accurate and timely fulfilment processes provide value.	Delivery can improve customer experience, pride, and product/service efficacy.	The delivery and the status of the delivery agent can create additional symbolic value.	Payment terms, shipping alternatives, return policies, invoicing, and after-sales may influence.
	Technology enhanced multisensory and immersive experience value co-creation			
Domain	*The technology-enhanced multisensory and immersive experiencescape facilitates the value creation process through three spheres: Provider Sphere (value facilitation), Joint Sphere (value co-creation), and Customer Sphere (value-in-use) (Grönroos and Voima, 2013).			
Interface	*In the technology-enhanced multisensory and immersive experiencescape, interactive platforms enable participants to engage in potential value interactions during the value co-creation process (Ramaswamy and Ozcan, 2018).			
Enhancement	*Interaction, engagement, participation, and customization are essential factors and qualities within the technology-enhanced multisensory and immersive experiencescape that significantly contribute to value generation (Carvalho, Kastenholz, and Carneiro, 2021).			

The cells with an asterisk indicate the researchers' interpretations of the existing literature, while the highlighted cells in the framework represent the novel contributions made by the research in framework development.

Building upon the value framework of Smith and Colgate (2007) as succinctly captured in Table 2.5, the foundation of the proposed final research framework was established. This chapter emphasizes the demand for novel approaches in cultivating and promoting immersive experiences within the realm of tourism, ones that wholly embrace the multisensory and captivating essence inherent in the industry. Noteworthy attributes such as interaction, immersion, participation, and personalization emerge as pivotal components in shaping value, a sentiment also echoed by Caravalho et al. (2021). Rather than discarding the traditional value creation process in favour of exclusive co-creation, the proposition emerges that the evolution of tourism value creation should be visualized as a progressive continuum of interconnected spheres. The provider sphere plays the role of the facilitator, the joint sphere becomes the domain for collaborative creation, and the customer sphere transforms into the arena for actualizing value-in-use, as elucidated by Grönroos and Voima (2013).

Moreover, within the context of multisensory tourism, the underpinning of value co-creation should find its roots in interactive actions that span diverse platforms, fostering the potential for value interactions to transpire, as advocated by Bender et al. (2021) and Ramaswamy and Ozcan (2018). This comprehensive perspective, gleaned from the insights encapsulated in Table 2.5, forms the foundation upon which the proposed final research framework is constructed.

2.10. Summary

The objective of this chapter was to explore the value creation paradigm and its significance to the research at hand. Extensive analysis was conducted on customer value frameworks and relevant literature. In this chapter, the author's objective was to explore the concept of customer value creation and its relevance to the research at hand. Through an analysis of customer value frameworks and relevant literature, the focus was on understanding the dynamic nature of value creation. It became evident that customer value creation involves a sequence of actions aimed at achieving specific goals, and the utilization of information, knowledge, skills, and resources is crucial in this process.

Service providers have the opportunity to generate value through collaborative and intuitive interactions that may not always follow a linear path. The literature underscores the significance of human senses in shaping tourist experiences and influencing the formation of value. Moving forward, it is essential to expand the study into new environments to gain insights into how multisensory immersive technology can be effectively designed and implemented to enhance customer experiences and add value to tourism attractions. The literature-driven and context-amended table 2.5 plays a crucial role in contextualizing the non-existent phenomenon of technology-enhanced multisensory tourism experiences. By utilizing Smith and Colgate's (2007) value framework, key characteristics such as interaction, immersion, participation, and personalization as crucial factors in value formation were identified. Adding to these, the table highlights that the value co-creation should be based on interactive actions deployed across diverse platforms, enabling potential value interactions. These principles have guided the development of research tools and ultimately facilitated the creation of the proposed framework. The next part discusses human senses and immersive technology's involvement in value construction.

Chapter 3 - Technology Enhanced Multi-Sensory Experience

3.1. Introduction

The following chapter covers existing literature on human senses, sensory experiences and how tourism industry might benefit from immersive technologies. When competing against alternative leisure activities and, for example, economical next generation consumer electronics and immersive virtual worlds, the tourism industry will have to adapt to a range of developments in the future (Jeong and Shin, 2020). The tremendous capabilities of modern tourism technologies enable the augmentation of interactions with a service and the enrichment of the tourist experience itself, enabling new ways of helping in behaviour modification and even long-term user transformation. (Stankov and Gretzel, 2020). In the tourism context, the significance of creating memorable experiences for value generation has been emphasized by scholars (Prebensen and Xie, 2017; Pine and Gilmore, 1998). Furthermore, research has shown that tourists prioritize the experiential and symbolic value of a destination over its functional utility (Sørensen and Jensen, 2015). Already in 1973, Kotler emphasized that emotional environmental elements have the power to stimulate desire, leading to increased patronage intent, willingness to purchase, intention to revisit, and positive recommendations. Building upon this, the customer journey has experienced a transformative shift, incorporating more immersive and captivating multisensory experiences. This shift is driven by advancements in information and communication technology, particularly the emergence of extended reality (XR) (Santoso et al., 2021; Hoyer et al., 2020; McColl-Kennedy et al., 2019). Therefore, this chapter attempts first to analyse the multidisciplinary paradigm of senses, followed by an analysis five human senses, and finally the how immersive technologies might be used for sensory stimuli in tourism related service- and experiencescapes.

This chapter will conclude by summarizing the literature and exploring future possibilities for new service development in tourism. It emphasizes the importance of creating sensory experiences and designs that enable consumers to both experience and purchase services. Furthermore, the chapter examines how the concepts of human senses and sensory stimuli are incorporated into tourism servicescapes and discusses the

implications of the latest advancements in the Reality-Virtuality paradigm for the tourism industry.

3.2.   The multidisciplinary paradigm of senses

The role of the senses in human knowledge has been a subject of debate since ancient times, as evidenced by the works of philosophers such as Aristotle (1984) and Plato (2003). Aristotle, for instance, argued that knowledge originates from sensory perception and our understanding of the external world. Contemporary scholars, including Agapito et al. (2017), Martínez (2012), and Zimbardo et al. (2011), have further explored the relationship between the senses and various aspects of human cognition, such as learning, memory, emotions, and desires. Their research reveals that these cognitive processes are shaped by the interaction between our sensory experiences of the external reality and our internal perceptions of the world around us. Recent studies have also revealed the significance of considering multisensory factors in the design of tourist experiences and locations (e.g., Agapito, 2020).

Several definitions of sensory experience exist, as identified by Carù and Cova (2003) and Walls et al. (2011) due to different disciplinary approaches. The classification of five senses is commonly acknowledged, but the exact number of human senses remains a matter of ongoing debate among experts. This complexity and the multidisciplinary nature of the subject contribute to the lack of consensus on the definitive count of human senses (Agapito et al., 2017). It is widely understood that a multidisciplinary approach is required to properly comprehend the intricate interaction between human senses, experiences, and the perception of the environment. Consequently, a multidisciplinary approach is perceived essential, as the senses are deemed fundamental to both the staging and the experience of tourist products (Pine and Gilmore, 1999).

Scholars in psychology recognize the profound impact of human senses on an individual's experiences and behaviour (Agapito, 2020). In the field of sensory psychology, the process of perceiving the external world is explained by the activation of sensory receptors, which generate neural messages that represent the stimulus in the brain. This

initiation of the individual's experience of the stimulus is a fundamental aspect of sensory perception (Krishna, 2010:11). On the other hand, with the approach from human geography, Agapito et al. (2017) explain the '*making sense of the world*' with a process where the human senses provide, and actively structure information about the environment around individuals. Furthermore, in the field of human geography, scholars have challenged the notion of visual sensory stimuli as the dominant factor in perceiving the surrounding environment during geographical encounters, such as visiting a tourism destination. Instead, they emphasize the role of other non-visual senses in shaping our perception. Rodaway (1994:26) astutely points out that what may initially seem like a purely visual perception encompasses significant elements of hearing, smell, and touch upon closer examination. This perspective emphasizes the multidimensional character of sensory experiences, indicating that our perception is not limited to a single sense but involves a rich interplay of multiple sensory modalities.

Moreover, research exploring the cultural and social aspects of the senses reveals that sensory perceptions are not solely determined by physical attributes but are learned behaviours (Howes, 2006). It is acknowledged that the various senses work together harmoniously to enhance positive experiences (Zurawicki, 2010:80) and shape customer behaviour (Derval, 2010). In other words, the collaboration and interaction of different senses play a crucial role in creating enjoyable and satisfying experiences, which, in turn, can affect how individuals behave as customers. Similarly, from a historical standpoint, Smith (2007:3) argues that the senses are not universal but are shaped by specific places and times, resulting in changes in how people perceive and interpret smells, sounds, tastes, and sights. This historical perspective underscores the dynamic nature of sensory experiences and their connection to cultural contexts.

Schmitt (1999) identifies five 'strategic experience modules' in marketing management research and says that consumer experiences may be characterised by sensory, emotive, creative cognitive, physical, and social-identity factors. In contrast, Zarantonello's (2009) brand experience measure emphasises sensory components above emotive, intellectual, and behavioural elements. In their 'multisensory marketing model to tourism,' Pawaskar

and Goel (2014) investigated the emotional connections between businesses and their consumers, as well as how engaging all five senses increases the likelihood of connecting with a customer on a deeper level. It's generally agreed that because services are intangible, they require sophisticated, multifaceted, inspirational, and cutting-edge modes of communication. Hankinson (2001) categorizes brand associations and perceptions of services into two main types: functional, which are related to physical qualities, and symbolic-experiential, which encompass overall attitudes towards brands. According to Grönroos (2008), the multisensory brand experience is the result of interactions between suppliers and customers, and it plays a crucial role in determining the generated value. Grönroos further suggests that a multisensory brand experience carries implicit value, which is perceived differently by each individual. While Hulten et al. (2009:6) argue that firms should strategically align their sensory marketing actions with the five human senses, Krishna (2012:332) extends the concept of multi-sensory marketing to encompass strategies that engage consumers' senses and influence their perception, judgment, and behaviour.

For instance, the physical and interpersonal frameworks of the servicescape are connected to how various brain regions respond to advertising (Fugate, 2007; Lee et al., 2007; Plassman, O'Doherty and Rangel, 2007). Moreover, there is a clear and often overlooked relationship between the application of neuroscience and the integration of multiple senses in marketing strategies within the hospitality and tourism industry. Experiences that engage our senses have a profound impact on our memories and emotional states (Krishna, 2010). Hospitality and tourism managers who possess the ability to create robust and targeted sensory experiences can establish a strong connection with consumers' emotions, leading to the formation of positive and enduring memories. These memories, in turn, can be recalled by visitors and shared within their social networks, generating positive word-of-mouth about the service and destination. Despite its potential, the utilization of neuromarketing and multimodal marketing remains underexplored in the hotel and tourism business. In the field of tourism research, there has been a notable lack of comprehensive models that propose the implementation of multisensory or neuromarketing strategies to enhance customer experiences and

cultivate long-term brand recognition and brand image (Krishna, 2010; Lindstrom, 2005). Despite the considerable interest in studying tourism experiences, there is a scarcity of empirical studies that explore the connection between sensory elements and the evaluation of these experiences, particularly in real-world settings (Elvekrok and Gulbrandsøy, 2022).

3.3. Conceptualisation of the sensory dimensions of tourism experience

Researchers have emphasized the importance of investigating sensory dimensions to enhance tourist experiences, providing valuable insights for decision-makers (Elvekrok and Gulbrandsøy, 2022; Knobloch, 2017; Gretzel and Fesenmaier, 2010). Within the context of hedonic value, which recognizes the creation of memorable experiences as a competitive advantage, Agapito et al. (2017) propose that designing immersive and captivating experiences that engage all human senses can foster personal engagement. However, it is crucial for organizations embarking on new service development to understand the significance of their product or service from the perspective of the users or recipients. It becomes evident that certain products can greatly benefit from incorporating a broader range of senses in their communication strategies (Kita and Nakatani, 2011). The existence of emotional ambient factors evokes desires and impacts diverse consumer behaviours, encompassing loyalty (Baker et al., 2002), purchase inclination (Kotler, 1973), inclination to revisit (Wakefield and Blodgett, 1996), and endorsements (Meacci and Liberatore, 2018; Sherman et al., 1997). These emotional surroundings elicit sensations by stimulating sensory organs (Krishna, 2012). Consequently, the consumer encounter can be perceived as a multi-sensory, affirmative, and extensive emotional immersion that facilitates profound personal metamorphosis. By integrating aspects such as distinctiveness, genuineness, captivating narration, multi-sensory perceptions, interactive components, and contrasts, service providers can shape unforgettable and distinctive experiences for prospective clientele.

Existing frameworks for developing and managing tourist experiences highlight the importance of sensory stimuli in shaping tourists' emotions and conscious thoughts, as

every aspect of a tourist's journey at a destination can be considered an experience (Oh et al., 2007:120). Researchers investigating the sensory dimensions of tourism experiences employ various approaches based on their research goals and managerial implications. Some researchers focus on studying sensory perceptions during visitors' actual visits to destinations (Agapito et al., 2017; 2020; Kastenholz et al., 2012), while others gather data on the imagined or desired experiences before the visit (Gretzel and Fesenmaier, 2010; Govers et al., 2007). Furthermore, some researchers examine reflections on past experiences in the destination (Small et al., 2012; Dann and Dann, 2012; Richards et al., 2010; Pan and Ryan, 2009).

Previous studies have indicated that beyond visual aspects, individuals perceive their surroundings, including the physical spaces and the surrounding atmosphere, through various sensory modalities such as sound, smell, taste, and touch. This multi-sensory perception has been acknowledged by researchers (Agapito, 2020; Urry, 2002; Bitner, 1992; Ackerman, 1991). In different periods, as cultural, social, and geographical factors have influenced sensory perception, research on tourist experiences has focused on various senses (Agapito et al., 2017; Berg et al., 2014; Urry, 2008). Traditionally, tourism studies have predominantly adopted a western perspective that emphasizes visual attributes and the concept of the tourist gaze (Pan and Ryan, 2009; Everett, 2008; Urry, 1990). However, scholars have recognized the importance of the body in the tourist experience, leading to a more holistic approach to sensescapes (Kastenholz et al., 2012; Ellis and Rossman, 2008; Govers et al., 2007; Gretzel and Fesenmaier, 2003).

Despite recent efforts, empirical studies addressing the multi-sensory dimension of the tourist experience remain relatively scarce (Elvekrok and Gulbrandsøy, 2022). Consequently, there is a need for a sensescape approach that considers the interaction between places, destinations, and tourists holistically. This approach advocates for exploring additional sensory realms encompassing soundscapes, tastescapes, haptiscapes, and smellscapes to gain a more nuanced understanding of the intricate sensory aspects involved in shaping the tourist experience. By embracing this expanded

research perspective, a comprehensive understanding of the sensory dimensions can be achieved, enhancing the knowledge base for decision-makers in the tourism industry.

The concept of experiencescape was reintroduced by Kastenholz et al. (2012) to elucidate the captivating and memorable rural tourism experiences. Drawing inspiration from the principles of engineering (Carbone and Haeckel, 1994), staging (Pine and Gilmore, 1999), crafting (Ooi, 2005), designing (Ek et al., 2008), managing (Morgan, 2010), and choreographing the experiences (Walls et al., 2011a), Kastenholz et al. (2012) embraced the notion of experiencescape as proposed by O'Dell (2005). While the original servicescape (Bitner, 1992) referred to the physical structures and elements of the service environment, the experiencescape emphasises tourists' universal consumption, and includes the destination as the experience environment (Agapito, 2020; Agapito et al., 2017). The experiencescape provides a stage for an experience, where consumers, with their motives and choices, add the final link (Pine and Gilmore, 1999). The role of sensory stimuli in the experiencescape, as highlighted by Walls et al. (2011a), and the significance of social interactions (Mossberg, 2007; Walls et al., 2011a) emphasize the importance of the physical dimensions in orchestrating the environment. Besides physical and social sensory cues, Hirschman and Holbrook (1982) suggest that individuals also produce multi-sensory metaphors and images within themselves. According to Hirschman and Holbrook (1982), historic imagery involves recalling personal experiences, while fantasy imagery involves assembling familiar sensory elements in a unique arrangement. In a similar vein, Carbone and Haeckel (1994) classify the elements of mechanics and humanics as contextual cues that enhance the customer experience. Mechanics are associated with the five human senses and sensory impressions, while humanics arise from interpersonal interactions. This classification emphasizes the importance of utilizing new technologies to activate desired humanics cues, as suggested by Carbone and Haeckel (1994).

The ongoing debate surrounding the categorization of the human senses (Agapito, 2020; Agapito et al., 2017) has not hindered the exploration of the multi-sensory dimensions of tourist experiences and the concept of experiencescape. These studies have effectively

adopted the conventional division of five senses. As a result, the following sections will delve into a comprehensive analysis of how these five senses play a crucial role in shaping tourism experiences.

3.4.   The role of Human Senses in Tourism Experiences

Sensory brand experience, as described by Hultén et al. (2009), refers to the impression that products or services create in individuals, challenging their minds and senses. It is crucial to acknowledge the importance of sensory perceptions in customer experience, as customers perceive reality in a multisensory manner (Obrist et al., 2017; Spence et al., 2016). However, there is a scarcity of empirical research and commercial examples illustrating multimodal brand communication (Rodrigues, 2011; Velasco and Spence, 2019). Multisensory marketing, as described by Krishna (2012:332), not only considers how information from each sensory modality impacts customer behaviour but also acknowledges the interactions and influences among different sensory modalities in shaping consumer behaviour. Emotional branding relies on appealing to all sensory perceptions, creating sensorial experiences and designs that evoke emotions and entice customers to both physically and emotionally engage with the product or service (Joseph-Mathews et al., 2009). The integration of sensory elements is essential for establishing strong emotional connections with the brand.

However, the behaviour of modern travellers is characterized by emotional complexity, as they respond rapidly to stimuli from surrounding businesses, cafes, and restaurants. This dynamic nature of their reactions often leads to unpredictable and spontaneous purchasing decisions (Agapito, 2020; Heikkinen, 2014; Spence and Gallace, 2011a). This highlights the need for businesses to be attuned to the emotional responses of customers and adapt their strategies, accordingly, ensuring their offerings align with the evolving expectations of the sensory-emotional landscape.

Carbone and Haeckel (1994) propose that sensory stimuli in the service environment encompass a range of elements, including visual cues, auditory experiences, tactile sensations, and olfactory perceptions. These sensory inputs contribute to the overall

sensory experience. On the other hand, in the interpersonal context, individuals and their actions serve as sensory stimuli, influencing the overall sensory experience. According to Elvekrok and Gulbrandsy (2022), the service environment plays a significant role in establishing emotional connections. In 1973, Kotler introduced the concept of atmospherics to describe the physical elements that encompass the impact of sensory inputs, such as visual, auditory, olfactory, and tactile experiences, on consumer behavioural intentions. In the context of tourism, these sensory stimuli, including colours, sounds, smells, and textures, evoke people's experiences and are processed through perceptual mechanisms in response to environmental cues, ultimately influencing their behaviour (Agapito, 2020). Furthermore, these emotional elements present in the environment enhance positive behaviour. Similarly, Babin and Attaway (2000) have explored the use of atmospherics as a means of creating value and fostering stronger customer engagement, particularly in retail settings. They emphasize that the deliberate inclusion of sensory elements, such as the distinctive new car smell in the automotive industry, contributes to a comprehensive customer experience that encompasses the entire consumer journey. In the context of destination marketing, Pan and Ryan (2009:635) provide an illuminating example that underscores the pivotal role of human senses as mediators. According to Medway (2015:191), the concept of a destination sensescape encompasses the collection of sensory data from each individual sense. In their research on the sensescapes of prominent destinations in New Zealand, Medway (2015) suggested that by carefully integrating elements of sound, smell, taste, and touch, it is possible to design a thoughtfully crafted itinerary for visiting journalists. This approach enables journalists, as well as other tourists, to immerse themselves fully in the varied and captivating experiences that New Zealand has to offer, leading to a comprehensive understanding of the destination.

The visitor experience encompasses diverse sensory aspects, each of which contributes to the overall perception. These sensory elements are intricately linked to the surrounding environment and can be leveraged to create engaging multisensory experiences and enhance the appeal of attractions (Meacci and Liberatore, 2018). It is crucial to recognize that the tourism experience extends beyond a mere collection of sensory encounters.

Rather, it should be acknowledged as a multi-sensory journey that evokes affirmative emotions and facilitates profound personal growth. A beach vacation, for instance, elicits a variety of sensory experiences, such as a powerful awareness of the sun's heat on skin, the tactile effects of waves upon the swimming body, the sonic impressions of the crashing rhythms of the sea and the squawk of seabirds, and the granular irritations of sand in the body's crevices (Ederson, 2018; Pocock 2010; 2002). Through the integration of diverse sensory and interactive components, service providers possess the capacity to design remarkable and exclusive experiences for their customers (Karjalainen et al., 2005; Tarssanen and Kylänen, 2006; Ranasinghe et al., 2017). By employing these strategies, service providers can create immersive encounters that resonate with customers, forging a sense of individuality and lasting significance. The following sub-sections discuss the sensory stimuli related to five commonly agreed human senses in relation to multisensory tourism experiences.

3.4.1. Auditory sensory stimuli

Numerous studies have extensively explored the profound impact of audible sounds, including noise, background music, and sounds, on various aspects of consumer behaviour. Over a long research history, the influence of these auditory stimuli has been examined in relation to consumers' purchase intentions, moods, perceptions of service, and overall decision-making process. Notable contributions to this field of research include studies conducted by An et al. (2021), Santoso et al. (2021), Jinde et al. (2018), Räisänen (2012), Liu et al. (2016), Pawaskar and Goel (2014), Bailey and Areni (2006), Wlson (2003), North and Hargreaves (1996), Areni and Kim (1993), Alpert and Alpert (1990), and Milliman (1986). The utilization of music or ambient sound in hotels, restaurants, and retail stores has the capacity to affect consumers' mood, their perception of the duration spent at a specific location, the actual time they allocate there, and the overall amount they spend (Krishna, 2012). Already in early 1990's, the products of the Muzak Corporation, the largest of the programmed music companies, were heard by more than 80 million people daily in approximately 20 countries throughout the world (Jones et al., 1992). Moreover, the role of soundscapes in the tourism system is of utmost

importance, as they significantly contribute to enhancing the visitor experience and positively shaping the development of tourism destinations (Jinde et al., 2018; Liu et al., 2016; Zhong, Deng, Song, and Ding, 2011). The seminal research conducted by the 'World Soundscape Project' (Schafer, 1977) serves as the foundational framework for contemporary assessments of acoustics and noise. This comprehensive model integrates both objective physical measurements, such as sound levels, and psychoacoustic factors like loudness, roughness, and sharpness. Additionally, it incorporates subjective experiences through methods such as verbal descriptions, interviews, and questionnaires. By combining these different approaches, a more holistic understanding of the subject matter is attained, encompassing both the measurable and perceptual aspects of soundscapes. This multi-faceted approach ensures a thorough examination of the complex interplay between sound and the tourism experience. Despite receiving criticism, particularly from contemporary authors in the realm of sonic theory (Goodman, 2012; Ikoniadou et al., 2014), the World Soundscape Project can be viewed through a broader lens, as highlighted by Botteldooren et al. (2011). According to their perspective, the notion of a 'soundscape' encompasses not only the sources of sound but also the surrounding milieu, which is subject to diverse sensory stimuli. These stimuli encompass factors such as the functionality of the environment, the motivations and expectations of individuals present, and the distinct auditory and cultural background of each participant. Consequently, the design of a 'soundscape' possesses the capacity to govern when particular sounds should be perceived. Through meticulous analysis and effective management of the components comprising the soundscape, novel and inventive elements can be forged to enhance the existing ones (Brown, 2004; Siebein, 2010). Such an approach unveils opportunities for shaping and enriching the overall auditory encounter. According to Botteldooren et al. (2011), understanding the concept of a 'Soundscape' involves a holistic grasp of both the auditory environment and the simultaneous perception of individuals within it. This encompasses not only the physical sources of sound but also the surrounding context, such as the location or room. Additionally, it takes into account the influence of other sensory stimuli, the functional aspects of the environment, and the motivations and expectations of those present.

Furthermore, individual auditory and cultural backgrounds are considered when examining the phenomenon of the 'soundscape'.

In the field of sound field analysis, the concept of 'psychoacoustic' aims to bridge the gap between the physical dimensions of a sound field and the perceived elements of that field (Genuit and Fiebig, 2006). By integrating psychoacoustic methodologies, a more comprehensive understanding is achieved, enabling a thoughtful approach to designing environments. Instead of relying solely on quantitative criteria, the soundscape approach emphasizes qualitative aspects, such as the style and content of the sound, rather than solely focusing on factors like loudness or technical qualities (Brown, 2004). Moreover, soundscape design highlights the importance of drawing attention to sounds that are perceived as pleasant, without necessarily reducing the overall sound level, in order to mitigate annoyance (Botteldooren, 2011). It also provides the ability to regulate when specific sounds should be audible. Through careful analysis and management of the elements within the soundscape, new and innovative components can be introduced to enhance the existing ones (Siebein, 2010). This approach offers opportunities for creative enhancement and shaping of the overall auditory experience.

The concepts of psychoacoustic and soundscape frameworks, as highlighted by Botteldooren et al. (2011) and others, emphasize the significance of audio branding and intentional use of sound. Recent studies suggest that high-quality virtual travel solutions, utilizing virtual reality (VR) technology, can provide a realistic auditory experience by dynamically adjusting sound direction based on the user's head movements. This opens up new possibilities for designing auditory stimuli in tourism experiences (An et al., 2021). Both Lindström (2005) and Hultén et al. (2009) have established that the sensation of sound is associated with creating extreme sensory experiences. Therefore, considering other sensory stimuli in conjunction with the soundscape model and psychoacoustic methods provides a comprehensive and reflective approach to designing environments (Guo et al., 2021). This integrated approach, focusing on qualitative criteria and attention to pleasant sounds, contributes to a more satisfying auditory experience without compromising the overall sound level. It also allows for the exploration of new

components and creative possibilities within the soundscape design, further enhancing the overall sensory journey. The power of sound to evoke feelings and emotions has been extensively studied (Santoso et al., 2021; Jiang et al., 2018; Hultén, 2011; Lindström, 2005), and these sensations play a significant role in shaping brand experiences and interpretations. Businesses recognize the potential of sound to create sensory experiences and enhance memory formation, leading them to explore various options for developing a trademark sound that embodies their brand (Botteldooren et al., 2011; Pawaskar and Goel, 2014). According to Botteldooren (2011) and Pawaskar and Goel (2014), signature sounds not only evoke specific sensations but also influence the emotional experiences associated with the brand. These sensory experiences not only enhance recall but also serve as symbolic representations of the brand. Henriques (2011) supports this notion by describing "sonic dominance," which refers to the complete immersion of participants in an auditory experience. By connecting with the physiological responses of individuals through vibration frequencies, a deep level of immersion can be achieved.

While the importance of the sonic environment and immersion has been recognized, there remains a limited amount of research on the sensation of sounds in virtual or mixed reality environments, particularly within the context of tourism (Santoso et al., 2021). The subsequent section will delve into the role of vision, another dominant human sense, in shaping our experiences.

3.4.2. Visual sensory stimuli

The prominence of visual stimuli in sensory research related to tourism can be attributed, in part, to the widespread popularity of organized group travel. When it comes to conveying sensory experiences to tourists, it is more straightforward to promote visual images compared to those derived from taste or touch (Guo et al., 2021; Santoso et al., 2021; Haase, 2013; Pan and Ryan, 2009). As a result, group travel organizers have successfully delighted their customers by placing emphasis on the visual sense and taking them to carefully selected and promoted destinations (Pan and Ryan, 2009).

Numerous studies have demonstrated the significant role played by visual sensory stimuli in shaping our overall experiences (Ryan, 2018). In addition, Markwell (2001:55) contended that for example, viewing platforms at tourist sites mediated the bodily experience significantly by '*softening or rendering invisible the physical sensations which would otherwise have been felt by the tourist at that site*'. The visual pleasure experienced in tourism is influenced by a multitude of factors associated with the physical environment. The visual aspects that contribute to the overall pleasure in tourism encompass a wide range of elements. These include the style of architecture, the aesthetic design choices, the presence of various objects, the arrangement of patterns, the diverse forms and themes, the materials used, and the symbolic representations that are present within the tourism space (Agapito et al., 2017; Rahman et al., 2016; Diţoiu and Căruntu, 2014). These factors collectively shape the visual experience and play a significant role in creating an appealing and memorable environment for tourists.

It is worth noting that the visual pleasure derived from the tourism experience extends beyond the physical environment alone. Tourists also derive enjoyment from observing cultural scenes, such as witnessing local people engaged in their daily activities or participating in the process of souvenir shopping (Rahman et al., 2016). These additional elements add depth and richness to the visual experiences encountered by tourists during their travels. Typically, contemporary travellers expect visual interactions with cultural and natural places, which they then gaze upon. According to Urry (1990), these visual behaviours exemplify historically unique ways of seeing, and he said that in modern times, they are rooted in an especially ocular centric, image-rich society.

Although Urry's (1990; 2002) concept of 'tourist gaze' remains a seminal concept for tourism discourse, it has also become evident that visual-centric approaches have notable limitations in explaining the complexity of more personified postmodern tourism activities (Rahman et al., 2016; Edensor, 2018). Visual-centric methods focusing on the visual representations and consumption of scenery may deliver understanding into how sights are socially and culturally experiences but fails to explain the non-representable forms (Crouch et al., 2002). Likewise, Everett (2008) highlights the increasing complexity

of tourism experiences and how the visual approach fails to explain the multidimensional experiences of space.

Moreover, Urry and Larsen (2011) emphasized that tourism experiences go beyond mere visual perception and involve the engagement of multiple senses. Recent research by Buzova et al. (2021) introduced the concept of a 'visualscape' in tourism, which refers to the spatial representation of the physical elements in the external environment as perceived through the eyes. The visualscape encompasses the information gathered from visual stimuli and plays a pivotal role in shaping the overall tourist experience.

In the realm of virtual travel, An et al. (2021) proposed that the eyes are the primary sensory organ for receiving information. They argued that media with high vividness have a more profound impact on the user experience compared to those with low vividness. Virtual reality (VR) technology, on the other hand, surpasses traditional media like television and movies by significantly enhancing the responsiveness to visual information, resulting in a heightened level of realism and immersion. Additionally, according to Santoso et al. (2021) highlight that new immersive technologies can be used to appeal visual memories of certain locations and sceneries.

Despite increasing demands for a more sophisticated and multi-sensory approach to tourist experience research, vision is still often regarded as the superior human sense, and as the most alluring method of delivering tourism-related information (e.g. Pawaskar and Goel, 2014). In addition to the prevalence of destination marketing communications, for instance, several hotels, restaurants, and attractions provide visual materials and virtual tours of their sites and products (Guerra et al., 2015). However, pioneers in the business are already incorporating additional sensory aspects into their products and services in order to expand beyond typical visual stimulation. The subsequent part will explore the sensory experiences associated with the sense of taste. Alongside the pioneering tourism operators, alternative approaches to research visitors' sensory experiences in tourism should be utilised. These include adopting multisensory approaches, engaging phenomenological research methods (Rahman et al., 2016;

Edensor, 2018), exploring embodied research to understand tourists' physical interactions (Everett, 2008), utilizing mobile biometric devises to collect real-time data (Buzova et al., 2021), employing arts-based approaches for subjective interpretations, and involving tourists as active participants in collaborative research (Crouch et al., 2002; Urry and Larsen, 2011). These alternative methods enable a more comprehensive understanding of the complexities involved in tourists' sensory encounters beyond the limitations of visual-centric approaches.

3.4.3. Gustatory sensory stimuli

The human palate can discern only five primary tastes, namely sweet, salty, sour, bitter, and umami (Krishna, 2012). While taste holds utmost importance in the food and beverage industry, it presents challenges in the context of tourism. However, research by Spence et al. (2019) and Biedekarken and Henneberg (2006) emphasizes that taste is not only a distinct sensory experience but also strongly connected to emotions and frequently interacts with other senses. Despite its tangible nature, Pawaskar and Goel (2014:261) highlight that diverse taste experiences can significantly contribute to shaping a brand's image. Therefore, integrating taste into the design of multisensory services is crucial as it adds value, recognizing that individuals perceive and appreciate this sensory aspect uniquely. By engaging the taste sense, tourism experiences can be enriched and offer a more comprehensive and memorable journey for travellers. Velasco et al. (2018) concluded that the sense of taste is assumed to entail just tongue-stimulated sensations, including sweet, sour, salty, bitter, and umami. Furthermore, flavour (e.g., the experience from eating a meal) originates through the integration of taste, olfaction, and maybe touch. Food and drink experiences, however, involve several other sensory inputs, such as the food's appearance (how it appears, its colour), the sound it produces, and the place where we consume. Tastes are emotional drives, but flavour and food experiences are multimodal (Velasco et al., 2018).

Tasting local food and beverages plays a crucial role in the tourism experience and contributes significantly to tourist satisfaction when visiting a destination (Berg, Sevón,

2014). The integration of food, taste, and tourism has gained attention in academic studies since around 2003, leading to the emergence of terms like 'culinary tourism,' 'gastronomic tourism,' and 'foodways tourism' (Everett, 2018). This development has encouraged researchers to explore the concept of taste-scape and expand tourism discussions beyond visual-centric perspectives, emphasizing the importance of multisensory experiences (Everett, 2018). Consequently, it is valuable to explore non-representational aspects of culinary tourism and delve into taste sensations, such as immersive multisensory experiences and a deep sense of place. By incorporating these elements, future tourism services can be enriched and enhanced. In effect, Kivela and Crotts (2006) claimed that a pleasurable sensory experience is convoyed through consumption of local food and beverages, and these gastronomic pleasures influence obligation and emotional attachment towards the place. In food related tourism discourse, the local food and beverages, hence the gustatory sensations, are considered as significant element in the gastronomic pleasure (Omar et al., 2014; Diţoiu and Căruntu, 2014). The arrangement and presence of gastronomic offerings in a destination have been explored by tourism researchers using the term "tastescape" (Buzova et al., 2021; Berg and Sevón, 2014). Adema (2009) also expanded this concept to include "foodscapes," which specifically refer to the distribution of street food establishments within a location. Regardless of the specific terminology used, the tastescape plays a crucial role in shaping the overall sensory experience of a destination, as it encompasses the sensory perception of a place through the sense of taste (Buzova et al., 2021). Destinations frequently utilise the distinctive flavour of local cuisine in their branding tactics. Also, relating to customer experience and value creation, sensation of taste has significant role in the formation of memories and therefore should be considered while developing tourism experiences in conjunction with other sensory stimuli. Based on visitors' narratives of their destination experiences, local food and drink have frequently been identified as components of a destination's tastescape and smellscape, as revealed by the sensory descriptors discovered in this study (Buzova et al., 2021). The subsequent section examines the role of olfactory sensory stimuli and explores the incorporation of the smellscape concept in this research.

3.4.4. Olfactory sensory stimuli

The exploration of olfactory stimuli and memory encompasses various fields, including neuroscience, psychology, and marketing (Krishna, 2012). According to Morrin and Ratneshwar (2003), the utilization of ambient scents can enhance the recall and recognition of brands. Similarly, Mitchell et al. (1995) proposed that ambient scents contribute to the elaboration of product information, influence consumer choices, and foster memorable experiences, ultimately leading to an increased inclination for seeking variety. These findings underscore the interdisciplinary nature of studying olfactory cues and their impact on consumer behaviour. Likewise, Bosmans (2006) demonstrated that emotion-based semantic connections with memories can be enhanced with scents and thus improve product evaluation. Consumer behaviour researchers have also studied the impacts of scents on store evaluation, and the time spent in store (Krishna, 2012).

Porteous (1985) introduced the concept of tourism smellscape which embodies the notion of spatially arranged olfactory sensations. The concept of a smellscape encompasses all the olfactory elements present in a given environment, including both incidental and background fragrances. Xiao et al. (2018) provides a contemporary perspective, defining a smellscape not only as the physical features of the scent environment but also as an individual's perception of the stimuli based on their previous experiences and its relevance to a specific context. This expanded definition highlights the subjective nature of the smellscape, emphasizing how personal experiences shape one's perception of olfactory stimuli in a particular setting.

However, within the field of tourism research, the role of olfactory experiences has been largely overlooked, with only a limited number of studies examining the scent signals encountered by tourists at destinations (Buzova et al., 2021). Despite the scarcity of research in this area, the advantages of scents in the tourism context have been demonstrated. For example, scents have been found to increase slot machine usage in casinos (Hirsch, 1995), positively influence social interactions through ambient fragrances in destinations (Zemke and Shoemaker, 2007), reduce perceived stress in

scented waiting areas (McDonnell, 2002), and boost sales (Morin and Chebat, 2005; Hirsch, 1995).

Furthermore, olfactory stimulation supports place recognition and enhances the overall tourist experience (Gutiérrez and Horillo, 2014). The presence of distinctive scents creates memorable experiences and fosters a stronger connection between tourists and their destinations (Agapito et al., 2017; Diţoiu and Căruntu, 2014; Zainol, 2014; Van Hoven, 2011). In fact, scents can even evoke memories associated with specific destinations or places (Rahman et al., 2016).

Considering the significance of olfactory experiences, Dann and Jacobsen (2003) argue that for a tourist destination to thrive, it is crucial to have specialists who can diligently explore and capture aromas, akin to wine tasters savouring a bouquet, before they dissipate. Destination managers can harness this olfactory stimulation, represented by fragrances, to prolong the duration of tourist encounters, enhance brand communication, and foster emotional connections. Consequently, when customers have a positive experience and later encounter the same perfume combination, they readily associate it with the brand and seek to recreate the memorable experience (Kita and Nakatani, 2011).

Just like auditory sensations, the olfactory senses are triggered by the everyday activities of local residents, reflecting the identity and attachment to the place. This includes the smell of vehicles, the smoke emanating from street kitchens, as well as scents associated with religious activities (Zainol et al., 2013). With the discussion on the five human senses coming to a close, the next section will explore haptic sensory stimuli.

3.4.5. Haptic sensory stimuli

The perception of touch, often referred to as the "landscape of touch" (Kabat-Zinn, 2013), plays a crucial role in shaping the sensory experience of a destination. Touch is traditionally considered a dominant sense, with other senses amplifying the sensations it provides. Aristotle (1984) recognized touch as a means to gain an accurate understanding of an object's essential nature. Interestingly, touch is the first sense to

develop in humans, allowing the embryo to establish its presence and orientation within the womb (Krishna, 2012).

In the realm of marketing and management research, there is a growing focus on incorporating the concepts of "tactile sensations" (Gutiérrez and Horillo, 2014) and "haptic feedback" (Bagozzi, Gapinath, and Nyer, 1999) into brand communications for products and services. These concepts aim to leverage the sense of touch as a strategic tool for enhancing brand experiences. Tactile sensations encompass both physical and psychological responses, evoking emotions through the interaction with a product (e.g., Pawaskar and Goel, 2014). By integrating tactile elements into their marketing strategies, brands and services can effectively shape their identity and image, fostering stronger connections with their target audience.

Numerous taxonomies of consumer touch have been established and published within the corpus of marketing research (Buzova et al., 2021). Within the realm of touch, Peck (2011) distinguishes between two primary categories: hedonic touch, which involves seeking pleasure from the sensation of being touched, and instrumental touch, which serves the purpose of obtaining object-related information. Travel destinations offer a plethora of haptic stimuli, such as the novel climatic conditions that can be felt through the skin as well as the novel material things (such as an ornament or a landmark) that visitors come into contact with throughout their time there. Existing research on the sensory aspects of tourism highlights the significant role of haptic experiences, which are shaped by hedonic and aesthetic stimuli. For instance, the tactile sensations of feeling the sand (Agapito et al., 2017), exploring historical ruins (Buzova et al., 2020), and interacting with animals (Son and Pearce, 2005) contribute to visitors' haptic encounters. Furthermore, studies have investigated various factors influencing the haptic sense, including the perceived comfort derived from appearance and temperature variations (Motoki et al., 2019; Agapito et al., 2017; Diţoiu and Căruntu, 2014; Zainol et al., 2013). These studies aim to identify the key elements that shape haptic experiences. Notably, in both historical and rural contexts, cutaneous sensations such as the touch of the wind and the warmth are frequently emphasized (Lv and McCabe, 2020). In addition, Krishna

(2012) asserts that when a customer comes into direct physical touch with the products they purchase, not only does the consumer get a sense of familiarity with the products, but also some level of expertise (Krishna, 2012). In addition, the sensory signals of a product, service, or location, including visual, aural, olfactory, and tactile cues, collectively contribute to tourists' overall experience. These sensory stimuli not only encourage tourists to touch memorabilia or sample food, but also enhance their engagement and connection with the product, service, or location. This multisensory approach increases the likelihood of tourists having a positive and memorable experience with the offering (Rahman et al., 2016).

The methods via which travellers can acquire images of destinations are currently considerably more diversified. These channels include rich video material created by Destination Marketing Organisations and augmented or virtual reality, both of which provide the potential for more immersive sensory connection with destinations in the future (Lv and McCabe, 2020). Recent advancements in wearable technology have revolutionized the possibilities of haptic feedback and input. Traditionally, haptic feedback was limited to vibrations or shocks, while input was restricted to conventional devices like keyboards or mice for movements (Cano et al., 2017). However, these new technologies have transcended these limitations by allowing the translation of consumers' observed movements into the virtual world, enabling them to perceive virtual objects with a sense of solidity. By utilizing haptic gloves, handheld remote controllers, or sophisticated movement detection systems, technology bridges the gap between the consumer and the virtual realm, delivering tactile sensations and enhancing the immersive experience (Vi et al., 2017). These advancements have the potential to disconnect consumers from reality and immerse them in virtual environments, where their hand motions are accurately identified and matched with corresponding tactile feedback.

The following section will combine the previously discussed five sensory stimuli into tourism environment and discuss the possibilities of immersive technologies in augmenting the sensory experience in tourism context.

3.5. Experiencescape

From a facility planning and management standpoint, the 'interior layout and design' (Brauer, 1992), hence the 'built environment' (Bitner 1992) is the most important element of a successful service setting. The management has a considerable level of influence over a variety of factors, whereas the ambient conditions, particularly in certain leisure settings, pose greater challenges in terms of control. Customer satisfaction, which subsequently impacts factors such as the duration of stay and the likelihood of future visits, is significantly influenced by the perceived quality of aesthetics, electronic equipment, seating comfort, and cleanliness of the built environment. These essential elements of the ambient environment, encompassing interior design, sound, and lighting, serve as fundamental tools for shaping the overall atmosphere experienced by consumers (Heikkinen, 2014; Koskinen, 2013). In commercial spaces, they are widely employed to support or activate the intrinsic dynamism of a location. For instance, airports, cultural establishments, and shopping malls exhibit diverse atmospheres, with restaurants, cafes, and shops radiating vibrancy, high-ceiling passageways embodying immaculateness, and lounge facilities exuding tranquillity (Frey, 2014).

The concept of an ambient manager, or vibe manager, originated in the 1970s as a response to the need for reducing anxiety and fear among airline passengers. During this time, personnel were employed, and specific music compositions were created to create a calming atmosphere (Prendergast, 2001). Today, the role of an ambient manager has expanded to include supporting service providers at airports and upscale hotels worldwide. Their main responsibility is to analyse and optimize various sensory aspects such as visual aesthetics, auditory ambiance, and overall customer comfort. By curating the sights, sounds, and overall vibe of the environment, ambient managers aim to enhance the multisensory perception of objects and create a pleasant atmosphere for customers.

In 1992, Bitner introduced the concept of "sensescape" and delved into the exploration of the effects of the "physical environment" on both customer and employee behaviour. This

led to the development of the 'servicescape' framework, which has been extensively examined and validated in diverse service contexts such as hotels, restaurants, sports stadiums, and events (Kucukergin et al., 2020; Taheri et al., 2020; Durna et al., 2015; Namasivayam and Lin, 2008; Bitner, 1992).

The servicescape framework provides insights into how the "spatially ordered senses" influence customers' behavioural responses, including their approach/avoidance tendencies, spending habits, and intentions to revisit. It encompasses three key dimensions, as delineated by Bitner (1992). Firstly, there is the "ambient" dimension, which encompasses various sensory aspects such as visual, auditory, gustatory, and tactile sensations. These sensory stimuli significantly shape customers' perceptions of the service environment. The second dimension revolves around the "spatial layout and functionality," encompassing elements such as atmospherics, psychoacoustics, and soundscape. These factors contribute to customers' overall enjoyment and satisfaction. Lastly, there is the dimension of "symbols and artifacts," which refers to the decorative and communicative objects employed to enhance the ambiance and convey messages within the service setting. By comprehending and effectively managing these dimensions, service providers can exert influence over customers' perceived quality, satisfaction levels, and their subsequent responses to the servicescape.

Studies in environmental psychology have suggested that individuals respond holistically to various environmental elements (Mehrabian and Russell, 1974). As a result, evaluating the service experience should consider customers' comprehensive perceptions and emotional reactions to the environmental elements throughout their entire service encounter (Dong and Siu, 2013).

The concept of servicescapes encompasses the physical settings where commercial interactions take place, and these settings are intentionally designed and staged to create meaningful experiences (Arnould, Price, and Zinkhan, 2002). While the focus of servicescape research has predominantly been on the tangible aspects of the

environment within the framework of substantive staging (Johnson et al., 2004; Nguyen, 2006), there is a growing recognition of the importance of the staging process itself.

For instance, Lucas (2003) conducted a study on the servicescape of casinos, identifying five dimensions: ambiance, casino design, cleanliness, internal decoration, and comfort. By emphasizing the significance of the servicescape alongside the core service offering, Lucas (2003) proposed that managers who prioritize the servicescape have the greatest potential to maximize both immediate and long-term profitability. This underscores the crucial role of strategic design and management of the servicescape in enhancing the overall customer experience and driving business success. Consequent studies in retail environments and in other service industries have confirmed the relationships between the built environment and company performance, consumers' behavioural intentions, and emotional responses (Mattila and Wirtz, 2001). Moreover, Taheri et al. (2020) and Reimer and Kuehn (2005) have demonstrated that the servicescape is more important determinant of visitors' quality evaluations in a hedonic service context compared with a utilitarian service.

Consumers undergo transformative experiences, whether they are real, imagined, or virtual, as they engage in the consumption process, expressing their desires and emotions (Güzel, 2014). These experiences are significantly influenced by the elements that constitute the servicescape, which in turn impact consumers' cognitive and emotional responses to a service situation. It is therefore important to predict visitors' evaluation of the service experience based on their satisfaction with the substantive staging of the servicescape (Dong and Sui, 2013).

The concept of servicescape, originally introduced by Bitner in 1992, initially focused on the physical structures and elements within the service environment. However, the notion of experiencescape has since emerged, providing a broader perspective (Fossgard and Fredman, 2019; Agapito et al., 2017; Kastenholz et al., 2012; Walls et al., 2011a). The experiencescape goes beyond the physical surroundings and encompasses the entire destination as the experiential environment. It serves as a stage for consumers, offering

both physical dimensions and the distinctive characteristics of the destination. Within the experiencescape, visitors are exposed to multi-sensory stimuli and engage in social interactions, driven by their motivations and choices. Thus, the tourism customer experience should be seen as a comprehensive immersion in sensory perceptions, encompassing sight, sound, smell, taste, and touch, while also incorporating social interactions within the experiencescape (Agapito, 2020; Agapito et al., 2017).

To enhance the overall experience, it is crucial for the visual aspects to complement the auditory environment, for the tangible components of the experiencescape to align with visitors' preconceived expectations, and for the physical environment to serve as a stage that encompasses all encounters and interactions. The experiencescape involves a cognitive process that encompasses perceptions, visualizations, and ideas about various aspects of the environment (Mei et al., 2020). Moreover, the experiencescape plays a significant role in shaping visitors' hedonic benefits by facilitating interactions among different stakeholders and integrating both physical and virtual elements of the environment, alongside the characteristics of service delivery (Chen et al., 2020).

New developments in consumer electronics, software, and hardware have paved the way for the emergence of innovative experiencescapes, where digital, physical, and social elements intertwine in a powerful manner (Deng et al., 2019). Recognizing the potential of information and communication technologies in enhancing tourist experiences, Tom Dieck et al. (2016) highlights their increasing utilization in the tourism industry. Furthermore, building upon the interaction, co-creation, technology, and experience framework presented by Neuhofer et al. (2012), Neuhofer et al. (2014) developed a typology of technology-enhanced tourism experiences. This typology presents a four-level experience hierarchy, ranging from conventional experiences to technology-assisted experiences, technology-enhanced experiences, and finally, technology-empowered experiences. At the technology-empowered experience level, technology becomes pervasive and the key element in shaping the tourism experience. These advancements in technology have revolutionized the way tourists engage with their surroundings, offering new possibilities for immersive and interactive experiences. The

integration of technology at various levels, from assistance to enhancement and empowerment, has the potential to transform traditional tourism encounters into enriched and empowered experiences, where visitors are actively engaged and empowered by the pervasive presence of technology. The following sub-chapters elaborate the current literature concerning the development of software and immersive technologies in relation to technology enhanced experience.

3.5.1. Multiverse

Although the term multiverse was already introduced in 1895 by James and later by Deutsch, (2011:310), more recent, and popularised view of the profound relations of convergent technology and the service industry has been laid by Pine and Korn (2011). The concept of the multiverse, also known as the meta-universe, suggests the existence of a vast collection of possible universes. This hypothetical framework encompasses everything that exists, including space, time, matter, energy, and the fundamental laws that govern them. It postulates that within this multiverse, there are numerous parallel universes or alternate realities, each with its own unique set of characteristics and possibilities (Pine and Korn, 2011). In 2014, Whittington put forward a visionary proposition regarding the future of travel, suggesting that virtual experiences specifically designed for families would dominate the landscape, while virtual travel opportunities would become increasingly accessible and commercially viable. Whittington's vision entails a convergence of technology and neuroscience, unlocking the potential to transform imaginary worlds into tangible destinations that were previously confined to the realm of fiction. This transformative future of travel is characterized by a combination of mass marketing and personalized experiences, offering spontaneity and the ability to engage with different levels of consciousness through immersive technologies like virtual and augmented reality, wearable devices, and advancements in brain science. These advancements may encompass the use of pharmaceutical substances, transhumanist modifications, or intentional alterations of consciousness levels, enabling artificially generated experiences to rival, and possibly surpass, the quality of real-life encounters (Whittington, 2014).

The framework of the multiverse presents a comprehensive model that encompasses eight distinct realms, ranging from Reality to Virtuality. These realms serve as conceptual arenas where diverse forms of value creation and reception can occur. Each realm within the multiverse, as depicted in Figure 3.1, is formed through the intricate interplay of six variables: Time and No-Time, Space and No-Space, and Matter and No-Matter. As a result, the potential for creating unique and limitless experiences in the domains of tourism and hospitality becomes boundless.

Within each realm, consumers are presented with opportunities to derive value from various technological advancements that augment their experiences. The authors underscore the infinite possibilities that lie within this framework. It is plausible to anticipate that future tourism destinations and hotels will operate within the continuum of the RV (Reality-Virtuality) spectrum, actively engaging in value co-creation within the expansive multiverse.

Time
(Actual)
Actual

Matter
(Atoms)
Material

No-Space
(Virtual)
Virtual

Space
(Real)
Real

No-Matter
(Bits)
Digital

No-Time
(Autonomous)
Autonomous
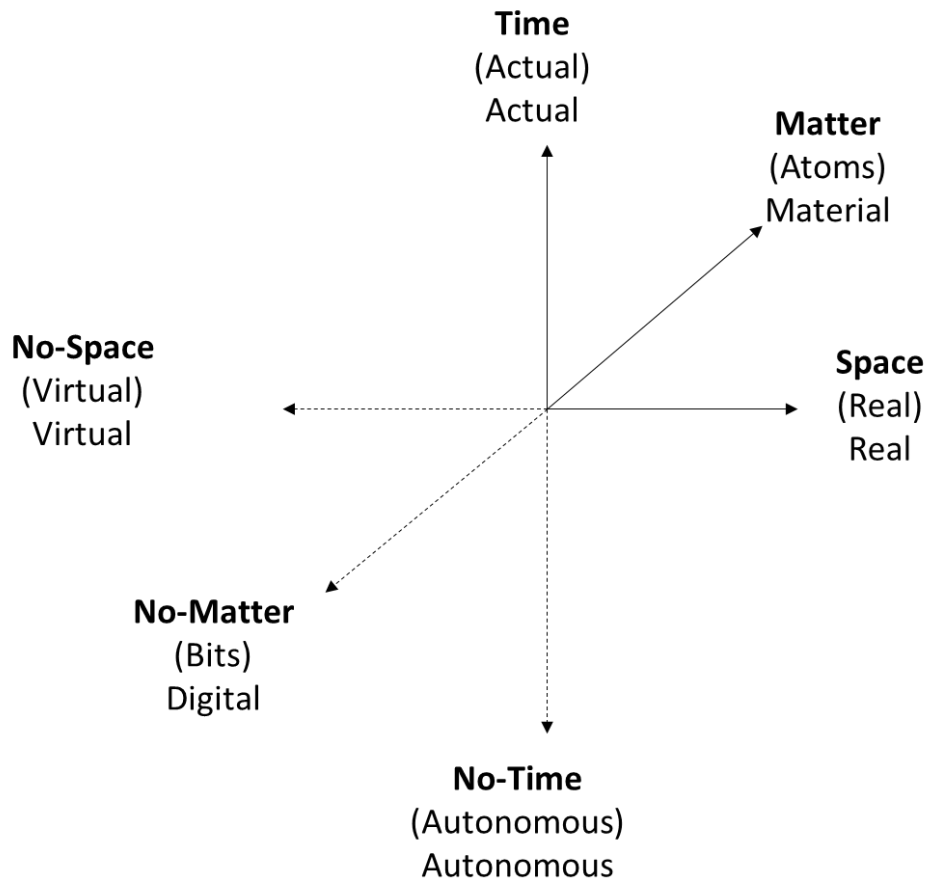
Figure 3.1 Variables and dimensions of the Multiverse (Pine and Korn, 2011)

In their study, Kaivo-Oja and Ruth (2015) synthesized the earlier work of Pine and Korn (2011) to construct a conceptual map that explores the realms of the multiverse, Internet of Things, and various devices, shedding light on the pervasive nature of the world. They emphasize the significance of three core elements—time, space, and matter—in the fabric of reality. As a result, they advocate for the need to develop new service strategies and business models that effectively navigate the multidimensional dimensions of time, matter, and reality within the ubiquitous society. Managing these intricate dimensions becomes imperative for managers operating within the multiverse (Kaivo-Oja and Ruth, 2015).

The scholars from the physics community have strongly debated the multiverse hypothesis, while disagreeing about the existence of the multiverse, and if the multiverse, in the first place is an appropriate theme for further scientific examination (Kragh, 2009). Additionally, Ellis (2011) has contended that the multiverse inquiry is more philosophical than scientific, lacks reliability, has been challenged for pseudoscientific nature, and therefore cannot be considered as a scientific question (Ellis, 2011). The value of the multiverse in this study lies in its abstract and philosophical nature, which allows for the exploration of non-existent realms and the transformation of pure fantasy into tangible experiences through technological advancements. By embracing the concept of the multiverse, this study opens up possibilities for describing and understanding the convergence of virtual and real worlds (mixed reality) and the creation of immersive environments that were once confined to the realm of imagination.

3.5.2. Immersion

According to Dede (2009:66), immersion can be defined as the subjective impression of actively participating in a comprehensive and realistic experience, regardless of the method used to create it. This definition aligns with Witmer and Singer's (1998) perspective, which characterizes immersion as a psychological state where individuals feel fully enveloped and engaged in virtual environments, experiencing a continuous stream of stimuli and experiences. This state of psychological immersion is also referred to as being deeply absorbed or engrossed (Ermi and Mäyrä, 2005).

In the realm of marketing literature, the concept of neuromarketing explores the relationship between multi-sensory emotions and immersion. Studies suggest that advertisements that simultaneously activate multiple regions of the brain can have a more potent impact, potentially fuelling consumer desire and motivation to shop (Moilanen, 2014).

Simulations, on the other hand, have the ability to create highly immersive spaces by considering people's expectations and utilizing advanced techniques to stimulate the sensory system and respond to consumer input. As Dede (2009:66) states, '*the greater*

the immersion, the stronger the participant's suspension of disbelief that they are 'inside' a [...] setting.' Looking ahead, immersion and emotions will play a significant role in shaping the consumer experience, and the tourism industry is likely to explore the development of versatile spaces where atmospheric elements can be adjusted based on consumer needs (Gorini et al., 2011).

The present study aligns with the emotion-focused literature's definition of immersion proposed by Dede (2009:66), which characterizes it as the subjective impression of actively participating in a comprehensive and realistic experience, regardless of the method used to generate the immersive encounter. This perspective resonates with the viewpoint of Witmer and Singer (1998), who describe immersion as a psychological state where individuals perceive themselves as fully engaged and interacting within virtual environments, offering a continuous flow of stimuli and experiences, known as psychological immersion (Rietveld, 2013).

There is no consensus on the definition of immersion, as different perspectives exist. For example, Morris and Rollings (2000) emphasize the importance of sound in immersion, while Van Leeuwen (1999) highlights the role of ambient sound in creating immersion. Immersion can be classified into three categories proposed by Kalawsky (1996) and supported by Oliveira et al. (2000), Ermi and Mäyrä (2005), and Slater (2009): technical immersion, sensory contingency immersion, and involvement-immersion. These categories encompass aspects such as technology facilitating a sense of presence, sensory experiences, challenges, imaginative elements, and psychological immersion resulting in a diminished awareness of time.

Furthermore, simulations have the capacity to create highly immersive environments by employing advanced techniques to stimulate the sensory system and respond to user input. The stronger the immersion, the more the participant suspends disbelief and feels a sense of being "inside" the virtual setting. Skillful storytelling in various media forms, such as movies, books, and games, can also achieve this level of captivation and immersion (Blascovich and Bailenson, 2011).

Pine and Gilmore (1999) propose a perspective on immersion and absorption that focuses on the relationship between users and their surrounding environment. This immersive experience, characterized by a sense of detachment from the real world, can be encountered in various mediums such as films and games (Patrick et al., 2000). Dovey and Kennedy (2006:146) describe immersion as the state of losing a sense of embodiment in the present while being fully engaged in a mediated environment. It is a mental state where individuals become completely absorbed in their activities.

The concepts of "immersive experience" and "immersive sensory experience" build upon the earlier works of Holbrook and Hirschman (1982), Pine and Gilmore (1998), Jensen (1999), and Schmitt (1999). These works emphasize the significance of context, aesthetics, storytelling, emotions, and symbolic elements in shaping customer experiences. Schmitt (1999) introduces the concept of "sensorial strategies," which integrate the five senses and the consumer's brain to create multi-sensory brand experiences and establish behavioural, emotional, cognitive, sensory, and symbolic values for each individual. The aim is to differentiate brands by offering unique multi-sensory experiences. Sensorial strategies seek to stimulate multiple senses and evoke genuine sensations through physical stimuli, according to Schmitt (1999). These various perspectives and the exploration of sensorial strategies have influenced our understanding of immersion and its role in shaping consumer experiences.

Immersion is frequently used to describe the degree of engagement and involvement in gaming, particularly in virtual reality settings. Researchers and designers consider immersion a significant aspect of user interaction (Brown and Cairns, 2004). Studies on electronic dance music festivals have also highlighted the importance of musical immersion (Ferreira, 2008; Attias et al., 2013; Yadati et al., 2014). Furthermore, a recent investigation focused on mixed reality and virtual reality environments suggests that the auditory environment and psychoacoustics heavily influence the sense of being within a mediated environment and the overall level of the experience (Lorenz et al., 2015). Thus, the auditory milieu plays a crucial role in shaping the perceived reality and overall immersion in such contexts.

According to Snodrgrass et al. (2013), immersion involves heightened sensory connection to the experience or consumption environment. It is a subjective process where the consumer disconnects from their daily life and gradually or abruptly enters the experience environment. Lunardo and Posignon (2019) describe sensory immersion as an emotional connection that stimulates the imagination through activities and the environment's sights, sounds, and scents. Narratives, as identified by Chen et al. (2020), are associated with sensory immersion, involving seeing, hearing, smelling, and feeling. They are utilized to change or sustain an emotional state that leads to pleasure.

In contrast, mental immersion, as defined by Lunardo and Posignon (2020), refers to full absorption in activities and the environment. When the experience setting allows for bodily involvement, such as seeing, hearing, touching, and smelling, the potential to immerse and become part of the experience arises (Bec et al., 2019; Xu et al., 2021). The subsequent sections will discuss ways to enhance immersion through immersive technologies.

3.6.   Immersive Technologies

Immersive technology is revolutionizing the staging of experiences, as highlighted by Tom Dieck and Han (2022). In line with our earlier discussions, tourism experiences encompass various elements, including emotions, education, entertainment, and immersion. These components, or stimuli, allow visitors to fully engage with the tourism environment and have a comprehensive experience (Martins et al., 2017). One effective approach to enriching the user's understanding of the surrounding world is through the utilization of multisensory modalities such as visual, auditory, tactile, and olfactory stimuli. Research by Lee et al. (2020), Ablart et al. (2017), Santoso et al. (2021), Bae et al. (2020), and Bogicevic et al. (2019) supports the positive influence of these modalities on customer assessments. By engaging multiple senses, these techniques contribute to a more immersive and satisfying experience for individuals, allowing them to deeply connect with their environment. Virtual Reality (VR), Augmented Reality (AR), and Mixed Reality (MR) are immersive technologies that offer a range of multisensory modalities.

These technologies enable the merging of actual and virtual elements to different extents, creating a new environment for users to explore (Flavian et al., 2019). By leveraging these immersive technologies, individuals can engage with a blended reality that combines both real-world and virtual components, enhancing their sensory experiences and opening up new possibilities for interaction and engagement. In recent years, there has been a growing interest among researchers (e.g., Santoso et al., 2021; Flavian et al., 2019; Schnack et al., 2019) and industry marketers in the field of immersive technologies. However, there remain theoretical uncertainties regarding the implications of these technologies for the marketing profession (Flavian et al., 2019). Therefore, before delving into the application of immersive technologies in the realm of tourism experiences, it is crucial to provide a clear and accurate description of immersive technologies as a whole, as well as an individual understanding of each specific immersive technology. This will lay the foundation for a comprehensive exploration of their potential in enhancing the tourism experience. However, before descriptions, the following sub-sections will discuss the overall Reality-Virtuality paradigm and explain the complexity of the topic, and the various definitions and research streams.

3.5.3. Reality-Virtuality paradigm

The rapid rise of transformative concepts such as polymath devices and ubiquitous connectivity has led to a profound shift that is gradually eroding the familiar reality, we have become accustomed to (Whittington, 2014). Nearly thirty years ago, during the nascent stages of ubiquitous technology, Milgram et al. (1995) presented a ground-breaking perspective on the nature of reality and virtuality. Building upon their earlier research on Extent of World Knowledge, Reproduction Fidelity, and Extent of Presence Metaphor (Milgram and Kishino, 1994), they portrayed reality and virtuality not as opposing forces, but rather as opposite points on a continuum known as the Reality-Virtuality (RV) continuum. The RV continuum, proposed by Milgram and Kishino in 1994, has been widely employed as a conceptual framework for studying and advancing virtual and augmented reality. This continuum, along with its accompanying taxonomy encompassing dimensions such as the dimensions of extent of world knowledge,

reproduction fidelity, and extent of presence metaphor, was initially intended to characterize the capabilities of visual display technologies. However, it is noteworthy that researchers have predominantly focused on the overarching RV continuum while neglecting the specific dimensions of the taxonomy (Skarbez et al., 2021). Although Augmented Reality (AR) has been mentioned in academic literature since the 1960s, a consistent and widely accepted definition has remained elusive (Santoso et al., 2021; Kounavis et al., 2012). In earlier discussions by Milgram et al. (1995), AR was described in general terms. It was referred to as a technology that enhances the operator's perception by providing additional cues and information alongside the natural feedback received from the environment. This augmentation of feedback aims to enrich the user's experience and understanding of the surroundings. Additionally, AR was characterized as a form of virtual reality where the participant's head-mounted display allows them to see virtual elements overlaid on the real world, creating a seamless integration of digital content and the physical environment. The transparency of the display enables the user to maintain a clear and unobstructed view of the real world while interacting with virtual objects or information. These descriptions emphasize the concept of enhancing real-world experiences through the integration of virtual elements and the importance of maintaining a connection with the physical environment in AR applications. Since those days, the definitions have become more precise.

In 1992, Cruz-Neira et al. recognized the potential of virtual environments (VE) as an effective medium for the design process and product development. In recent times, various businesses in the hospitality industry, such as hotels, restaurants, travel agents, and attractions, have embraced the use of 360-degree virtual tours to showcase their locations and offerings (Guerra et al., 2015; Pakanen and Arhippainen, 2014). These businesses have also integrated Visual Sales Systems into their operations to enhance customer engagement.

However, there are industry pioneers who have already begun exploring innovative approaches to stimulate the senses of their customers. One notable example is the '#geteleported' mixed reality trip introduced by the international hotel chain Marriott. This

experience incorporates multiple sensory stimuli to transport guests to different locations virtually. Another pioneering initiative was the VRoom service offered in Marriott hotels, where traditional room service is combined with the provision of VR headsets, allowing guests to immerse themselves in virtual experiences (Eye for Travel, 2016).

These examples showcase the industry's forward-thinking approach in adopting immersive technologies to deliver unique and engaging experiences to customers. By leveraging mixed reality and VR technology, businesses are pushing the boundaries of traditional service offerings and opening up new possibilities for sensory exploration and customer satisfaction. Moreover, Destination Marketing Organisations have also embraced AR and VR technologies, particularly in pre-experience contexts (Santoso et al., 2021).

However, in order to fully harness the potential of Virtual Reality (VR) technology, Virtual Visit Experiences (VVE), and Mixed Reality Environments (MRE) in the tourism sector, operators must first understand users' expectations and preferences regarding virtual and mixed reality environments (Deng et al., 2019). Each individual tourist harbours their own vision of an ideal tourism experience, and the motivations behind their decisions vary significantly (Santoso et al., 2021; Buhalis and Law, 2008). Therefore, all environments, whether physical or digitally enhanced, must provide sufficient challenge, inspiration, and aesthetic appeal to attract consumers (Huang et al., 2010).

Moreover, it is crucial to acknowledge that regardless of the technological advancements of the AR/VR system utilized, users primarily engage with virtual environments through sensory stimuli, encompassing the senses of sight, hearing, touch, smell, and taste. However, their internal sensations and emotions, including feelings, remain unaffected by the virtual experience. External virtual worlds lack the capability to manipulate these internal sensations. Therefore, instead of placing emphasis on evaluating the level of realism in reproducing the real world, the naturalness of user interaction with the AR/VR display, or the quality of technology representation, the discussion surrounding reality and

virtuality should focus on categorizing users' mixed reality experiences (Skarbez et al., 2021).

The introduction of wearable technologies and position tracking has sparked a revolution in the field, pushing the boundaries of haptic feedback, traditional input methods, and user interaction. These advancements empower users to seamlessly translate their real-world movements into virtual environments, creating a heightened sense of engagement with virtual objects. By temporarily disconnecting users from reality, these technologies synchronize their physical motions with specialized input devices like haptic gloves or motion detection systems, eliminating the need for conventional input methods (Santoso et al., 2021).

Emotions play a crucial role in shaping the overall user experience, encompassing both affective and cognitive aspects. Virtual environments have proven to be effective in eliciting emotional responses, as evidenced by previous research (Cruz-Neira et al., 1992). The incorporation of narrative elements within these virtual realms further enhances emotional engagement (Gorini et al., 2011). The accessibility of affordable head-mounted displays (HMDs) like the Oculus 2 (Meta) has democratized the availability of immersive environments, making their benefits applicable across various contexts. Furthermore, the fusion of authenticity, immersion, and emotion presents an intriguing challenge, especially when aiming to integrate these elements effectively in commercial settings (Reiners et al., 2014). Achieving a seamless integration requires careful consideration and creative thinking to craft captivating experiences that deeply resonate with users.

It is worth noting that off-the-shelf solutions for visual displays, CPUs, trackers, and human input devices offer a viable pathway to create captivating mixed reality experiences (Skarbez et al., 2021). Even commonly available display devices such as mobile phones or tablets, when used as augmented reality displays or as head-worn devices for augmented and virtual reality, often come equipped with tracking capabilities and integrated computing power. This inherent potential is invaluable, as it allows for

precise manipulation of variables that are challenging to control or replicate within real-world environments. By harnessing the unique advantages offered by the digital realm, these technologies open up new possibilities for immersive experiences.

The Technology Acceptance Model (TAM), initially proposed by Davis in 1989, has emerged as the prevailing framework for comprehending users' acceptance and utilization of technology (El-Said & Aziz, 2022; Venkatesh, 2000). This model explores the multifaceted factors that shape users' decisions and behaviours when confronted with a new technology. It posits that external variables exert influence over two key dimensions: perceived usefulness (PU) and perceived ease of use (PEU). PU, defined as the extent to which individuals believe that employing a specific system enhances their job performance (Davis, 1989: 320), and PEU, defined as the degree to which individuals perceive the system as effortless to operate (Davis, 1989: 320). By elucidating the drivers behind technology adoption, the TAM has proven valuable in explaining the adoption of novel information technologies and has been particularly relevant in the context of commercially viable augmented reality services and virtual reality environments (Cranmer, 2016).

Moreover, the Technology Acceptance Model offers insights into the influential role of user comfort and the perceived simplicity of using technology in the decision-making process, particularly when planning trips. It highlights that consumers' willingness to integrate technology, such as mobile phones and tablets, into their travel planning hinges on their evaluation of the system's ease of use and perceived usefulness (El-Said et al., 2022). By delving into the dimensions of PU and PEU, the TAM facilitates a comprehensive understanding of users' attitudes and behaviours towards technology adoption in diverse domains.

The theory of social presence, initially introduced by Short et al. (1976), has been extensively examined to shed light on the intricacies of tourists' interactions with virtual and augmented reality information systems (Jung et al., 2016). Several scholars, including Kreijns et al. (2021), Kang and Gretzel (2012), and Kounavis et al. (2012), have

affirmed that the sense of social presence differs between augmented reality (AR) and virtual reality (VR) environments. In their research encompassing both VR and AR settings, Jung et al. (2016) proposed that social presence serves as a crucial predictor of the experience realms outlined by Pine and Gilmore (1999). Moreover, the study by Jung et al. (2016) concluded that service providers can significantly impact tourists' overall experiences and intention to revisit a destination by offering high-quality visuals, immersive sounds, authentic environments, and enhancing the entertainment aspect of the tourist experience.

Recently, Buhalis et al. (2022) have extended the reality-virtuality paradigm by introducing the concept of the Metaverse. The Metaverse can be described as a parallel virtual realm that utilizes intelligent sensors to enhance real-world environments, products, and services, creating a shared virtual space for collaborative value creation. In the tourism context, the Metaverse integrates physical reality with mixed reality (augmented reality and virtual reality) to unite all stakeholders and meet various demands within a three-dimensional virtual environment. This integration enhances real-world locations by transforming them into mixed reality spaces, effectively turning the internet into a mirrored virtual universe (Buhalis et al., 2022).

Given these advancements, it is crucial to thoroughly investigate consumer behaviour in virtual reality environments. While the Technology Acceptance Model (TAM) primarily focuses on perceived utility value, the tourism industry places a significant emphasis on perceived pleasure, enjoyment, and other hedonic attributes. Therefore, it is essential to explore the intricacies of consumer behaviour in virtual reality settings, considering the unique experiential dimensions and hedonic aspects that significantly influence tourists' perceptions and interactions. Additionally, recent advancements in spatial augmented reality, tactile holography, and spatial audio provide potential insights into future modes of interactivity, immersion, and engagement in servicescapes and the conceivable Metaverse (Santoso et al., 2021).

3.5.4. Immersive technology

The term "immersive technologies" refers to any technology that facilitates the convergence of the real and virtual worlds, offering users a heightened sense of immersion (Tom Dieck and Han, 2022). Despite its growing popularity, there remains a paucity of research aimed at gaining a deeper understanding of immersive technologies and how customers utilize them. Previous studies have also employed the terms interchangeably, underscoring the necessity of establishing clear distinctions between the various realities that modern technology can offer (Flavian et al., 2019). Milgram and Kishino's (1994) Reality-Virtuality Continuum, as well as the Extended Reality-Virtuality Continuum proposed by Flavian et al. (2019) have shortcomings in their ability to fully encompass the transformative capabilities of immersive technology. These frameworks primarily revolve around portable devices, wearable gadgets, and head-mounted displays, failing to capture the true essence and depth of the immersive experience (Skarbez, 2021). Because of the idea of social presence, for instance, immersive technologies are a potent instrument for marketing and commercial purposes (Tom Dieck and Han, 2022), and they may increase consumer, learning experiences (Moorhouse et al., 2019).

The emergence of information and communication technologies has ushered in a profound transformation in the consumer journey, providing a wealth of captivating and immersive experiences. Recent studies conducted by Santoso et al. (2021), Hoyer et al. (2020), and McColl-Kennedy et al. (2019) underscore the significance of extended reality (XR) as a comprehensive term encompassing virtual, augmented, and mixed realities. XR encompasses the integration of computer technology and wearable devices, seamlessly merging virtual and real environments to facilitate interactions between humans and machines, ultimately offering immersive experiences. In the subsequent sections, we will embark on an exploration, description, and analysis of these immersive technologies within the domain of tourism experiences, shedding light on their profound impact on the creation of value.

3.6.1. Augmented reality

The emergence of augmented reality (AR) can be traced back to 1968 when Sutherland introduced the Head-Mounted Three-Dimensional Display at Harvard University (Azuma et al., 2001). Azuma (1997:355) defines AR as a variation of virtual environments (VE) that combines elements from both virtual and real worlds, resulting in a unique immersive experience. He suggests that VE technologies fully immerse users in synthetic environments. Subsequently, Azuma et al. (2001:34) refined the definition of AR to encompass display systems that integrate real and virtual elements, enable real-time interactivity, and are registered in three dimensions. Building upon these concepts, Kleef, Noltes, and Spoel (2010:1) describe AR as a technique that seamlessly blends live real-time views with computer-generated virtual images, thereby augmenting the perception of reality. As mobile and handheld devices progressed in terms of technology, Kounavis and colleagues (2012) introduced augmented reality (AR) as a technique for visualizing information. This approach involves overlaying text, video, graphics, GPS data, or other multimedia formats onto the real-world view captured by the cameras on computers, mobile phones, or other similar devices. In simpler terms, it allows users to see additional digital content superimposed onto their physical surroundings through their device's camera, enhancing their perception of the real world.

AR, as described by Santoso et al. (2021), creates a dynamic and real-time environment that blurs the boundaries between the human, digital, and physical realms, resulting in a highly interconnected user experience. Users can interact with virtual objects in real time, combining elements from both the real and virtual worlds. This integration enhances users' perception of their surroundings by providing additional virtual information and intuitive ways to interact with the technology. In simpler terms, AR allows users to blend the real world with virtual elements, creating an interactive and immediate experience. It bridges the gap between our physical environment and digitally created content, enriching our understanding and interaction with the world. By adding virtual layers to reality, AR enhances our perception and enables us to engage with virtual objects in a natural and intuitive manner.

However, it's important to acknowledge that AR does have its limitations. Research by Chen et al. (2019) and Jung and Han (2014) suggest that AR may be less immersive and generate lower levels of user engagement compared to other technologies. Despite these limitations, Rauschnabel et al. (2019) emphasize the increasing significance of augmented reality in the realms of consumption and marketing, urging marketers to find innovative ways to incorporate these emerging realities into their strategies. One notable advantage of AR is its ability to facilitate shared experiences among users. As explained by Santoso et al. (2021), AR overlays computer-generated information onto the real world, allowing users to collectively engage with the virtual content while their physical surroundings serve as a backdrop. This social dimension enhances the interactive and collaborative nature of AR experiences.

In summary, AR offers an immersive and interactive environment that seamlessly blends the real and virtual worlds. While it has limitations in terms of immersive qualities, it holds promise for various applications, particularly in marketing and creating shared experiences. Based on their comprehensive literature review, Dey et al. (2016) observed a significant surge in the number of research studies focusing on augmented reality (AR) over the past two decades, particularly in relation to handheld devices. However, the authors noted a lack of empirical evaluations and an overreliance on subjective ratings, with limited field testing conducted in most studies.

The tourism industry, along with tourism researchers such as Tom Dieck and Jung (2015), has swiftly embraced augmented reality (AR). One of the earliest studies in this field was conducted by Yovcheva et al. (2013), which explored the potential of smartphone applications in assisting tourists navigating unfamiliar environments. Since then, several notable research studies have emerged, shedding light on various aspects of AR in tourism. Research by Han et al. (2014) has focused on understanding user requirements for AR technology in the tourism context. Studies conducted by Jung et al. (2015) and Tom Dieck et al. (2015) have examined the acceptance and behavioural intentions of tourists towards AR experiences. Furthermore, Yovcheva et al. (2013) have contributed to the exploration of creating immersive AR tourism experiences, while Linaza et al.

(2013) have delved into the realm of AR tourism gaming. These studies collectively contribute to our understanding of AR's potential in enhancing tourism experiences, uncovering user preferences and expectations, and exploring novel ways to engage tourists through immersive AR applications. In the context of augmented reality (AR) applications at cultural heritage sites, Jung and Han (2014) emphasized the importance of conducting further research and developing successful case studies. Their aim was to gain a comprehensive understanding of the dynamics of value creation through AR and to conceptualize its implications. By acknowledging the need for additional investigations and practical examples, Jung and Han highlighted the significance of exploring how AR can contribute to enhancing the visitor experience and creating value at cultural heritage sites. Their call for more research and successful case studies reflects the aspiration to unlock the full potential of AR in this domain and uncover effective strategies for leveraging its benefits. In a comprehensive literature review, tom Dieck and Jung (2015) similarly list several challenges in tourism related AR, for example, usability, accuracy, end-user services, and hardware design. Correspondingly, Tscheu and Buhalis (2016) critique the lack of empirical testing and state that, for example, stakeholder requirements, the development process, value creation process, and the sources of competitive advantages should be researched more thoroughly. Cranmer et al. (2020) highlight the limited research on the value of augmented reality (AR) for tourism suppliers. On the other hand, Jung et al. (2015) emphasizes the potential of AR within the tourism industry. They argue that unlike virtual reality (VR), AR enables natural interaction between attractions, tourists, and the overlaid digital content, particularly through handheld devices.

Cranmer et al.'s observation draws attention to the lack of extensive studies exploring the benefits of AR from the perspective of tourism suppliers. Meanwhile, Jung et al. emphasize the unique advantage of AR in facilitating seamless and interactive experiences for tourists. By allowing natural interaction with the physical environment, AR has the potential to enhance the overall tourism experience, providing a more immersive and engaging encounter with the attractions through handheld devices. AR has gained recognition for enhancing user experiences and interaction with the real world (Cranmer et al., 2020). It offers opportunities to add value to the tourism industry by providing novel

ways to explore unfamiliar environments. As technology becomes integrated into our daily lives, it significantly impacts various sectors, including tourism, influencing travel habits, decision-making, and information search (Wang, Xiang, and Fesenmaier, 2016). The ubiquity, adaptability, personalization, and diffusion of mobile technology make it a valuable tool for both tourism providers and consumers. Consequently, more tourism organizations are exploring technology's potential to enhance visitor experiences (Santoso et al., 2021). However, careful investigation of AR's full potential is crucial before implementing it due to the significant investments required (Cranmer et al., 2020). This ensures a comprehensive understanding of the technology and enables informed decision-making in integrating AR within the tourism industry.

3.6.2. Spatial Augmented Reality (SAR)

Milgram and Colquhoun (1999) introduced a taxonomy of display systems that integrated the real and virtual worlds, distinguishing between two types: head-mounted displays (HMD) and head-up displays (HUD). Head-mounted displays allow users to see their actual environment while superimposing computer-generated visuals either optically or through video coupling (Milgram and Colquhoun, 1999:2). Head-up displays, commonly used in military aircraft, operate on a similar principle of transparency, overlaying graphical information onto the pilot's actual view. Milgram and Kishino (1994) and Milgram et al. (1995) introduced another classification that encompasses large-screen and monitor-based displays, where virtual elements enhance the real world. Spatial Augmented Reality, as introduced by Raskar et al. (1999), broadened the scope of augmented reality by incorporating the projection of virtual items and information onto tangible objects. This particular form of augmented reality is frequently exemplified through the use of CAVE virtual environments.

Raskar et al. (1999) brought about a significant breakthrough in virtual reality with the introduction of the CAVE (Cave Automatic Virtual Environment). This immersive system consists of a walk-in box with walls that display stereoscopic visuals using projectors, allowing users to experience a three-dimensional environment. A notable aspect of the

CAVE is its capability for spatial augmented reality, which involves projecting virtual items onto physical objects. Unlike head-mounted displays (HMDs), the CAVE offers a multi-user experience, enabling multiple individuals to interact within the virtual environment simultaneously (Stuerzlinger et al., 2015). This shift in approach marked a paradigm change in the field of virtual reality. Additionally, detecting and responding to the user's bodily position, motions, and gestures enhanced immersion and eliminated the majority of references to the actual world in simulations such as virtual flying (Febretti et al, 2013).

However, the high expense of the devices and the related demand for space have frequently limited the usability of CAVE systems. In addition, the needs for specialised computer hardware and software, as well as the necessity for a professional to operate the system, have limited the broad usage of CAVE environments in prototyping, design, and visualisation in both educational and research contexts. (Stuerzlinger et al. 2015.) Recent developments of mixed reality (AR) cubicles for immersive three-dimensional visualisations and the advancements in computing power and speed, offering realistic perception and immersive experience with lower cost and maintenance, have encouraged the re-adoption of modern CAVE systems in numerous fields, such as the military, education, health care, entertainment, and design, among others (Onime et al., 2016; 2020). Stuerzlinger et al. (2015) created a Temporary Immersive Virtual Environment (TIVS) for restricted areas. At a reduced cost, TIVS can immerse a limited number of viewers in a virtual environment. In venues such as one-day floorshows, modest conference rooms, and even high-end home theatres and gaming sets, the TIVS are therefore a viable choice (Stuerzlinger et al. 2015). Within Projection-based Mixed Reality environments, the boundaries between the real and virtual worlds are blurred by projecting virtual Computer Graphics (CG) elements onto physical objects. The CG models are adjusted to align with the real-world objects, resulting in a merged MR scene. The unique aspect of these settings is that they can be observed without the need for wearable display equipment. Moreover, Projection-based Mixed Reality displays offer advantages over other MR technologies, such as Head-Mounted Displays (HMD) and 3D displays, by mitigating issues like 3D sickness and convergence insufficiency (Zhang et al., 2014). Mixed Reality (CAVE) Environments (MREs), such as the TIVS, combine front

projections, high resolution LED/OLED displays, and holographic projections with spatial image mapping software, therefore decreasing the required footprint (Stuerzlinger et al. 2015).

Combining the setup of modern TIVS, and the 3D mapping technology in a real service environment, with service personnel and actual services, and products consumed has not been tested, nor defined in any literature (Jung et al., 2015). Recently, system enabling intuitive AR-based multimedia gaming and entertainment applications has been introduced to the public. In these pilots, interactive holography systems have been used to provide stereoscopic AR display in real environment (Song et al., 2015). Using a web-camera to capture user's gesture at the holographic stage, the virtual objects are merged into the actual environment by a holographic projection. Group observation and face-to-face social interactions are hindered by the small monitors of phone-based AR and the cumbersome head-mounted devices of wearable AR (Mine et al., 2012). While fully immersive 3D holographic displays are not currently available, projection-based AR offers a promising solution to enhance the user experience. In projection-based AR, projection technology is employed to enhance and augment real-world objects and environments in three dimensions, according to the AR community (Mine et al., 2012). The projector allows for spatial and seamless AR visual displays (Benko et al., 2014). Using a projector's light, real things may be enhanced with projected images, bringing them and their surroundings to life in a shared environment (Ro et al., 2019). By harnessing the power of a controllable light source, projector-based or spatial augmented reality (SAR) offers a range of impressive applications. It enables the transformation of any surface into an interactive touch screen, as demonstrated by Harrison et al. (2011). Furthermore, this technology allows for the virtual restoration of historical paintings, preserving their integrity without causing damage to the priceless canvas, as explored by Bimber et al. (2005). In the context of the Disney theme park, SAR has been utilized to bring an old dwarf's house to life, turning it into a whimsical and enchanting abode (Mine et al., 2012).

One of the notable features of spatial augmented reality is its capability to overlay digital content onto physical surfaces, creating a seamless integration of the virtual and real

worlds. This opens up exciting possibilities and use cases, including the automatic distribution of public AR experiences. Moreover, it fosters a unique form of social engagement where physical and digital realms intertwine, offering opportunities for interactive and immersive participation (Siriborvornratanakul, 2018). Spatial augmented reality typically utilizes projectors strategically positioned around an object or distributed across a three-dimensional space, such as an entire scene. The projectors can be manually or automatically synchronized and may project content collectively or individually, as highlighted by Benko et al. (2014). The projected visuals can establish visual connections with physical objects or surface elements, accurately reproducing surface colours and characteristics. This process enhances colour richness, saturation, and contrast, resulting in high dynamic range (HDR) outcomes, as demonstrated by Raskar et al. (2001).

Spatial augmented reality offers a significant advantage by enabling the creation of mesmerizing and dynamic environments that bring sets and scenes to life in ways that traditional lighting methods cannot easily achieve (Benko et al., 2014). This approach presents unique opportunities to elevate visual experiences and convert physical spaces into immersive and interactive settings. Through the utilization of projection technology, augmented reality unlocks fresh avenues for creative expression and facilitates engaging user interactions. By merging the physical and virtual realms, spatial augmented reality revolutionizes the way we perceive and interact with our surroundings, fostering a truly immersive and captivating experience.

Spatial augmented reality provides theme park designers with the capability to integrate captivating features like high dynamic range (HDR) lighting, precise control at the pixel level, dynamic multimedia, and interactive content, thereby enhancing the overall visitor experience (Ro et al., 2019). One noteworthy advantage of projection-based augmented reality is its capacity to offer a shared viewing experience for multiple individuals, which is particularly advantageous in theme parks with a large amount of visitors. Conversely, device-based augmented reality methods, such as head-mounted displays or mobile

devices, lack scalability and primarily cater to individual users, especially when achieving accurate alignment with the real-world environment is necessary (Mine et al., 2012).

Spatial augmented reality systems encounter fewer latency issues compared to transparent AR devices due to the reduced relative motion between the projector and augmented objects. This advantage proves particularly valuable in theme park settings characterized by slow and predetermined movements of components. However, when employing mobile displays, transparent AR systems are more susceptible to noticeable delays and artifacts. Consequently, in environments where real-time responsiveness is critical, projection-based augmented reality emerges as a more dependable and efficient alternative.

Furthermore, spatial augmented reality aligns more seamlessly with experiencescape design principles and aesthetic philosophy (Fossgard and Fredman, 2019) due to its ability to blend in with the surroundings. Within the realm of theme parks and attractions, building projection represents a relatively new application of spatial AR. In the amusement park and attraction industry, spatial augmented reality is recognized as a cost-effective approach to enhance and activate existing locations, allowing for modifications without extensive structural or facility upgrades. Additionally, it enables the swift introduction of new experiences to existing sites, which proves invaluable for special or seasonal events in amusement parks and attractions (Sakurai et al., 2013; Mine et al., 2012).

3.6.3. Virtual reality

Virtual Reality (VR) was originally conceptualized by Myron Kruger in the mid-1970s as a potential method for human-computer interaction (Williams and Hobson, 1995:423). Cruz-Neira et al. (1994) identified three key elements of the VR experience: visualization, immersion, and interactivity. These elements distinguish VR from computer games, arcade attractions, and advanced video games. According to Cheong (1995:418), VR can be defined as a "computer-mediated, multisensory experience" that allows users to explore and perceive alternate realities beyond their own. The goal of VR is to replicate

or replace the user's real-world experience by immersing them in a synthetic 3D environment using graphics and sound (Cheong, 1995:418).

In VR, a fully immersive virtual world is created, enabling users to interact in real-time (Bekele et al., 2018). Synthetic information is utilized to simulate sensory experiences that approximate those of the real world (Santoso et al., 2021). By providing users with a sense of presence, VR creates the illusion of physically being in the virtual environment (Lee et al., 2020a). However, there are certain drawbacks to using VR, such as the occurrence of cybersickness. Cybersickness arises when there is a discrepancy or conflict between the visual, vestibular, and other sensory systems, as explained by theories of sensory mismatch and conflict (Santoso et al., 2021).

Understanding the hedonic aspect of the virtual reality experience involves examining different dimensions. Dube and Bel (2001) discuss two key components: anticipatory pleasure, which is closely tied to motivation and goal-directed behaviour, and consummatory pleasure, which refers to the satisfaction of desires. Nah et al. (2011) highlight several significant hedonic constructs for comprehending the virtual reality experience, including enjoyment, emotional immersion, affirmative emotions, and the flow experience. These characteristics play a crucial role in shaping users' perception and engagement with virtual reality environments. Goh and Yoon (2011) emphasize the influence of perceived enjoyment in hedonic virtual reality worlds on the overall user experience. They note that virtual worlds offer game-like simulations that allow users to engage and derive entertainment, serving as a motivating factor for participation.

When considering the impact of virtual reality on behaviour and intentions, factors such as perceived ease of use, perceived usefulness, and subjective satisfaction come into play. Venkatesh (2000) suggests that perceived ease of use and usefulness contribute to the enjoyment of technology use, while subjective satisfaction in the virtual world can serve as a predictor of behavioural intention. Additionally, positive emotions and overall satisfaction have been found to be closely linked to customer experiences and intentions to return in physical locations and service interactions. Pleasant emotional states, such

as those experienced in the hospitality, travel, and tourism industries, have been shown to influence repurchase likelihood. Furthermore, hedonic reactions to travel information can evoke positive emotions that impact destination choice behaviour (Grappi and Montanari, 2011). Therefore, understanding the hedonic dimension of the virtual reality experience involves examining anticipatory and consummatory pleasure, as well as factors such as enjoyment, emotional immersion, affirmative emotions, and the flow experience. Perceived enjoyment in virtual reality environments plays a significant role, while factors like ease of use, usefulness, and subjective satisfaction contribute to users' behavioural intentions. Positive emotions and overall satisfaction have implications for repurchase likelihood and destination choice behaviour in various industries. Understanding emotional engagement and the concept of flow is essential when studying individuals' motivations and experiences in virtual reality environments. Holsapple and Wu (2007) emphasize the role of emotional engagement in comprehending why individuals are drawn to interact with virtual reality environments. Similarly, the concept of flow, as introduced by Csikszentmihalyi (1990), sheds light on the immersive and enjoyable mental state individuals experience when fully engaged in an activity.

Emotional engagement and flow are significant constructs in understanding virtual reality experiences. Richard and Chandra (2005) successfully employed the concept of flow to comprehend online consumer experiences, highlighting its relevance in virtual reality contexts. Faiola and Smyslova (2009) further emphasize the importance of flow as a key indicator in understanding virtual reality experiences, contributing to our understanding of individuals' immersion and engagement. Moreover, Hsu, Chang, and Chen (2012) emphasize the substantial impact of the flow experience on consumer behaviour in virtual reality environments, particularly in relation to purchase intentions and revisit intentions. Integrating the concept of flow within the proposed integrated framework, along with the Technology Acceptance Model (TAM) and hedonic construct, provides a comprehensive understanding of consumer behaviour in virtual reality settings. By considering emotional engagement and flow, researchers can gain valuable insights into the motivations, experiences, and behavioural intentions of individuals within virtual reality environments.

VR offers many opportunities for tourism marketing (Bec et al., 2021), entertainment provision, education, access to restricted areas, or preserving wildlife and endangered areas (Guttentag, 2010). Already in 1995, virtual theme parks and location-based entertainment complexes using virtual reality technology were created (Williams and Hobson, 1995). Musil and Pigel (1994:90) argue that virtual reality (VR) cannot replace tourism because it fails to replicate the genuine experience of being present in a real environment, where one can fully engage with the sights, sounds, sensations, and natural ambiance. VR systems also lack the ability to incorporate taste and smell, which limits the immersive multisensory experience. Although some progress has been made in simulating three of the senses, the current virtual simulations still do not provide truly lifelike experiences (Cheong, 1995). Furthermore, despite advancements, VR image quality, resolution, and fluidity have not yet reached satisfactory levels of realism due to constraints in processing power and speed.

Despite the challenges, VR tourism harnesses a technology that engrosses users in a multisensory encounter, granting a genuine viewpoint from the perspective of a traveller (Kim et al., 2020). The application of VR in the realm of tourism assumes a crucial role in shaping tourist behaviour and enabling distinctive ventures, ranging from interstellar expeditions to visits to expansive amusement parks (Kim et al., 2020). By leveraging VR applications and equipment, individuals acquire the capacity to virtually explore any destination. The notion of authenticity emerges as a pivotal aspect in heightening VR experiences, as emphasized by Guttentag in 2010, who underscored the influence of technology quality on the perception of genuineness (Guttentag, 2010). The importance of physical and sensory interactions within virtual tourism encounters is underscored by Mura et al. (2017), as they contribute to the sense of authenticity. The elevated level of perceived authenticity in VR tourism shifts the focus from the mechanics of travel to the potential for meaningful connections, transcending the limitations of physical journeys (Yung and KhooLattimore, 2019). Significantly, authenticity acts as an essential prerequisite for the acquisition of souvenirs and fosters a deeper comprehension of local culture, traditions, and the surrounding milieu (Kim et al., 2021). VR tourism unveils

avenues for immersive and culturally enriching experiences that surpass geographical boundaries.

3.6.4. Mixed reality

The definitions of mixed-reality (MR) have varied greatly since the invention of VR, and even though the MR has evolved into a totally separate research area, compared to earlier status as sub-section of virtual reality, the definitions remain highly diverse and cross-disciplinary (Newman et al, 2007). MR combines real and virtual environments, incorporating various forms of AR and VR, into a unified technology (Bekele et al., 2018). It can be used interchangeably with VR and AR (Speicher et al., 2019) and is also referred to as strong AR (Yung and Khoo-Lattimore, 2017). According to Intel (2022), MR interacts with the physical environment in a spatially-aware manner. In contrast, Microsoft describes augmented reality as the addition of visuals to video, commonly seen in AR experiences on mobile devices, while mixed reality involves a seamless integration of the physical and virtual worlds. AR enables users to engage in more immersive settings and interactions (Park et al., 2018). To enable interactions in MR, Costanza et al. (2009) found that high-contrast, high-resolution displays and accurate location tracking are necessary. Position-tracking technology is utilized to identify and monitor environmental elements like faces and objects with distinctive textures and curves (Costanza et al., 2009).

Real and virtual material coexist and interact in real time inside a mixed reality environment. To do this, augmented and virtual reality elements combine. MR is not only a substitute for augmented or virtual reality. Rather, it is a perspective that enhances the human sense of both actual and virtual situations (Skarbez et al., 2021). Essential components of a MR experience include adaptability, immersion, engagement, cohabitation, and augmentation. It is accomplished by incorporating both AR and VR's technology components. Thus, regardless of the domain, an MR experience delivers a real-virtual environment in which users feel immersed and their perception of the actual world is enhanced (Bekele et al., 2018).

Mixed reality (MR) encompasses the convergence of real and virtual environments, employing specialized gear such as smart glasses with see-through displays and various sensors to track the user's surroundings (Buhalis et al., 2022). It presents a novel approach to address the challenges of social isolation and limited mobility, offering an alternative mode of destination consumption (Bec et al., 2021). Through the utilization of Head Mounted Displays, MR has the potential to enrich user experiences by providing enriched information through multiple sensory sensations (Bae et al., 2020).

The co-creation of cultural heritage and tourist experiences emerges as a prominent application of MR, revolutionizing visitor engagement and enjoyment through interactive and educational content (Buhalis et al., 2022). MR has demonstrated its capacity to augment users' perception of their surroundings, generating a heightened sense of immersion (Skarbez et al., 2021). Within the realm of cultural heritage attractions, two fundamental aspects of MR contribute to the user experience. Firstly, the virtual realm crafted in MR engenders a profound sense of engagement and vividness, fostering immersion. Secondly, the interactive capabilities inherent in MR empower users to actively engage with and shape the virtual environment in real time, thus significantly enhancing enjoyment (Bekele et al., 2018; Covaci et al., 2018).

Interactivity and the capacity to fabricate a sensorially immersive mediated environment stand as pivotal attributes of MR (Bae et al., 2020). By seamlessly amalgamating information with physical reality, MR holds the potential to render imperceptible aspects of a location, its historical context, and its community observable in situ, bestowing visitors with a distinct and simultaneous encounter of these elements.

3.7.   Discussion of Value Creation in Technology Enhanced Multi-Sensory Experience

The previous sections presented and discussed the relations of sensory stimuli, and the perceived value of the built environment, and how the technology might be used for enhancing the sensory stimuli in tourism related service- and experiencescapes. The human senses impact customer's purchasing intentions, emotions, service perceptions, and consumer choice, and despite recent requests for a more sophisticated, multi-sensorial approach to tourism experience research, vision is still largely regarded as the most important human sense. It is well-established that servicescape aspects strongly impact customers' cognitive and emotive responses to a service scenario. Consequently, visitors' evaluations of the service experience should be predicted based on their satisfaction with the servicescape's substantive staging. The experiencescape, as described by Agapito et al. (2017), encompasses the destination itself as the immersive environment where experiences unfold. It serves as a platform with tangible elements that shape the experiences and offers opportunities for consumers to engage with multi-sensory stimuli and social interactions that align with their motivations and preferences.

Milgram et al. (1994) and Pine and Korn (2011) have explored the vast experiential landscape that spans from the realm of reality to the realm of virtuality. In these diverse domains, technology plays a pivotal role in enhancing consumer experiences and delivering value. The concepts of "Immersive Experience" and "Sensory Experience" align with earlier research by Holbrook and Hirschmann (1982) and Pine and Gilmore (1998), emphasizing the importance of context, aesthetics, narratives, emotions, and symbolism in shaping consumer encounters. Holsapple and Wu (2007) emphasize the significance of emotional engagement in understanding individuals' attraction to interact with virtual reality environments. By merging the concepts of immersive sensory experiences with insights from augmented reality (AR) and augmented virtuality (AV), researchers can gain a deeper understanding of the imaginative and emotional responses evoked by these immersive technologies. In projection-based Mixed Reality environments, the boundaries between the physical and virtual worlds become blurred as virtual Computer Graphics objects are projected onto tangible objects. This enables

visitors to observe the Mixed Reality scene without the need for display devices. Furthermore, multi-sensory Mixed Reality environments offer the ability to manipulate various sensory stimuli, including fragrances, temperature, humidity, sounds, and visual elements, which can be customized based on customer preferences or predefined scenarios (Tuominen and Passos Ascencao, 2016).

3.8.   Summary

The objective of this chapter was to provide a contextual background for the thesis, emphasizing the significance of human senses in shaping the tourism experience and value creation. By drawing on the literature on sensory experience and overall experiences, we conducted a comprehensive exploration of the opportunities presented by these tourism environments. This analysis proved instrumental in understanding the key stakeholders responsible for implementing innovative technologies that facilitate visitor interaction and collaborative value co-creation. Through a comparative analysis of research on portable and wearable immersive technologies, it became apparent that the focus on the latter is considerably limited. More specifically, numerous scholars have examined the impacts of technologies such as augmented reality (AR) and virtual reality (VR) on visitors' perception of experiences and their subsequent behaviour. In addition, the immersive and multisensory technologies have primarily been researched from the perspective of portable or head-mounted devices, neglecting one of the important elements of experiencescape, human contact and shared experiences. However, aesthetically pleasant out-of-store settings, such as those in town centres, have become crucial in luring shoppers to these places, highlighting the need of expanding our understanding of how the design of these spaces effects the buying behaviour of visitors. Therefore, it is essential to extend this research into the new context in order to comprehend how multisensory immersive technologies should be designed and implemented in order to generate positive consumer experiences and serve as a valuable tool for tourism attraction developers seeking to create value. Consequently, the section that follows describes two technology-enhanced tourist sites that will be explored further and utilised as test settings for visitor interviews and surveys.

VALUE FACILITATOR	Company	Co-creation	Customer
VALUE IN USE	***Functional/Instrumental Value*** • Correct/accurate attributes • Appropriate performances • Appropriate outcomes ***Cost/Sacrifice Value*** • Economic • Psychological • Personal investment • Risk	***Experiential/Hedonic Value*** • Sensory • Emotional • Social/relational • Epistemic	***Symbolic/Expressive Value*** • Self-identity/worth • Personal meaning • Self-expression • Social meaning • Conditional meaning
MANAGEMENT	***Experiencescape*** • Development • Design & manufacturing • Sales and marketing • Delivery (service)	***Interaction*** • Timeliness • Mass tailoring • Narratives (to interact with) • Sensory cues (to react to)	***Immersion*** • Content creation • Appraisal • Promotion
TECHNOLOGY ENHANCED EXPERIENCE	***Experiencescape - Pervasive technology*** • Visual aesthetics • Soundscape • Scents	***Interaction - Interactive technology*** • Augmented, Virtual and Mixed Reality • Discovery, learning • Personalisation of the experience	***Immersion – Immersive technology*** • Virtual-, Augmented- and Mixed reality • WEB 2.0, sharing, self esteem

Figure 3.2 Theoretical Value creation Framework for Multisensory Mixed Reality Tourism Experience (Combined and extended from Smith and Colgate (2007), Grönroos and Voima (2013), and Neuhofer et al., (2014).

Chapter 4 - Tourism and Service Industries in Finland

4.1. Introduction

Portraying the fundaments of the service industries, and specifically the tourism industry dynamics in Finland, the following sections introduce the context of this research, the Finnish tourism industry. This chapter will provide an overview of the service industry from a broader perspective, highlighting its evolution and recent transformations. Additionally, it will explore the role of the tourism industry within the Finnish economy. Moreover, the chapter will delve into the research context, offering a detailed portrayal of the theme park and attraction industry in Finland. Specifically, it will focus on two specific locations where the empirical data collection for the study will take place. Finally, this chapter will summarise the reason for choosing these locations and most of all, provides possibilities for considering how the findings of this study relates to other tourism destinations and countries with similar visitor profiles, and similar smaller visitor attractions around the world and therefore concerns how the tourism industry would benefit from this study outside of the chosen two attractions.

4.2. Tourism Industry in Finland

Hospitality and tourism economies in Finland, are reported together by the trade union. Consequently, the official statistics of Finland separate transportation and storage into the reporting category H, and accommodation and food service activities into category I. Visit Finland, the government-owned destination marketing office, provides specific reports dedicated to tourism. These reports offer valuable insights into the industry. In addition, the MaRa trade union (2017) emphasizes the crucial contribution of the Hospitality and Tourism sectors to job creation across the country. Employing over 11 percent of the one million people working in the private services sector, these industries offer employment for 140000 professionals in Finland. The reports from Visit Finland (2017) differ from these, while their data shows that 5.6 percent of all employed people are employed in tourism industry. The variance may be explained by the differences in methodologies. Whilst MaRa accounts for all sub-contractors and tourism related

activities, visit Finland reports only the workforce directly employed by tourism companies and operators. Yet, the statistics agree, to some extent, that the hospitality and tourism industries' workforce increased by 37/30.1 percent between 1995 and 2015 (Mara, 2017; Visit Finland, 2017 respectively.)

Finland's strengths as a destination lie in its physical beauty, modern infrastructure, political stability, and advantageous location relative to affluent European markets (Vuoristo, 2002). Known for its multitude of lakes, Finland's landscape also features archipelagos, forests, and wilderness in the northern and eastern regions (Tikkanen, 2002; Vuoristo, 2002).

Lapland, in the north, attracts tourists with its association with reindeer, the midnight sun, winter sports, and Santa Claus (Visit Rovaniemi, 2017). Leveraging its unique tourism landscape, weather system, strong economy, and strategic geographic position, Finland appeals to outdoor enthusiasts seeking nature-based activities (Visit Finland, 2017). As urbanization progresses elsewhere, the value of Finland's pristine natural environment as a recreational setting continues to rise, establishing it as a contemporary peripheral destination that balances nature preservation with modern amenities (Vuoristo and Vesterinen, 2001:251). Finland was divided into five regions for tourism development based on general preconditions by Artman et al. (1978): Southern and southwestern Cultural Finland, Central Lake Region, Ostrobothnia, Eastern Hill Region, and Lapland. However, these regions do not align with the distribution of attractions, tourism facilities, or tourist flows. Focal tourist centres are often located in attractive environments with versatile service infrastructure and good transportation connections. Puhakka and Saarinen (2013) emphasize the role of nature-based tourism, particularly in northern peripheral areas, as a key driver for regional development in Finland. National parks have gained popularity, with increasing visitor numbers, supported by the government's focus on nature-based tourism and the utilization of the national park network (Puhakka and Saarinen, 2013). In addition to nature-based tourism, Finland is also recognized as a top destination for MICE (Meetings, Incentives, Conferences, and Events) tourism. However,

MICE and culture-oriented tourism mainly benefit the southern part of Finland (Visit Finland, 2017).

According to Visit Finland statistics (2017), foreign tourists choose Finland as their destination for various reasons, depending on their nationality. For example, Russian tourists are attracted to shopping, while Japanese tourists show interest in cultural attractions and events. Despite the connection to the natural environment, overall tourism in Finland focuses more on urban attractions than natural settings, with Helsinki being the most popular tourist centre for both domestic and international visitors. The seasonality of tourism and Finland's four distinct seasons also play a role in destination preferences. Although Finland does not experience extreme weather conditions that pose significant barriers to tourism development, the weather can be somewhat unpredictable, and the guarantee of long sunny and warm summers or ideal conditions for winter sports cannot be assured (Vuoristo, 2002).

Finland possesses favourable conditions and qualities that make it a promising growth market in the tourism sector. Statistics from Finland (2017) reveal that the number of foreign visitors has doubled between 2000 and 2015, with the most significant growth potential stemming from the Asian market. The Official Statistics of Finland (2017) estimate that the number of jobs in tourism industry can increase by 30000 by year 2025. Table 4.1. illustrates the present key figures of tourism industry in Finland and highlights the steady growth the industry has enjoyed in the past 20 years.

Table 4.1 Key figures in tourism account by Indicator and Year (Visit Finland Statistic Service Rudolf, 2017)

	1995	2005	2014*
TOTAL tourism demand, EUR million	5 741	9 636	14 209
Inbound tourism demand, EUR million	1 745	2 473	4 035
Domestic tourism demand, EUR million	3 996	7 163	10 174
Domestic leisure tourism demand, EUR million	2 886	5 045	7 720
Other domestic tourism demand (compensated business trips, own free-time residences), EUR million	1 110	2 118	2 453
Inbound tourism demand total, share of total tourism demand %	30	26	28
Domestic leisure tourism demand total, share of total tourism demand %	50	52	54
Other domestic tourism demand (compensated business trips, own free-time residences), share of total tourism demand %	19	22	17
Employment in tourism industries, persons	..	..	139 200
Tourism related employment in tourism industries, number of persons employed	47 700	60 400	62 100
People employed in tourism industries as a share of all employed people %	..	..	5,6

In 2015, accommodation establishments in Finland recorded nearly 19.8 million overnight stays, of which domestic tourists accounted for 14.2 million and foreign tourists for 5.5 million. However, the recent changes in global politics, and the COVID-19 pandemic has dramatically changed the tourism industry in Finland. Table 4.2 illustrates the 20 largest tourism market Finland has and the changes in nights spent in Finland. The largest markets for overnight stays in 2022 were the Germany and the United Kingdom, followed by neighbouring country Sweden. (Visit Finland, 2023.)

Table 4.2 Yearly nights spent by TOP 20 countries of residence. (Visit Finland Statistic Service Rudolf, 2022)

Country	2019	Change %	2020	Change %	2021	Change %	2022	Change %
Germany	661 981	5,30	246 184	-62,80	257 836	4,70	580 713	125,20
UK	569 294	-4,00	168 341	-70,40	268 282	59,40	507 660	89,20
Sweden	558 453	-0,30	102 209	-81,70	170 523	66,80	467 878	174,40
France	341 747	14,10	157 520	-53,90	110 016	-30,20	333 250	202,90
USA	309 118	7,00	81 652	-73,60	96 426	18,10	271 330	181,40
Netherlands	262 222	6,40	130 662	-50,20	72 461	-44,50	247 667	241,80
Estonia	243 107	9,30	151 971	-37,50	163 431	7,50	203 337	24,40
Spain	173 847	-1,20	41 020	-76,40	85 515	108,50	160 344	87,50
Italy	180 282	12,60	51 689	-71,30	72 434	40,10	160 258	121,20
Russia	820 888	-0,60	257 948	-68,60	40 622	-84,30	151 974	274,10
Norway	189 938	-1,60	74 104	-61,00	47 349	-36,10	151 821	220,60
Switzerland	166 052	-1,20	58 462	-64,80	51 939	-11,20	146 191	181,50
Poland	104 492	-0,80	42 834	-59,00	58 405	36,40	107 176	83,50
Denmark	115 874	7,60	33 584	-71,00	42 788	27,40	104 004	143,10
Belgium	93 741	10,40	40 863	-56,40	30 795	-24,60	103 272	235,40
Austria	76 144	8,30	25 116	-67,00	27 138	8,10	63 727	134,80
Latvia	61 588	6,20	30 999	-49,70	30 463	-1,70	62 169	104,10
China	441 033	14,70	92 873	-78,90	22 615	-75,60	56 307	149,00
Israel	56 166	5,30	22 846	-59,30	9 114	-60,10	52 219	473,00
Lithuania	46 856	10,30	19 121	-59,20	24 352	27,40	50 921	109,10
Total	5 472 823		1 829 998		1 682 504		3 982 218	

The dramatic changes in global and local economies and global insatiability have also influenced Finnish Tourism Industry. Responding to fluctuations in inbound tourism demand, and in the demand of certain nationalities, the Finnish government has accentuated the role of tourism industry, and thus is willing to invest in the development and for example to the construction of the infrastructure for future tourism development projects (Ministry of Employment and the Economy, 2015).

4.3.   Service Industry in Finland

The Finnish service sector comprises nearly 200,000 businesses, but there are significant differences among them. Digitalization has allowed certain services to be geographically independent and exported like industrial products. However, the growth trend in services, which has been a stable source of employment and growth for Finland, may be shifting (Ministry of Employment and the Economy, 2015). The global impact of digitalization is transforming service markets, increasing productivity, and creating new job opportunities in novel areas of the economy. It is estimated that 20-30% of current service sector jobs in Finland may be affected by digitalization in the medium term, while cross-border trade in services presents both challenges and opportunities. Despite this, market services in Finland have experienced rapid growth, generating 150,000 new jobs since 2003 and serving as a counterbalance to the decline in manufacturing jobs (Ministry of Employment and the Economy, 2017). The ongoing structural changes in service sectors, influenced by digitalization and the Internet economy, are not only impacting products, services, and business models but also the ways of working. Digitalization plays a crucial role in increasing the scalability, tradability, value added, and productivity of services. However, it is worth noting that the manufacturing industry still dominates the Finnish enterprise turnover, as illustrated in Table 4.3.

Table 4.3 Finnish enterprises turnover by industry in 2014 – 2015 based on Official Statistics Finland report.

Industries	Turnover EUR 1000		Change
	2014	**2015**	**%**
(B) Mining and Quarrying	1,661,142	1,500,666	-9.7
(C) Manufacturing	130,284,373	124,332,625	-4.6
(D) Electricity Gas Steam and Air Conditioning Supply	13,074,441	12,422,194	-5.0
(E) Water Supply; Sewerage Waste Management Activities	2,451,932	2,491,448	1.6
(F) Construction	28,998,388	30,269,970	4.4
(G) Wholesale Retail Trade	116,846,278	114,116,675	-2.3
(H) Transportation and Storage	23,108,891	22,530,873	-2.5
(I) Accommodation and Food Service Activities	6,048,548	6,138,771	1.5
(J) Information and Communication	17,862,057	19,193,433	7.5
(L) Real Estate Activities	8,005,031	8,140,792	1.7
(M) Professional Scientific and Technical Activities	13,253,797	13,810,413	4.2
(N) Administrative and Support Service Activities	10,075,843	10,483,130	4.0

Based on the Tax Administration's business taxation data, the total turnover of service industries was EUR 93.4 billion in 2015. Turnover grew by EUR three billion or 3.3 per cent year-on-year. Among service industries, the IT sector continued to grow heavily by EUR 1.3 billion from 2014. The games industry covered EUR 0.8 billion of the growth. While the games industry managed to raise its operating profit by nearly EUR 0.4 billion, the total operating profit of services industries grew by EUR 0.4 billion from the year before. (Official Statistics of Finland, 2015.) The hospitality and tourism industry in Finland, encompassing travel, accommodation, theme parks, amusement parks, attractions, and restaurants, generates tax revenue exceeding EUR 5.2 billion for the government. This accounts for approximately 5.4 percent of the total taxes and fees collected by the government (MaRa, 2017).

4.4. Theme Park and Attraction Industry in Finland

Theme parks and family attractions are typically created with the intention of accommodating large groups and families, serving as recreational activities that offer entertainment opportunities during individuals' flexible leisure time (Milman, 1991). In Finland, to indulge the local tourist, as well as international guests, there are variety of amusement- and theme parks, as well as zoos and botanical gardens. Over 60 zoos, animal parks, and small animal sanctuaries or farm enterprises exist in Finland, most of which are rather. The main zoos are Korkeasaari Zoo (in Helsinki), Ranua Zoo (in Ranua), Ähtäri Zoo (in Ähtäri), and Zoolandia (in Lieto). Finland has also two ocean and sea life centres where you explore the underwater life; Sea Life in Helsinki, the Maretarium in Kotka, (Visit Finland, 2017; Discovering Finland, 2017). Similarly, the variety of Theme Parks and Amusement Parks is abundant in Finland. Thera are over a dozen permanent theme parks, the largest being Linnanmäki (Helsinki), Särkänniemi (Tampere) and PowerPark (Alahärmä, near Ähtäri). Generally, the amusement parks are open approximately 7 months per year, excluding the winter months November-March. For family vacations, an interesting alternative to paid entertainment is browsing local public playgrounds. To some extent, competing with commercial amusement parks and family entertainment centres, virtually every neighbourhood in every town and city in Finland has a public play park for children, and these are consistently well kept and perfectly safe (Discovering Finland, 2017). The amount of amusement and recreation parks has increased by 27 percent from 2013, while the number of botanical and zoological gardens is decreasing. Highlighting the importance of this study, table 4.4. describes the growth of the recreational visitor attraction industry in recent years.

Table 4.4 Number of, and the turnover of Amusement and Recreation Parks and Activities and Zoos (Statfin report)

	2013	2014	2015	2016	2017	2018
93 Sports activities and amusement and recreation activities						
Establishments of enterprises (number)	3,565	3,687	3,930	4,099	4,335	4,473
Turnover of establishments of enterprises (EUR 1,000)	921,559	957,213	1,051,334	1,108,221	1,266,000	1,307,819
93210 Activities of amusement parks and theme parks						
Establishments of enterprises (number)	57	56	72	85	103	112
Turnover of establishments of enterprises (EUR 1,000)	66,244	72,588	106,564	113,334	133,698	138,840
91040 Botanical and zoological gardens and nature reserves activities						
Establishments of enterprises (number)	39	46	22	25	19	20
Turnover of establishments of enterprises (EUR 1,000)	8,251	34,137	11,342	11,452	12,671	18,491
9102 Museums activities						
Establishments of enterprises (number)	26	23	29	30	31	29
Turnover of establishments of enterprises (EUR 1,000)	6,890	5,270	29,062	12,009	14,049	17,360
Total establishments of enterprises (number)	3,687	3,812	4,053	4,239	4,488	4,634
Total Turnover of establishments of enterprises (EUR 1,000)	1,002,944	1,069,208	1,198,302	1,245,016	1,426,418	1,482,510

4.5.   The Research Context

Recent advancements in information and communication technology, such as the development of MR or XR, have led to significant changes in the customer journey within the tourism industry in Finland. While the industry is expanding, there is still a need to fully meet the evolving needs of consumers with new and innovative services. The increased interest in using immersive technology along the customer journey is now unsupported by empirical data and, as a result, requires more study (Santoso et al., 2021). New services and attractions with multimodal experiences must be further developed. In the context of technology-enhanced multisensory mixed-reality attractions, there is thus a need for more research into how technology-enhanced sensory inputs may influence the amount of visitor pleasure and generate value and good behavioural intent. During the data gathering period between late 2020 and early 2021, just two tourist destinations qualified as technology-enhanced multisensory mixed-reality attractions. The parts that follow will provide a more in-depth description of the two chosen destinations and explain why they symbolise recent developments in the Finnish tourist sector. The statistics for yearly nights spent in Ähtäri region, in relation to whole of Finland are presented in table 4.5.

The findings of this chapter can be compared with other similar countries like Scandinavian countries who hold the same size of population and share the same international client base. Also, the findings of this chapter can be compared with other smaller and mid-scale attractions which serve both domestic and international visitors.

Table 4.5 Yearly nights spent and arrivals by country of residence by Region in Ähtäri region and in Rovaniemi city (Official Statistics of Finland report)

		Nights spent			
		2015		**2016**	
WHOLE COUNTRY (FIN)	**Total**	19 738 123		18 846 065	
	Domestic	14 227 773	72 %	13 733 489	73 %
	Foreign	5 510 350	28 %	5 112 576	27 %
RE South Ostrobothnia (Ähtäri region)	**Total**	**670 916**		**666 032**	
	Domestic	642 323	96 %	626 420	94 %
	Foreign	28 593	4 %	39 612	6 %
C 698 Rovaniemi (Santa's office region)	**Total**	**470 382**		**456 617**	
	Domestic	212 239	45 %	212 486	47 %
	Foreign	258 143	55 %	244 131	53 %

4.5.1. Multisensory Virtual Zoo at Ähtäri Zoo

The other multisensory Mixed Reality Zoo was built to Ähtäri Zoo. Ähtäri Zoo was opened in 1973, and it is located in central Finland, approximately 160 km from Tampere. Ähtäri Zoo is the first natural wildlife park of its kind in Finland. Set in 60 hectares of spacious and natural environment and forest, the aim of Ähtäri is to provide natural environment for the animals with varied terrain and flora. The surroundings offer an excellent opportunity for the implementation of the basic principles of EAZA, the European Association of Zoos and Aquaria, and maximises the best possible circumstances for the delivery of best to care for the captured animals (Ähtäri ZOO, 2017.) Today, Ähtäri Zoo houses almost 65 animal species, the majority of which come from the coniferous forest zone. The Park's latest arrivals are the snow leopards, donated by the Korkeasaari Zoo (Helsinki), thus honouring the Ähtäri Zoo's 30th jubilee year. (Ähtäri ZOO, 2017.) There is a popular holiday resort next to the zoo which provides camping facilities, as well as the Hotel and Spa Mesikämmen, and there is also a convenient train service to the wildlife park Zoo stop. The zoo is spread in 60 hectares, in a versatile natural environment, surrounded by different terrains and vegetation. There is a 3 km and a 1.5 km walking

routes and approximately 300 animals. It is open every day throughout the year. The most popular animals are snowpandas, bears, endangered snow leopards and tankinis from Himalaya. During the peak season, (June 6th – August 15th), there is a fixed schedule with guided explanation about the different animals, conducted by animal keepers. The experience, can take from 2-4 hours, depending on how deep visitors want to explore, see and read about the animals.

Highlighting the informative and educational aspects of Snow Panda preservation, the developed multisensory MR experience at Ähtäri Zoo consisted of 4 episodes located along the normal customer journey of the Snow Panda House. Figure 4.1. summarizes the narrative, sensory stimuli and technologies used to augment the visitor experience. Comprehensive list of technologies used in multisensory virtual zoo can be found in appendix A.
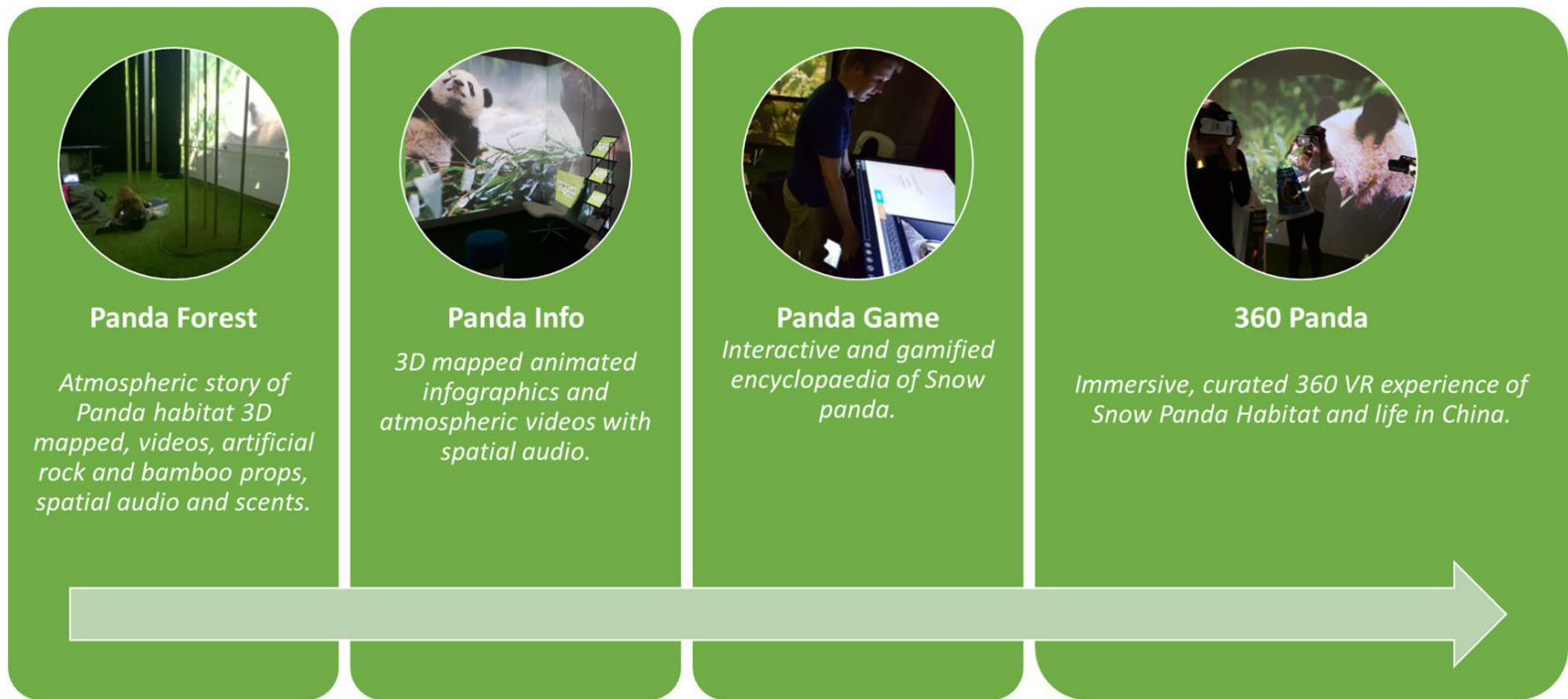
Figure 4.1 Summary of the episodes at the multisensory virtual zoo (source: Author's own).

4.5.2. Christmas Box at Santa Claus Office

The Santa Claus Office in Santa Claus Village, located in Rovaniemi, Finnish Lapland, has attracted many foreign tourists due to its connection to important travel routes in northern Finland (Vuoristo, 2002). The development of the Santa Claus industry and the Santa Claus Village in Rovaniemi has been discussed by Pretes (1995; 2007), who traced its origins back to a Finnish radio jockey in 1927. The Finnish word for Santa Claus, Joulupukki, is derived from the belief that a goat (pukki) delivered Christmas presents to children (Haahti and Yvas, 2004; Pretes, 1995). The figure of Santa Claus used in Finland was adopted from the United States, which in turn was influenced by the Dutch figure of Sinterklaas and the work of caricaturist Thomas Nast (Tervo-Kankare, Hall, and Saarinen, 2013; Pretes, 1995).

In 1984, the Finnish Tourism Board formed the Santa Claus Work Group, marking the beginning of formalized tourism centred around Christmas and Santa Claus (Pretes, 1995). Following this, the governor of Lapland declared the establishment of "Santa Claus Land," and a government-funded project was initiated under the control of the Finnish Tourist Board (Haahti and Yvas, 2004). These initiatives aimed to market Lapland as the true home of Santa Claus and attract more visitors to the region (Kylanen and Mariani, 2012). Lapland, with the support of tourism authorities and operators, successfully promoted the brand of "Santa Claus Land - the home and workplace of Santa Claus" (Tervo-Kankare, Hall, and Saarinen, 2013). As a result, Santa Claus became synonymous with the tourism industry in Lapland, serving as its ambassador and spokesperson (Kylanen and Mariani, 2012).

The Santa Claus Village and Office, located near Rovaniemi on the Arctic Circle, have remained as the main attractions of the Santa Claus Land project (Pretes, 2007). Rovaniemi was chosen as the location due to its existing popularity among tourists and its status as a starting point for further northern exploration (Kylanen and Mariani, 2012). The Santa Claus Village, established in 1985, offers a range of activities, shops, accommodations, and dining options with a Santa Claus and Christmas theme, attracting

approximately 300,000 visitors annually (Haahti and Yvas, 2004). The village includes the Santa Claus Office, where visitors can meet Santa Claus and take photos, as well as the Santa Claus Post Office, Christmas House, and various shopping departments (Kylanen and Mariani, 2012). Adjacent to the Santa Claus Village is Santa Park, an underground cave theme park designed for families and children, which opened in 1998 (Haahti and Yvas, 2004). The area also features husky and reindeer enclosures (Kylanen and Mariani, 2012).

Emphasising the Santa Claus story, the developed multisensory MR experience consisted of 6 episodes located along the normal customer journey of the Santa Claus Office. Figure 4.2. summarizes the narrative, sensory stimuli and technologies used to augment the visitor experience. Comprehensive list of technologies can be found in appendix A.

Figure 4.2 Episodes of the multisensory MR Christmas experience (Source: Author's own)

In summary, this chapter provided background information highlighting the importance of tourism and attraction businesses in the Finnish travel sector. The research data was collected from various locations that offer multisensory experiences. The number of international visitors to Finland has doubled since 2000, with Asia showing the highest growth potential. The hospitality and tourism industries play a significant role in generating employment in the country. Although Lapland is increasingly popular, Finland's inbound tourism continues to focus on urban attractions rather than natural areas. Future projections indicate that the Finnish tourist industry will continue to expand, while the inbound tourism demand of other nations will increase. In response to the increase in demand from international tourists, the number of amusement and leisure parks has increased while the number of botanical and zoological gardens has decreased. The initial multisensory Mixed Reality Environment (MRE) (Figure 4.1) was developed at Ähtari Zoo, while the second MRE (Figure 4.2) was based on the existing Santa Claus Office in Santa Claus Village near Rovaniemi in the Polar Circle. The following chapter will provide an overview of the research methodology and the design of the empirical study, including an evaluation of its validity and dependability.

Chapter 5 – Methodology

5.1.   Introduction

The purpose of this chapter is to discuss the chosen methodology, present the research design, and addresses the issues of validity and reliability of this study. To achieve the PhD aim and objectives, the benefits and implications of multi-sensory multisensory mixed-reality environments must be studied from the perspective of tourists, along with tourists' response to multi-sensory mixed-reality environments. Therefore, the tourists' emotions, reactions and perceptions of a multi-sensory, mixed reality experience will be measured in two tourist attractions in Finland. These environments were chosen, as they are the only multisensory MREs existing in the tourism context in Finland. Beyond the more traditional attraction props, these multisensory mixed-reality environments use large-scale 3D mapped image projections, and multiple sensory stimuli to create contextual and emotional atmospheres. Historically, cognitive factors have been the primary focus when examining perceived value (Duman and Mattila, 2005), often neglecting the significance of hedonic factors. However, there are exceptions to this trend, such as the study by Lee et al. (2011), which highlighted the significance of emotional value alongside functional value for festival attendees. Furthermore, Duman and Mattila (2005) discovered a correlation between affective factors, particularly hedonic pleasure, and the perception of value among cruise vacationers.

Within the proposed theoretical framework of Value Formation in Multisensory Mixed Reality Tourism (figure 3.2) context presented in the previous chapter, the aim for the PhD is to empirically test and analyse the proposed value creation framework in commercial multi-sensory mixed reality tourism environments. Furthermore, by understanding more of the value formation dynamics in multisensory mixed-reality environments, and how the different sensory stimuli effect the experience and perceived value. Furthermore, through empirical research, the PhD will aim to validate the value creation framework in the Finnish tourism context. Objectives 1 and 2 were achieved

during MPhil study, and the PhD further developed the framework to achieve objectives 3 and 4:

3. To explore antecedents of tourism value creation in the mixed reality environment; and
4. To further develop the proposed value creation framework for a multisensory, mixed reality environment within the tourism context.

5.2. Research philosophy

The researcher adopts a critical ontological perspective, aiming to understand reality in a critical and reflective manner, to place this study within the broader context of society and draw general conclusions. This involves recognizing concealed values, assessing evidence, conducting various activities, and reviewing conclusions. By going beyond surface-level observations and delving into the underlying social structures, power dynamics, and hidden meanings that influence people's experiences and behaviours, this study seeks to elucidate and present a multi-sensory mixed reality attraction while acknowledging visitors' hidden value perceptions.

Moreover, the study aims to extend its conclusions beyond the initially examined locations by triangulating emerging themes from recent literature, expressions of perceived value from focus group participants, and survey findings. By doing so, it strives to gain a broader and more nuanced understanding of the subject of study, recognizing the complexity and multifaceted nature of social phenomena. The researcher actively evaluates evidence, considers different viewpoints, and engages in activities that promote critical thinking and reflection. This approach allows for the generation of insights that surpass simple descriptions and contribute to a more comprehensive understanding of the topic.

For decades, investigations of value generation have been at the centre of the marketing research agenda (Hunt, 1977). In recent years, there has been a surge of research focused on co-creation within the service sector, particularly within the tourism and

hospitality industries (Chathoth et al., 2016). This growing interest has prompted academics to explore and understand the process of value creation in tourism, the roles individuals play in this process, and how businesses should effectively manage it. According to Grönroos and Gummerus (2014:209), co-creation involves customers actively contributing to the value they receive from the resources they utilize. Evaluating customer perceptions and attitudes and identifying the elements that contribute to the value of a product or service can be a challenging task. According to Kwortnik (2003), consumer choices in the tourism industry are influenced by both rational and emotional factors. While behaviour can be observed, the underlying motives behind that behaviour are often hidden. Research must therefore strive to address both conscious and unconscious motives. In addition to studying actual behaviour, it is important to elicit respondents' emotions and delve into the reasons behind their actions. Although theoretical frameworks (Edelman et al., 2010) suggest the existence of identifiable stages in customers' decision-making processes, it is difficult to determine the specific stage a potential customer is in at any given time. Determining the ontological stance of this research is further complicated by the search for information. It is challenging to ascertain the specific stage of each potential customer in their decision-making process at any given time, as these processes can span from seconds to several years. As a result, researchers must employ indirect methods to accurately place customers in the appropriate stage. Obtaining reliable information poses a challenge for researchers as distinguishing between facts and beliefs is not always straightforward. Consumers often regard their beliefs as absolute truths, making it difficult to discern the objective reality. It can be argued that a customer's perspective is a blend of truth and fantasy. To gather more dependable information, the researcher examined both pre- and post-experience perceptions and experiences, considering the individual perspective as well as the potential community membership, to gain insights into the actual touristic experiences and the factors influencing the purchasing decision.

5.2.1. Deliberation of the Ontology, and the Epistemological Position of the Research

Ontological, epistemological, and methodological foundations are used to compare and contrast different approaches in the social sciences (Della Porta and Keating, 2008). Ontology is a researcher's set of beliefs about what facts are and how they should be interpreted. These beliefs affect the researcher's choice of what to study and how the chosen research objects are seen and studied (Saunders et al., 2016). Objectivism and subjectivism are two different ways of looking at ontology. Objectivism is the idea that things (like social entities) exist as meaningful realities that are separate from the people who care about them (Crotty, 1998). Subjectivism asserts that social phenomena are made up of the constantly changing perceptions and actions of the people who care about them (Saunders et al., 2016).

Epistemology is the science of knowledge, so it has to do with whether or not it is possible to know about the world and what form that knowledge would take (Corbetta, 2003). It's about how people learned about the world around them. It looks at the possibilities, nature, sources, and limits of knowledge in the field of study (Dudovskiy, 2016). It gives a philosophical basis for figuring out what kinds of knowledge are possible and how to decide if a source of information is good enough and right (Blaikie, 2004). When planning a research project, it is crucial to consider ontology and epistemology, as they shape our understanding of knowledge acquisition and influence the researcher's choice of research questions, methods, and techniques (Hammond and Wellington, 2013). These fundamental concepts determine the lens through which researchers approach their studies and guide their decision-making processes. According to Hammond and Wellington (2013), reflecting on ontology and epistemology should be of utmost importance in the research planning phase. This study will investigate "multi-concept phenomena such as emotions, sensory inputs, and the touristic experience from an insider's perspective" (Corbin and Strauss, 2015:5) and will aim to synthesise the empirical research findings into "a theoretical story line" (Hogg and Maclaran, 2008:131).

5.2.2. Philosophical debate

The debate surrounding ontology and epistemology often revolves around the positivist and interpretivist research philosophies (Saunders et al., 2016). Positivism assumes that study outcomes are objective facts and established truths (Gray, 2014). Positivists typically employ quantitative approaches, such as statistical analysis, and gather information through experimentation, interviews, surveys, and observations (Henderson, 2011; Neuman, 2006). From an ontological perspective within the quantitative paradigm, there is a belief in a single truth: an objective reality independent of human experience (Sale et al., 2002). In the positivist epistemological framework, the researcher and the subject of investigation are seen as separate entities, enabling the researcher to analyse a phenomenon without being influenced or biased by it (Altinay and Paraskevas, 2009).

The aim of this study was to comprehend the inherent philosophical obstacles and develop a research design that would facilitate the researcher in elucidating the phenomena and determining the necessary evidence. Recognizing that no measurement is completely error-free, the researcher underscores the importance of employing a variety of data collection methods and sources. Each method and source may introduce different types of errors. Therefore, employing a triangulation approach, which involves comparing and cross-referencing data from multiple sources, becomes essential in order to gain a more comprehensive and accurate understanding of the phenomenon being studied.

The objective of this research is not to alter or refine the truth, but rather to present data and supported interpretations of the study topic within a carefully constructed and well-argued framework of value creation. The researcher concluded from the study that all observations are theory-laden and that the research is profoundly influenced by their cultural experiences, world beliefs, and other circumstances. Similarly, the researcher's strong involvement in the industry for over 20 years is acknowledged in this study. Even so, this study adapts the definition of hospitality as '*liberal entertainment of all sorts of men, whether neighbours or strangers, at one's House, with kindness, especially with*

meat, drink, and lodgings' (Wheler, 1698:66) and that the visitor experience, and thus the perceived value, is a socio-cognitive process (Granovetter, 1985).

Acknowledging the professional background of the researcher, this research combines two techniques of data collection: semi-structured focus group interviews and self-reported experience perceptions. Therefore, in opposition to positivism, which supports an objective understanding of reality and relies on quantitative data obtained through questionnaires and experiments, interactionism directs its attention towards studying individuals and their social behaviour in authentic situations (Altinay and Paraskevas, 2008:69). It emphasizes the utilization of methodologies that provide valuable insights, reveal significance, and acknowledge the existence of diverse perspectives and solutions to problems (Goulding, 1998:50). While the epistemological commitment of this work follows the positivist logic of the argument in its quest for causal linkages, it cannot be characterised as openly positivist. The researcher's managerial expertise and the realisation that management practise is frequently murky prompted the addition of more interpretive methods of inquiry to this investigation. According to Altinay and Paraskevas (2008:70), positivism supports a more objective interpretation of reality through the use of empirical data from surveys and experiments, whereas interactionism focuses on approaches that investigate individuals and their social behaviour. The philosophy of positivism highlights the role of observation in expanding our understanding of the world, emphasizing the need to measure events (Fox, 2008). It has been widely applied in generating hypotheses based on observations in the natural sciences. In the field of social sciences, Max Weber, a sociologist, introduced a form of post-positivism, offering an alternative perspective, during the era spanning the late 1800s and early 1900s. Weber conceptualised verstehen or 'understanding' as a hermeneutic strategy for acquiring knowledge of the social world. At the core of Weber's theory is the awareness that social realities must be grasped from the subject's perspective, not the observer's, and in their entirety, not in isolation (Fox, 2008).

Post-positivist philosophy consents several options for data collection, underlines the pragmatic need related to leisure sciences, but also enables the possibilities for

examining data in more expansive ways (Henderson, 2011). Positivism has been more commonly associated with scientific research and is based on facts, while the researcher remains distant from the phenomenon under study. Post-positivism is a collection of epistemological perspectives and offers an alternative to positivism and interpretivism for academics. Positivists think that society shapes the person and employs quantitative techniques, whereas interpretivists believe that society shapes the individual and employs qualitative methods. Moreover, on the other side of the research spectrum is interpretative research, which focuses on discovering causes and explanations for occurrences. For instance, an interactionist seeks to comprehend the behaviour of each individual within society. The interactionist believes that everyone has different attitudes, values, culture and beliefs (Altinay and Paraskevas, 2008). Furthermore, Easterby-Smith et al. (1999) argue that in interactionist research participants provide the starting point and through them, the researcher tries to understand and interpret what is occurring, and why. Hypotheses are formulated using meanings that arise from the researcher's pre-conceptions and those are tested against empirical evidence (Altinay and Paraskevas, 2008). Although this research aims to explain the phenomena by using quantifiable 'hard' data, parts of the research depend on interpreting the non-quantifiable actions and finding causalities and reasons for phenomena; and hence the possibilities of managing the phenomena within the real management context. The following section will discuss the chosen post-positivist epistemological perspective research methodology in more detail.

This research adopts a post-positivist epistemological stance, recognizing that the phenomena being studied are more complex than what can be captured by either positivist or phenomenological philosophies alone. Therefore, by utilizing selected data collection techniques and analysis, the researcher has effectively combined the advantages of both perspectives, thereby enhancing the rigor and systematic nature of the study while retaining the ability to delve deeper into the phenomena. In addition, rather than only testing predetermined hypotheses, the research aims to respond to new discoveries and therefore the research methodology employed is abductive. Finally, this study's application of abductive reasoning provides a reasonable result but does not fully confirm it. The abductive results, and consequently the "most likely" drivers of value within

the technology-enhanced multisensory mixed-reality tourism context, will be expanded into generalisations and hypotheses of a larger scope.

5.2.3. Utilising Post-positivist Philosophy to this Research Project

The choice of research methodology is influenced by the research philosophy and study design. Induction, deduction, and abduction are research methods and forms of logical reasoning that are employed in various types of research (Reichertz, 2014). The inductive method emphasizes the generation of empirical generalizations and theoretical assertions based on the analysis of data. In this approach, conclusions and hypotheses are drawn from the observed patterns and evidence gathered during the research process (Miller and Brewer, 2003). Deduction, in contrast, begins with a specific hypothesis or rule and evaluates how the raw data support the rule (Reichertz, 2007). Kennedy (2018) noted that when researchers rely on deduction in their studies, there is a risk of becoming less attentive to the participants, the specific research context, and the actual data collected. In this approach, the primary emphasis is on establishing or supporting existing theories and preconceived arguments, which may divert attention away from truly understanding the nuances and complexities present within the research context and the experiences of the participants involved. In contrast, induction remains close to the facts and can give fresh insights into current knowledge and conclusions (Reichertz, 2007). In qualitative research, induction refers to the process through which patterns, concepts, and theories arise from data through the researcher's interactions with the data without presupposing such conclusions beforehand (Kennedy, 2018). It is maintained, however, that inductive conclusions are frequently speculative and unreliable, as observations may exist in a specific scenario but have not yet been observed (Kennedy, 2018).

The practise of alternating between induction and deduction is known as abductive thinking, which employs a pragmatic perspective to overcome the limits of the two methodologies (Hammond and Wellington, 2013). Abduction is concerned with the discovery of new concepts, ideas, and explanations through the discovery of unexpected facts, data, or events that cannot be explained by prior knowledge (Kennedy, 2018). In

particular, abduction needs interaction between data collection and analysis, as well as between data and theory (Kelle, 2014). In this instance, the current analysis proposes viable ideas for additional investigation, and the researcher must implicitly or overtly draw on prior theoretical knowledge (Kelle, 2014). In addition, the researcher must reconsider, amend, or question preconceived notions in order to explain unexpected or baffling results (Alvesson and Karreman, 2011).

Mixed methods research incorporates both deductive and inductive approaches, enabling researchers to explore a conceptual framework or a theoretical proposition through qualitative methods, followed by quantitative research to examine broader patterns and relationships. For instance, qualitative methods can be used to investigate and refine a theoretical concept or construct, and then quantitative research can be conducted to validate and generalize the findings on a larger scale. This sequential approach allows researchers to gain a comprehensive understanding of the research topic by integrating diverse data sources and perspectives (Khoo-Lattimore et al., 2019). For this investigation, an abductive strategy was employed. In light of the paucity of prior research on the phenomenon under investigation, exploratory data were collected to test the employed theories in the context of this study, to identify themes and patterns from the data analysis, and then to locate these within a conceptual framework to test via subsequent quantitative data collection (Saunders et al., 2016). When applicable, the findings were integrated into existing theory to adapt them to the research situation (Khoo-Lattimore et al., 2019).

Post-positivist philosophy allows for multiple methods of data collecting, emphasises the pragmatic nature of leisure sciences, and facilitates the examination of data in more expanded ways (Henderson, 2011). Positivism is frequently connected with scientific investigation and is founded on facts, while the researcher maintains a distance from the phenomena being studied. On the other side of the research spectrum is interpretative research, which focuses on discovering causes and explanations for occurrences. For instance, an interactionist seeks to comprehend the behaviour of each individual within society. In extreme circumstances, they would deny that class is an issue and assert that

we cannot generalise that all members of a particular social class have the same beliefs. Instead, interactionists think that individuals have distinct attitudes, values, cultures, and beliefs (Altinay and Paraskevas, 2008). Easterby-Smith et al. (1999) assert that in interactionist research, participants are the beginning point, and via them the researcher attempts to comprehend what is happening and why. Using interpretations derived from the researcher's preconceptions, hypotheses are formed and evaluated using empirical evidence (Altinay and Paraskevas, 2008). Parts of this research depend on the interpretation of non-quantifiable actions and the identification of the phenomena's causes and, consequently, on the feasibility of managing the phenomena in a real-world management context, despite the fact that the purpose of this research is to explain the phenomena using quantitative "hard" data.

5.3.   Research Purpose, Methodologies and Data Collection Methods

In general, the study objective can be exploratory, descriptive, explanatory, or evaluative, (Kennedy and Thornberg, 2018). Exploratory research seeks to uncover and describe behavioural patterns in areas or activities that have not been extensively studied before. Its main objective is to gain a deeper understanding of a particular subject of interest by asking questions that focus on the "what" and "how" aspects. Through this approach, researchers aim to identify, characterize, or map out the dynamics and nuances of the topic, shedding light on previously unexplored territories (Veal, 2006). This form of research is widely adopted in the tourism industry due to two key factors: the dynamic nature of the phenomena under investigation, such as the shifting popularity of various tourism destinations, and the often-distinct separation between study and action. As a result, conducting exploratory research becomes crucial for gaining insights into the ever-changing landscape of tourism. By exploring and examining these phenomena, researchers can stay abreast of the evolving trends and patterns within the industry (Veal, 2006).

Due to their exploratory character, exploratory studies typically include qualitative methods such as interviews, and the qualitative findings are frequently beneficial for

directing the next step of research (Pinsonneault and Kraemer, 1993). Flexibility and adaptability are essential in exploratory research, as it aims to delve into unknown territories and uncover new insights. On the other hand, explanatory research builds upon the foundation laid by exploratory research, requiring a clear and comprehensive understanding of the investigated phenomena. It seeks to provide a deeper understanding and explanation of the observed patterns and relationships. Therefore, explanatory research can be seen as an extension of exploratory research, as it strives to provide a more refined and detailed picture of the phenomenon under investigation (Saunders et al., 2016). Research studies might focus on simply one of the research kinds; however, sometimes two or more techniques are included into a single study (Veal, 2006). To attain the study objectives, a mixed methods research design was employed, incorporating both exploratory research (Research Phase 1) and explanatory research (Research Phase 2). This approach allowed for a comprehensive exploration and understanding of the subject matter. The specific details of this mixed methods design will be further elucidated and discussed in the following sections. Following is a discussion of the research methodologies and data gathering techniques utilised for this study. Before conducting the empirical research, ethical approval was granted by Manchester Metropolitan University through EThoS (Appendix C).

5.3.1. Outline of Mixed Methods approach employed in this research

In accordance with the post-positivist philosophy discussed earlier, this study adopts a mixed-method approach. This approach involves the integration of quantitative and qualitative research techniques, procedures, approaches, concepts, and terminology within a single study (Azer, Taheri, and Gannon, 2021). By combining these different methods, a more comprehensive and holistic understanding of the research topic can be achieved. In fact, previous studies have demonstrated that qualitative and quantitative techniques may be merged since they both seek to comprehend the world in which we live, they share a unified logic, and the same rules of inference apply to both (Haase and Myers, 1988). Functioning as an alternative approach, the mixed-method methodology aims to integrate the strengths of both qualitative and quantitative techniques rather than

replacing them, thereby mitigating or eliminating any inherent limitations (Azer, Taheri, and Gannon, 2021). In fact, post-positivist research favour both research methodologies and consider the exclusive embrace of a single philosophical perspective to be counterproductive (Saunders et al., 2016). In pursuit of its objectives, this study employed a mixed-methods approach, combining qualitative and quantitative data collection techniques. The research commenced with a focus on qualitative data collection, followed by the incorporation of quantitative data. Building upon the initial qualitative findings, a subsequent quantitative study was conducted (Hesse-Biber, 2010; Veal, 2006). Earlier tourism research has also employed mixed methods widely (Azer, Taheri, and Gannon, 2021), and these studies provide evidence that a mixed-methods approach is beneficial for tourism studies investigating motivations and behaviour. Moreover, prior research (e.g., Creswell, 2009; Creswell and Clark, 2006; Ryan et al., 2002) has advocated for the inclusion of more mixed-methods studies for several reasons. These include enhancing the validity of theoretical propositions and achieving a more comprehensive understanding of the phenomenon being investigated compared to a narrower methodological approach. In this context and for this study, which studies the effect of multisensory mixed-reality environment cues on visitors' behavioural reactions in a tourism attraction, a mixed-method approach is deemed acceptable.

To accomplish the first objective, a comprehensive review of the relevant literature was crucial in this study. The literature review focused on three main research areas: 1) value generation, 2) multisensory experience, and 3) mixed reality technology within the context of tourism. Given the distinctive setting of the study, which examined the impact of multisensory mixed-reality environment cues on visitor behaviour in a specific tourism environment, the initial focus of the literature review was on tourist experience. The investigation of tourist experience literature provided insights into the applicability of traditional tourism research and theories to multisensory mixed-reality methodologies for the purpose of determining if they might be applied in the setting of this study. Additionally, a literature study was done to expand these research streams to value creation and immersive experiences. Then, the adaptation of existing AR, VR, and MR research within the framework of multisensory MR was discussed. The literature review played a

significant role in shaping the topics for the main data collection phase, particularly in understanding the impact of multisensory mixed-reality environment cues on visitor behaviour. To achieve this, a qualitative exploratory approach was employed to uncover context-specific factors and assess the relevance of existing tourism value formation theory within the multisensory mixed-reality tourism environment. As part of Research Phase 1, focus group interviews were conducted with visitors to gather data. These interviews were instrumental in addressing the third objective, which aimed to examine the circumstances influencing value formation through visitors' perceptions of the multisensory mixed-reality tourism environment.

The qualitative findings obtained from the focus group interviews were integrated into a theoretical model (Figure 3.2). To validate this model and gain further insights into the influence of multisensory mixed-reality signals on tourist behaviour in the context of multisensory mixed-reality tourism, a survey was conducted in Research Phase 2. A total of 317 survey responses were collected from visitors at a multisensory mixed-reality tourist destination. This phase of the study served to validate the proposed model and provided valuable information on the impact of multisensory mixed-reality signals on tourist behaviour. By validating the survey using structural equation modelling, the fourth objective was accomplished, which was to present a novel theoretical model representing the multisensory mixed-reality value formation in a multisensory mixed-reality tourism attraction and to provide recommendations to destination and attraction and MR developers/designers. Figure 5.1 provides an overview of the entire data collection process.
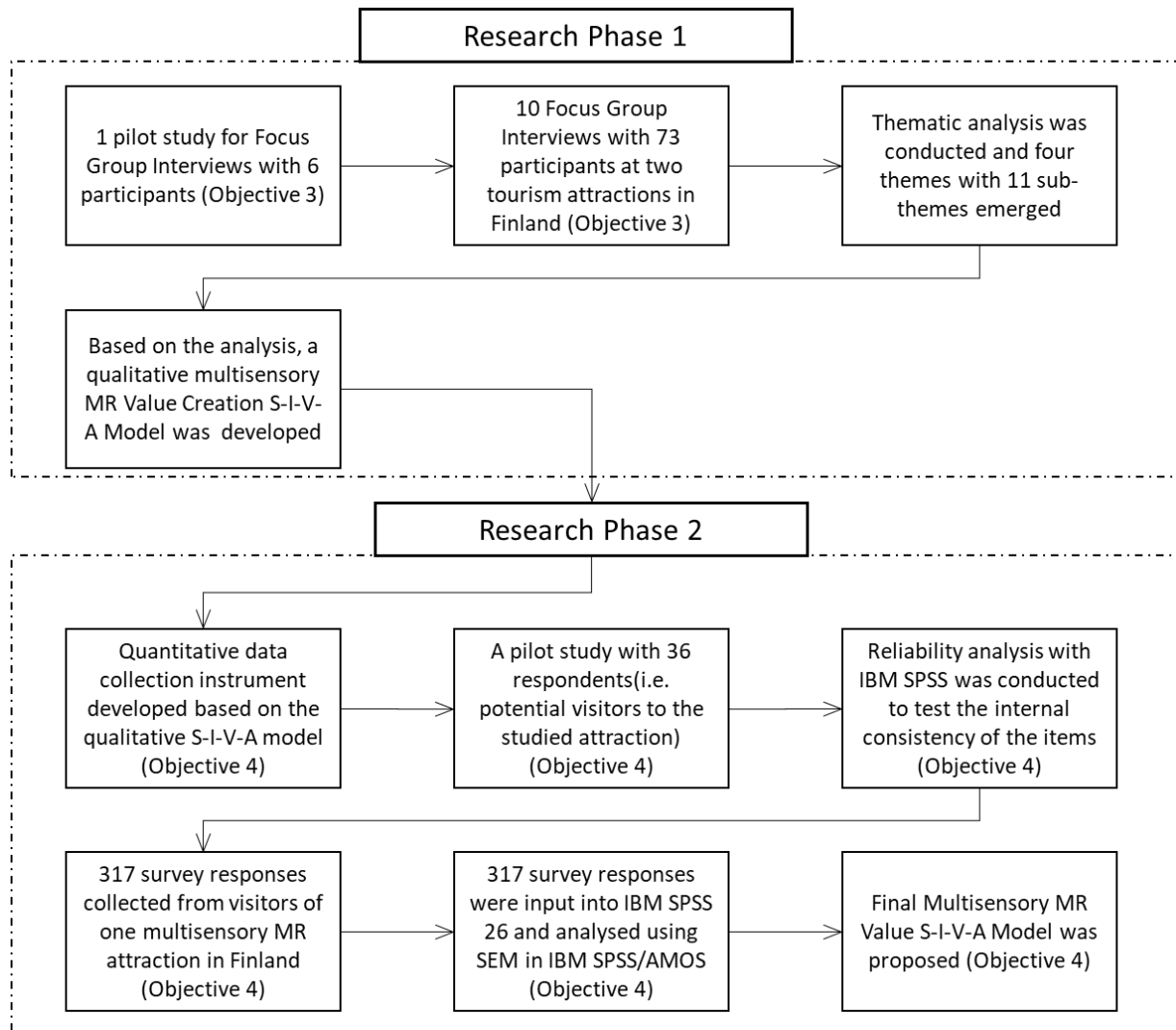
Figure 5.1 Summary of the data collection procedure (Source: Authors' own)

5.4.   Research Phase 1: Focus Group Interviews

As explained in the preceding section, abductive reasoning is utilised in this study. The abductive method permits the building of a value creation model based on current theory, followed by the design of future research to test the model in a Finnish tourist setting (Henderson, 2011). Abductive reasoning, a form of logical inference, aims to find the simplest and most plausible explanation for an observation or set of data. Unlike deductive reasoning, this approach generates a plausible conclusion without providing complete confirmation. As a result, abductive conclusions often contain a degree of uncertainty or doubt, which is expressed through terms such as "best available" or "most likely" (John et al., 1994). To identify the most probable scenarios, it is necessary to examine the implications and outcomes of multisensory mixed-reality settings, as well as the responses of tourists to such environments. Therefore, the responses and perceptions of visitors participating in a multi-sensory, MR experience will be measured at two Finnish tourist locations. These settings were selected because they are the only technology-enhanced multisensory mixed-reality experiences available in Finland for tourist purposes. Multisensory mixed-reality environments utilize 3D image projections and sensory stimuli to create immersive atmospheres.

To achieve objective 3, to study the antecedents of value development in a multisensory mixed-reality tourist environment, ten focus group were conducted using stratified random sampling. The stratified random selection highlights the subgroups of visitors and helps the comparison (Creswell, 2007:158), and is deemed suitable due to the visitors' easy access to both sites (Saunders et al., 2007:254). To ensure representative participation, suitable pre-screening criteria was applied to select diverse focus groups consisting of both male and female participants, including Finnish and international visitors. Conducted in English, the focus groups yielded valuable insights into participants' feelings, beliefs, experiences, attitudes, and values (Lutenbacher et al., 2002), enabling a comprehensive understanding of the intricate multisensory tourist experiences within a mixed reality tourism environment (Lindroth et al., 2007). Although saturation has been identified as the primary factor of the focus group sample size (Krueger and Casey, 2014), and while

Guest et al. (2017:16) believe that two to three focus groups will likely cover at least 80% of a topic's themes, ten focus groups were deemed appropriate for this investigation. To ensure comprehensive insights, the focus groups were structured into two distinct sections, allowing for a comprehensive understanding of participants' perspectives. The first part of the session took place before the participants engaged with the multisensory mixed-reality environment, while the second part occurred immediately after the experience, capturing their immediate impressions and reflections. This allowed for a comparison of the antecedents of tourist value prior to and following exposure to a multisensory mixed-reality tourism setting. Therefore, each participant attended two sessions, one prior to the experience and the other following it.

5.4.1. Focus Group design

Qualitative Research Methodology, a naturalistic study design proposed by Erlandson, Harris, Skipper, and Allen (1993), was selected as the data collecting approach due to the necessity for detailed descriptions and researcher-participant cooperation. Specifically, this research used interviews with focus groups. The focus group method was chosen because it complements the paradigms of postmodern ideologies. Focus groups incorporate dynamic participant-to-participant interaction and highlight the social and collectivist aspect of visitors' experiences (Kitzinger, 1994, 1995). As the empirical data was gathered through focus-group, one must be aware of the methodological advantages and disadvantages of employing this technique for data gathering. Frequently cited advantages of the interview approach include the ability to gather a great quantity of information rapidly and the opportunity for fast follow-up, clarification, and further inquiries. Even though the interview itself is unstructured, Kwortnik (2003:119) emphasises the significance of situating the interviews within an overall research topic or issue context. Hence, the provided conceptual framework formed the foundation for the focus group discussions. However, there are various methodological challenges to consider. Conducting effective in-depth interviews necessitates establishing a comfortable and collaborative environment, as well as minimizing participant apprehension through Skillful interviewer techniques. It is crucial for the interviewer to

possess strong listening skills, establish personal connections, and effectively close the conversation with relevant questions. Additionally, the interviewer must remain vigilant about the quality of the collected data, being mindful of potential personal biases consciously or unconsciously introduced during the interview process (Marshall and Rossman, 1989). When evaluating data gathered through focus groups, it is necessary to consider the advantages and limitations inherent in this research approach.

In this study, an abductive technique to qualitative data analysis was utilised. The researcher has initially been acquainted with all accessible data by reviewing interview transcripts. The study of qualitative data has blended parts of open coding (Straus and Corbin, 1990), axial coding, and selective coding, but not in their original form (e.g. Altinay and Paraskevas, 2008). In contrast to open coding, which splits the data into ideas and categories, axial coding reassembles them in novel ways by establishing explicit linkages in order to comprehend the phenomena and uncover causal ties between the various categories and subcategories. Selective coding entails both open and axial coding but seeks to comprehend the interrelationships and improve the initial framework by reviewing the coded statements and eventually enclosing the theoretical framework. A variety of coding methods is utilised to ensure a flexible interpretation of the examined phenomena. Real samples of the findings (such as comments, paraphrases, and quotations) are supplied inside the findings to clarify the topic.

Ten focus group discussions were undertaken with 73 guests to examine their perspectives on value formation; six were held at the Santa Claus Office in Rovaniemi on 18-19 December 2019 and four were held at the Snowpanda House in Ähtari Zoo on 11-12 February 2020. From the conversation transcripts, the most significant topics, the most notable quotes, and any unexpected discoveries were extracted and will be reported in the results. According to Patton (2002:53), the inclusion of a wide range of extremes in a chosen category would increase the chance of accurately characterising the phenomena. In order to limit the possibility of obtaining conclusions exclusive to a single place or tourism environment, data were collected from visitors in two genuine tourism attraction with diverse features, locations, and backgrounds. This non-probabilistic sample allowed

the researcher to utilise stratified sampling to increase the likelihood of a more precise description of the phenomena. The sampling technique will be elaborated upon in the subsequent description of the data collecting procedure, along with an explanation of why the selection of this diverse sample's aggregate responses may be regarded as a generalizable mean.

Concurrently, the abductive method permits the construction of a value creation model based on existing theory, followed by the design of future research to test the model in a Finnish tourist setting (Henderson, 2011). To achieve objective 4, ten focus groups were conducted at XRE environments using stratified random sampling. The stratified random selection highlights the subgroups of visitors and helps the comparison (Creswell, 2007:158), and was deemed suitable owing to the visitors' easy access to both sites (Saunders et al., 2007:254). To ensure the inclusivity of each focus group, specific criteria were employed during the pre-screening process to ensure a diverse representation of participants, including both males and females as well as Finnish and international visitors. Conducted in English, the focus groups aimed to capture valuable insights regarding the participants' emotions, beliefs, experiences, attitudes, and values, as documented by Lutenbacher et al. (2002). In line with the abductive methodology employed in this thesis, the thematic analysis of focus group conversations incorporated both predetermined topics derived from theory and a conceptual model previously presented. Additionally, the study utilized a latent approach that involved interpreting the subtext and underlying assumptions embedded within the data, following the methodology outlined by Braun and Clarke (2006).

The focus group discussions took place in the conference room of the chosen attractions, which served as a convenient and central location. The relaxed setting of a circular table, casual seating arrangement, and attraction-themed decorations created an atmosphere conducive to open and comfortable discussions. The expectations for the focus group procedure were defined, such as: everyone has an opportunity to speak, and you do not need to raise your hand to speak. The one-hour focus group was divided into two sessions, separated by a 1-2-hour interval during which participants investigated the

attraction. As a researcher, the author acted as facilitator for the focus groups (as suggested by Morgan et al. 1998). Previous experiences at amusement parks, touristic places, museums, or recreational venues served as conversation starters and as examples of how experience value is created. In addition, themes and discussion topics drawn from the conceptual framework were used to guide the discussion (Table 5.2).

The purpose of the semi-structured interviews with visitors was to uncover themes that emerged from their responses to the multisensory mixed-reality environment cues in the context of tourism attraction. In tourism research, interviews are useful for capturing the ideas, thoughts, and experiences of participants in their own words, and they give voice to the tales of individuals who are normally marginalised in traditional, quantitative survey-based studies (Weeden, 2005). The interview approach allows tourism researchers to obtain a better insight of visitor behaviour, experiences, and perspectives, as well as address issues in a manner that is not possible with many quantitative methods (Dwyer et al., 2012). This method is seen most useful for gaining a thorough understanding of tourism-related topics in which changes in perceptions, attitudes, impacts, behaviours, and practises are anticipated, feasible, or significant (Picken, 2017). The interview was performed in four parts in accordance with Morgan et al. (1998) 'funnel method' for focus group discussions.

The participants were provided with a thorough explanation of the study's objective and were informed about interview recording, confidentiality, and anonymity before obtaining their informed consent (Step 1). In Step 2, each participant was asked to recall their most memorable travel experience. Following these recollections, the discussion progressed to the most relevant questions (Step 3). Subsequently, the participants embarked on a tour of the multisensory mixed-reality attraction, experiencing it first-hand, before returning to the conference room. In the final phase (Step 4) of the discussion, participants were encouraged to share any additional comments or pose further questions based on the previous themes discussed and their experience.

5.4.2. Population for the Focus Group Discussions

The multisensory Mixed Reality Zoo will be built to Ähtäri Zoo. Ähtäri Zoo was opened in 1973, and it is located in the middle of Finland, approximately 160 km from Tampere. Ähtäri Zoo is the first natural wildlife park of its kind in Finland. Set in 60 hectares of spacious and natural environment and forest, the aim of Ähtäri is to provide natural environment for the animals with varied terrain and flora. The surroundings offer an excellent opportunity for the implementation of the basic principles of the European Association of Zoos and Aquaria (EAZA) and maximises the best possible circumstances for the delivery of best to care for the captured animals (Ähtäri ZOO, 2017.) There is a popular holiday resort next to the zoo which provides excellent camping facilities, as well as the Hotel and Spa Mesikämmen, and there is also a convenient train service to the wildlife park Zoo stop. The zoo is spread in 60 hectares, in a versatile natural environment, surrounded by different terrains and vegetation. During the peak season, (June 6th – August 15th), there is a fixed schedule with guided explanation about the different animals, conducted by animal keepers. The experience, can take from 2-4 hours, depending on how deep visitors want to explore, see and read about the animals.

With approximately 170 000 yearly visitors, Ähtäri Zoo is the most important attraction of the Ähtäri Zoo park is located to middle Finland 3,5 hours from Helsinki by car. Besides the neighbouring hotel, Ähtäri Zoo also offers accommodation. The location is on the edge of the lake where guests enjoy amazing view to the lake, have a swim and even experience the traditional lakeside sauna. The camping site is equipped with modern guest facilities and offers variety of recreational activities. The statistics for yearly nights spent in Ähtäri region, in relation to whole of Finland are presented in table 5.1. below.

Table 5.1 Yearly nights spent and arrivals by country of residence by Region (Statfin)

		Nights spent			
		2015		**2016**	
WHOLE COUNTRY (FIN)	**Total**	19 738 123		18 846 065	
	Domestic	14 227 773	*72 %*	13 733 489	*73 %*
	Foreign	5 510 350	*28 %*	5 112 576	*27 %*
RE South Ostrobothnia (Zoo region)	**Total**	**670 916**		**666 032**	
	Domestic	642 323	*96 %*	626 420	*94 %*
	Foreign	28 593	*4 %*	39 612	*6 %*
C 698 Rovaniemi (Santa's office region)	**Total**	**470 382**		**456 617**	
	Domestic	212 239	*45 %*	212 486	*47 %*
	Foreign	258 143	*55 %*	244 131	*53 %*

The Santa Claus Office in Santa Claus Village, Rovaniemi, northern Finland, serves as the second multisensory mixed-reality setting. It is a renowned tourist destination attracting international visitors and has been studied as a postmodern tourism phenomenon by Pretes (1995; 2007). The Santa Claus Village encompasses a variety of businesses, including activities, souvenir shops, and dining options, all centred around the theme of Santa Claus and Christmas. With an annual visitor count of approximately 300,000, the highlight of the village is the Santa Claus Office, where visitors can meet Santa Claus and capture photos with him. The Santa Claus Post Office, which receives a significant volume of letters from across the globe, adds to the attraction's popularity. The Santa Claus Office sees nearly 200,000 foreign guests each year, making it a daily and highly sought-after experience.

5.4.3. Stratified sampling and strata formation

For the purpose of achieving objective 3 and developing the value framework for quantitative analysis, stratified random sampling was employed to choose participants for the 10 focus groups. Stratification is the process of dividing a population into homogenous subgroups prior to sampling. The resulting strata should define a population segment. The stratified random selection highlights the subgroups of visitors and helps the

comparison (Creswell, 2007), and is deemed suitable owing to the visitors' easy access to both sites (Saunders et al., 2007). To reflect the diversity of the population, the researcher intended to include individuals from a variety of subgroups, such as age or nationality, depending on their proportion to the overall population, as described above. Thus, one may argue that a stratified survey is more representative of the community than a simple random sample or systematic sample. The goal of stratification is to increase the accuracy of the sample by minimising sampling error. (Botev, and Ridder, 2017.)

Based on visitor data (Visitory, 2020a; Visitory, 2020b), four strata were defined based on gender, age, and place of residence. The formed strata are illustrated in figure 5.2.

Group 1	Group 2	Group 3
•Nordic male, AG 1-3	•Nordic female, AG 1-3	•European, AG 1-4 (non-Finnish)

Group 5	Group 5
•European , AG 5-9, (non-Finnish)	•International
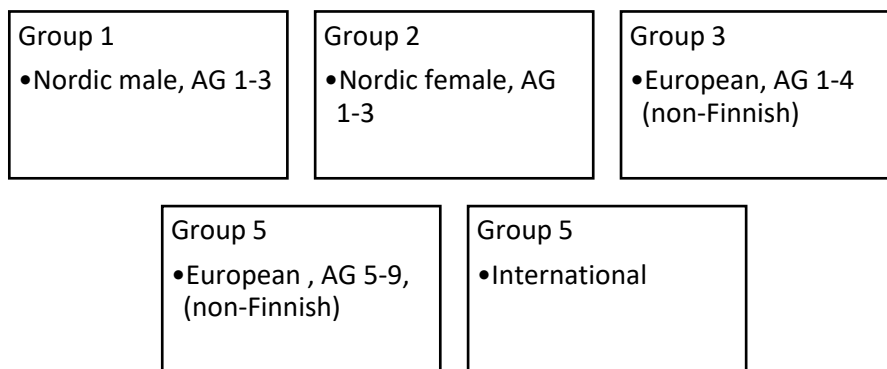
Figure 5.2 Designated strata for sampling based on participants' gender, age and place of origin

By implementing suitable pre-screening criteria aligned with established strata, a diverse and inclusive participant pool comprising both male and female individuals, as well as Finnish and international visitors, was ensured for each focus group. Conducted in English, these focus group discussions yielded valuable insights into participants' emotions, beliefs, experiences, attitudes, and values (Lutenbacher et al., 2002). This rich data can be utilized to discern and comprehend the intricate nature of multi-sensory tourist experiences within the context of a mixed reality tourism environment (Lindroth et al., 2007: 55). Although saturation has been identified as the primary factor of the focus

group sample size (Krueger and Casey, 2014), Guest et al. (2017: 16) believe that two to three focus groups will likely cover at least 80% of a topic's themes. Ten focus groups are therefore regarded acceptable for this investigation. Due to the novelty of multisensory mixed-reality environment, group sessions were divided into two parts: the first part will be held prior to the experience, and the second part will be held immediately after the experience in order to compare the antecedents of tourism value before and after experiencing the multisensory technology-enhanced multisensory mixed-reality tourism environment. Therefore, each participant joined one of the focus groups conducted prior to the event and one of the focus groups conducted following the experience. The data collected from the focus groups underwent thematic analysis, enabling the identification of the factors influencing tourist value creation and the subsequent development of the proposed framework delineating the stages of value formation in tourism.

5.4.4. Interview instrument design

The interview instrument had a total of ten discussion topics presented in table 5.3. Initially, participants were provided with an explanation of the concepts of multisensory stimuli and mixed-reality within the context of tourism attractions. Following this, an overview of the study's objectives was given. It is generally advised to begin the interview with less sensitive questions prior to delving into more specific topics. In this study, the participants were given the opportunity to describe an experience that they truly enjoyed, to allow the participant to become acclimated to the focus group procedure, create rapport, and demonstrate an interest in the interviewee (Morgan et al., 1998). Failure to develop rapport may cause interviewers to be hesitant to answer all questions openly and truthfully (Friesen et al., 2010). The last questions gave the participant the opportunity to raise any remaining questions and/or bring up any other topics they felt had not been addressed. The primary interview questions were organised by topic, with simple and personal question asked first. Derived from literature driven conceptual framework (figure 3.2), the interview consisted of 10 themes to elicit more thorough and complex replies to crucial issues. The primary topics that were thoroughly investigated were participants' response to the stimuli in the multisensory mixed-reality environment and how this can

impact their perceptions of received value and behavioural intentions. Furthermore, the study explored the role of immersion and the overall experience. Towards the end of the interviews, participants were given the opportunity to provide any additional comments or ask further questions.

Table 5.2 The Focus Group Discussion Themes (Source: Author's own)

Focus Group Discussion Themes
The role of:
Learning in customer experience
Inspiration in customer experience
Functionality of the built environment in customer experience.
Aesthetics of the built environment in customer experience.
Harmony of the built environment in customer experience.
Soundscape (the quality, style, source etc. of the audible sounds).
Tastescape (e.g. the style, feeling, quality or the narrative of the edible elements) in customer experience.
Immersion (i.e. the level, intensity or feeling of being a part of the surrounding environment, experience) in customer experience.
Social bonding (e.g. being able to deepen/build new relations, indulge in deep conversation, partnering etc.) in customer experience.
Memory formation in customer experience.
Is there an element/source of?
What kind of role does it play?
How does it influence your perceptions?
You may use free expressions, anecdotes, importance meters/comparison.

5.4.5. Thematic Analysis

This section provides a comprehensive discussion on the use of thematic analysis to analyse the interview data. Thematic analysis is a systematic approach that involves identifying key themes, categorizing textual material, and interpreting the data to uncover patterns and theoretical structures (Mura and Sharif, 2017). Thematic analysis is particularly effective in capturing the complexity of meaning in textual data, making it a suitable technique for identifying emerging themes in the exploratory qualitative interviews.

Each interview was recorded and manually transcribed into a separate Word document and analysed using theme analysis in NVivo 12 software. Using thematic analysis enabled the discovery of themes shared by participants' responses (Mura and Sharif, 2017). The analysis began during data collection. Emerging patterns and significant and reoccurring themes discussed were listed during the interviews. The interviews were then

analysed according to six phases recommended by Walters (2016). During analysis, the researcher often toggled between the complete data set, the coded extracts of data being analysed, and the analysis of data being created, even though the data are addressed sequentially, data analysis was not a linear, sequential procedure (Walters, 2016). Throughout the data collecting procedure, the researcher iterated between the various levels of analysis (Braun and Clarke, 2006).

The researcher first gained familiarity with the interview transcripts by reading them multiple times and noting their thoughts along the way (Walters, 2016). According to Boyatzis (1998), a common approach in thematic analysis is to extract themes from existing literature. In line with this, a theoretical approach and engagement with the literature prior to data analysis can enhance the analysis process by sensitizing the analyst to nuanced data characteristics (Morgan et al., 1998). For the visitor interviews, the primary discussion themes were informed by the existing literature and tailored to the specific context of multisensory mixed-reality experiences. This approach ensured that the themes captured relevant aspects related to learning and inspiration in tourism experiences, the atmospheric elements of the tourism attraction, the integration of immersive technology in tourism environments, the psychological responses of visitors to multisensory stimuli (immersion), and their perception of value and behavioural goals. By grounding the analysis in the literature and adapting it to the specific research context, the thematic analysis provided a comprehensive exploration of the data. The purpose of the exploratory interviews was to identify emergent subthemes within these principal themes.

The digital audiotape of the focus groups was transcribed by the researcher. Verbatim typed transcriptions of the recordings were then transferred to NVivo 12plus software. A limitation of transcribed data is that nonverbal information is missing. To overcome the limitations of transcription, such as the inability to capture nuances like emphasis and intonation (Polkinghorne, 2005), the researcher supplemented the data with notes on non-verbal behaviour and emotions observed during the discussions. Additionally, the

transcriptions underwent a thorough review by the researcher, ensuring accuracy and completeness. This review took place a few weeks following the initial transcription.

Before importing the transcripts into NVivo 12, the researcher marked significant remarks within the text. To ensure rigor and comprehensive coding, this process was repeated three times, both before and after the import, ensuring that all relevant codes and statements were identified. Additionally, the highlighted statements were coded using the program to further enhance the analysis. Some topics were discussed more by participants (extensiveness) and some comments were made more often (frequency) than others. These topics could be more important or of special interest to participants. Comprehensive list of most frequently mentioned words can be found in appendix B. A descriptive table of respondent demographics is presented in table 5.3.
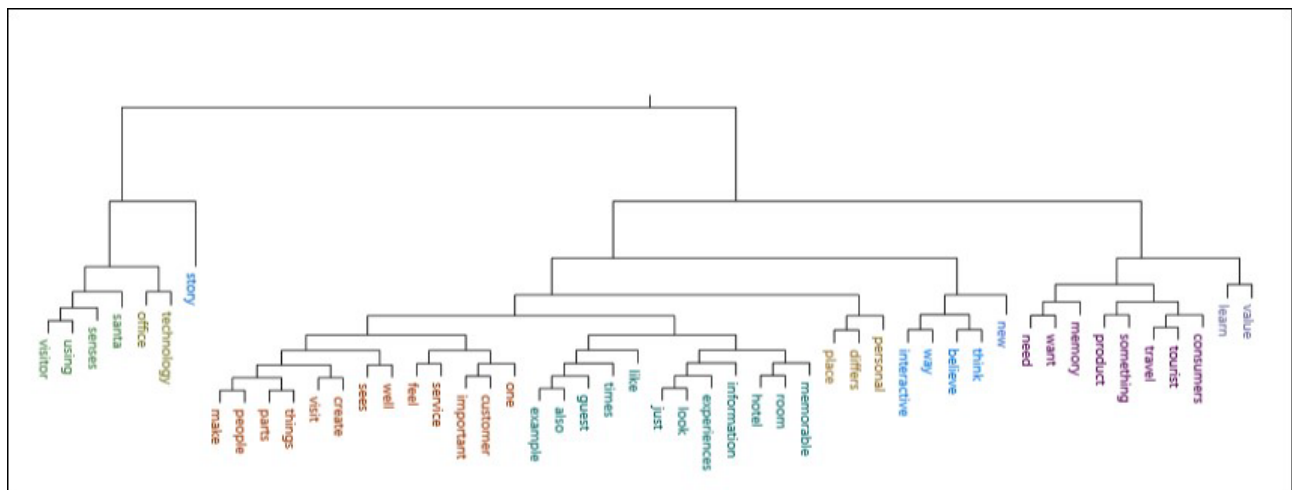
Figure 5.3 Top 50 (stemmed) words within the focus group discussions

Based on the discussion transcripts, a list of overarching themes, or domains was identified. During the first reading, the original domains developed by the researcher were revised through the recursive process which entailed: (a) returning to the raw data; (b) identifying categories, or core ideas; (c) comparing one category with another; (d) recognizing when categories seemed to interact and/or subsume each other (Fassinger,

2005) (see Table 1 for the domains). Core ideas were abstracted from the transcripts and were worded as closely to the participants' responses as possible.

Themes and subthemes were identified through the analysis of participants' responses, which is a subjective process due to the interpretation involved. In order to ensure objectivity and enhance the reliability of the findings, a reliability check should be conducted. This check involves examining the consistency of the coding or theme assignment across different researchers or through independent review. By conducting a reliability check, researchers can strengthen the validity of their claims about the prevalence of attitudes or themes in the data.

The discussions encompassed a diverse range of concepts, necessitating the use of a conceptual framework to establish overarching codes for organizing the data. These higher order codes, derived through abductive reasoning, often aligned with specific interview questions and were represented as parent nodes in NVivo. When coding the direct quotations, the major themes were verified or defined, and sub-themes began to emerge under each major topic, including sub-themes confirmed in past research and sub-themes unique to this study's environment. Subthemes were developed inductively, without aligning them to a pre-existing coding framework. These subthemes were represented as child nodes in NVivo (Figure 5.4). Detailed notes in the codebook were maintained to document the process of subtheme development and contribute to confirmability (Nowell et al., 2017).

Nodes		
Name	Files	References
⊟ ◯ Experience	2	37
◯ Co-created experience	1	14
◯ Engaging experience	1	2
◯ Immersive experience	1	5
◯ Interactive experience	2	6
◯ Managing experiences	1	6
◯ Memorable experience	1	14
◯ Multi-sensory experience	2	19
◯ Perceived experience	1	1
◯ Personalized experience	1	8
⊞ ◯ Technology enhanced experience	2	30
⊟ ◯ Immersion	1	1
◯ Detached immersion	1	1
◯ Mediated immersion	2	6
◯ Partisipative immersion	2	6
◯ Psychological immersion	2	3
⊟ ◯ Storytelling	1	8
◯ Emotional story	1	2
◯ Immersion into the story	1	2
◯ Modes of storytelling	2	6
◯ Storified experience	1	7
⊟ ◯ Value	1	7
◯ Cost_Sacrifice Value	1	11
◯ Experiental_Hedonic Value	1	30
◯ Functional_Instrumental Value	1	8
◯ Symbolic_Expressive Value	1	14
◯ Value related miscellanious	1	12

Figure 5.4 Initial coding framework in NVivo 12 Plus software with parent nodes derived from conceptual framework

5.4.6. Similarity of coded themes and data presentation

NVivo software was utilized to create a Pearson correlation aided cluster matrix, which allows for the evaluation of the level of similarity between pairs of items in a cluster diagram. This matrix calculates a similarity index for each item pair based on the chosen similarity metric, employing the Pearson correlation coefficient (-1 = least similar, 1 = most similar). Using this similarity index, NVivo groups the items into clusters using the complete linkage (farthest neighbour) hierarchical clustering algorithm. The outcomes of the cluster analysis are presented as a dendrogram, which is generated using the same hierarchical clustering technique. (Nvivo, 2020)

The initial coding framework, driven by the literature, comprised four domains with various subthemes. The extraction of results from the transcriptions adhered to Morrow's (2005) guidelines. To support the investigator's interpretations, quotes were included following Morrow's model (Tuason et al., 2007). The analysis yielded the following domains: (a) defining the elements of touristic experience, (b) dynamics of immersive experience, (c) the role of stories, and (d) value formation. Table 5.4 visually presents these four domains and their respective clustered themes. The data is organized by domain and further consolidated into new concepts and themes.

Each domain is supplemented with participant quotations, and the data is presented using coded aliases. The selection of Focus Group outputs was influenced by both the literature discussed in chapters 2 and 3, and highlighted in Table 2.5, and the frequency of similar topics mentioned in the discussion. Thus, in each section, at least one quotation has been highlighted to represent the most valuable and meaningful expression of the analysed theme.

In conclusion, a comprehensive report was compiled on the substance and significance of the themes identified in the data set (Ryan & Bernard, 2000). Additionally, a commentary was provided based on the relevant literature examined throughout the study.

5.4.7. Qualitative Framework Development

Drawing upon prior research (e.g., Khoo-Lattimore et al., 2019; French et al., 2017), a set of 10 hypotheses was formulated, taking into account the seventeen sub-themes identified from the visitor interviews. These sub-themes were then converted into variables, forming a qualitative model of S-I-V-A value generation (Creswell and Clark, 2006). The constructed model was subsequently subjected to evaluation in the subsequent phase of quantitative research. The qualitative data supported with accomplishing Research Phase 1 of the mixed method approach and guided the development of items and scales for the quantitative survey instrument (Creswell, 2006). To measure the hypotheses, pretested, and validated items were used and modified from prior studies (5.4). During Research Phase 2 of the mixed method approach, the developed survey instrument was tested, modified and applied to larger sample (Creswell, 2006). These findings are presented in Chapter 8.

5.5.   Research Phase 2: Quantitative Survey

The first phase of research, conducted by the author, addressed objective three, which aimed to investigate the factors influencing tourist value generation in a multisensory mixed reality environment. In the second phase, the author will employ a survey method to examine the behavioural reactions of visitors to the multisensory mixed reality environment. The subthemes found in the qualitative research were incorporated as constructs into the suggested research model. To assess the validity and reliability of the measurement methodology, a pilot study involving 36 potential visitors to a multisensory mixed reality attraction was conducted (French, 2017). Once the survey instrument was validated and developed, a sample of 317 visitors to the Santa Claus Office, a multisensory mixed reality attraction, was surveyed to evaluate the structural model and hypotheses (French, 2017). Prior to the collection of survey data, informed permission was obtained from each participant (appendix E).

5.5.1. Survey Process

Surveys are a widely used technique in social science research, involving the collection of information by asking individuals or businesses questions either face to face, over the phone, or through distributed questionnaires (So, King, and Sparks, 2014). As the focus is on gathering responses to a set of predetermined questions, this method is often associated with a quantitative approach (Adams et al., 2014). So, King, and Sparks (2014) provided guidance on the survey process to ensure its proper design and construction. Figure 5.4 depicts a high-level summary of the planned survey method for this project.
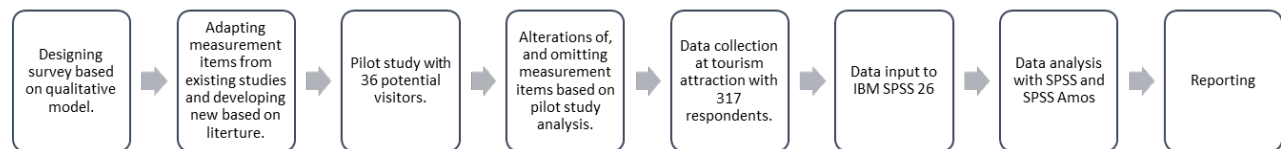
Figure 5.5 The Survey Process

Given the limited existing research on multisensory mixed reality (MR) environments specifically focused on value formation, this study draws upon insights from studies conducted in the field of virtual reality (VR) and gaming experiences. Previous research in VR (Disztinger et al., 2017, for example) has successfully employed survey methodologies, highlighting their appropriateness for investigating similar research questions in the context of multisensory MR environments. Kim and Hall (2019), for instance, collected 469 responses from Korean VR users in order to investigate hedonic motives in VR tourism using 26 questions. In addition, this study utilised the survey methods of past game immersion research. For example, Brockmyer et al. (2009) created a 19-item Gaming Engagement Questionnaire (GEQ), and Cheng, She, and Annetta (2015) created the Game Immersion Questionnaire (GIQ) to assess engagement and immersion in game experiences. These measuring items were evaluated and used to develop the research instrument for this study.

5.5.2. Instrument design

This study used a tourist-based value formation questionnaire based on actual visitors' perspectives, their experiences, and on-site research at the multisensory mixed-reality tourist sites under consideration (Sheng and Chen, 2013). Formulation of scales, evaluation of content validity, and a pilot test were all components of the instrument development process. The use of Likert scales is prevalent in social science research, as demonstrated by So, King, and Sparks (2014). Likert scales provide a structured approach for respondents to indicate their level of agreement or disagreement with specific statements or items. In this study, a 7-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree) was employed. This scale allowed participants to express their opinions and perceptions on various constructs related to tourism experience, atmospherics, and value.

Similarly, the self-report technique is commonly utilized to capture visitors' emotional responses in research, as highlighted by Correia et al. (2017). Through self-reporting, participants are asked to provide their own subjective assessment or evaluation of their emotional experiences. In this study, visitors were invited to reflect on their emotional responses within the context of the multisensory mixed reality environment. By employing the self-report method, valuable insights into visitors' emotional states and reactions could be collected and analysed.

Defining the domain of constructs is the initial stage in designing an instrument with content validity. Further investigation of the area of multisensory mixed-reality tourist value construction was judged necessary in the present study due to the extremely fragmented and inconsistent conceptualizations of the phenomena found in the relevant literature (So. King, and Sparks, 2015). A literature review identified conceptual definitions deemed appropriate for the investigated constructs and led to the production of an initial pool of appropriate items. Two different panels then evaluated the content validity of the items. Second, content validity is the capacity of selected items to reflect the idea in measure variables ((So, King, and Sparks, 2014). The content validity of a multisensory

mixed-reality tourism destination was determined using the perspectives of researchers, MR/VR developers, and prospective tourists (Zamanzadeh et al., 2015). In this study, the three project supervisors with experience in the respective disciplines functioned as subject matter experts. The MR/VR professionals were selected from AR/VR development businesses based in Finland. In addition, identifying potential visitors as specialists ensured that the demographic for whom the tool is intended was represented (So, King, and Sparks, 2014). In addition to providing information on the representativeness and clarity of items, the expert panel's opinion was helpful in guiding the design of the instrument through suggestions for improvement (Polit, Beck, and Owen, 2007).

Table 5.3 Measurement Items with Related Literature. (Source: Author's Own)

Construct		Measurement Items	References
Atmospherics	1	Unattractive - Attractive	Mattila and Gao (2017)
	2	Unlively - Lively	Mattila and Gao (2017)
	3	Boring - Stimulating	Bitner (1992)
	4	Unexciting - Exciting	Bitner (1992)
	5	Conventional - Creative	Bitner (1992)
	6	Unremarkable - Impressive	Bitner (1992)
	7	Difficult to navigate - Easy to navigate	Bonn et al. (1992)
	8	The built environment and staging promoted a perception of quality.	Bitner (1992)
	9	The technology, and the analog elements of the environment were aligned and created an uniform experience.	Buhalis et al. (2019)
	10	The technology enhanced atmospherics, hence the overall combination of the building, interior design, and the 3D projections, displays and other mixed reality elements influenced my emotional states and feelings.	Roggeveen et al. (2020)
	11	The mixed reality technology promoted a perception of quality.	Bitner (1992)
Multi-sensory experience	1	MR technologies along the journey allowed me to use my senses more thoroughly.	Trunfio and Campana (2020)
	2	MR visual (*projections, screens, lights and moving images/patterns*) complemented to the aesthetic interior design.	Vi et al. (2017)
	3	MR sounds (*wind, snow crunch, whispers, chatter, carols*) intensified the experienced narrative storyline.	Vi et al. (2017)
	4	MR haptics (*touch- and movement activated sounds and visuals*) increased the involvement with the environment.	Vi et al. (2017)
	5	MR scents along the journey activated my memories of christmas.	Vi et al. (2017)
	6	MR technologies along the journey were emotionally engaging and stimulating.	Vi et al. (2017)
Interaction	1	The Santa Claus Office experience had a high degree of interactivity.	Chen and Rahman (2018)
	2	The environment allowed me to choose my level of engagement with the experience.	Coudonaris and Staphit (2017)
	3	The attraction enabled me to interact with environment, the story, or other visitors.	Chen and Rahman (2018)
Narrative engagement	1	The stories extended my knowledge of the theme and the characters.	Richardson et al. (2018)
	2	The story elements satisfied my intellectual needs.	Mei et al. (2018)
	3	The exiting and mysterious elements of the story intrigued my imagination.	Sheng and Chen (2013)
	4	The stories and characters triggered my emotional states.	Gravili et al. (2017)
	5	The mixed reality technology and multi-sensory stimuli assisted me to understand the overall narrative storyline, characeters and theme.	Trunfio and Campana (2020)
Immersion	1	During the visit, I felt that sights, sounds and smells surrounded me.	Kastenholz et al. (2020)
	2	The interactive possibilities increased my feeling of presence.	Slater (2018)
	3	I felt that my senses were in high alert during the experience.	Brockmyer et al. (2009)
	4	After experiencing the multi-sensory mixed reality Christmas experience, I felt like I came back to the "real world" after a journey.	Cheng et al. (2015)
	5	The multi-sensory mixed reality elements (scents, sounds, sights) increased my emotional involvement.	Lee et al. (2019)
	6	During the visit, I lost track of time.	Lunardo and Ponsignon (2020)
	7	During the visit, I felt like being part of the story.	Calogiuri et al. (2018)
	8	I ended up spending more time in the attraction than I had planned.	Lunardo and Ponsignon (2020)
Value (functional)	1	This attraction offered a service with right features and attributes.	Smith & Colgate, 2007
	2	This attraction offered an experience with superior outcome.	Smith & Colgate, 2007
	3	This attraction offered high quality experience.	Smith & Colgate, 2007
	4	This attraction offered a usefull experience.	Smith & Colgate, 2007
Value (hedonic)	1	This atractions had positive ambiance and atmosphere.	Smith & Colgate, 2007
	2	This attraction was quite attractive.	Smith & Colgate, 2007
	3	This attraction extended my knowledge of christmas.	Smith & Colgate, 2007
	4	This experience was fun, interesting and exiting.	Smith & Colgate, 2008
Value (symbolic)	1	This attraction has strong symbolism.	Smith & Colgate, 2007
	2	Visiting Santa Claus Office helps me express my attitudes, interests and opinions.	Smith & Colgate, 2008
	3	This attraction is considered prestigious.	Smith & Colgate, 2009
	4	This attraction has a reputation of being socially responsible.	Smith & Colgate, 2010
Value (eudaimonic)	1	The visit helped me to think about my skills and potential.	Lengienza et al. (2019)
	2	The visit helped me to grow as a person.	Lengienza et al. (2019)
	3	During the visit, I thought about the meaning of life.	Lengienza et al. (2019)
	4	During the visit, I reflected my own childhood.	Lengienza et al. (2019)
Value (sacrifice)	1	The services offered are generally positioned as "good deals".	Smith & Colgate, 2007
	2	A key benefit of the services and product offered at Santa Claus Office is their low cost.	Smith & Colgate, 2008
	3	The services of Santa Claus Office offered value in use.	Smith & Colgate, 2009
	4	The experience was easy to understand and explore.	Smith & Colgate, 2010
Behavioural intent	1	I intend to visit this place again.	Staphit and Coudounaris (2018)
	2	I am willing to recommend this attraction.	Staphit and Coudounaris (2018)
	3	I will encourage friends and family to visit this attraction.	Staphit and Coudounaris (2018)
	4	It is very likely I will visit other attractions utilising multi-sensory MR tehchnologies.	Staphit and Coudounaris (2018)

5.5.3. Pilot Study

To ensure the effectiveness of the upcoming study, a pilot test was carried out to assess the data collection instrument, sample recruitment method, and identify any potential research protocol issues, as recommended by Connelly (2008). Webropol, a survey hosting firm, was employed to develop and administer an online pilot survey. Invitations to participate in the survey were sent via email to potential respondents, encouraging their active involvement in the study. This pilot test aimed to refine the research procedures and gather valuable feedback before conducting the full-scale study. In light of the Covid-19 lockdown and travel restrictions that hindered data collection, the pilot research leveraged the same CRM database as the primary study to obtain potential respondent emails. Thabane et al. (2010) emphasize the importance of using the same respondent pool in the pilot project, ensuring its representativeness of the target research population and adherence to the same inclusion/exclusion criteria as the main study. By following this approach, the pilot study aimed to maintain consistency and validity in the data collection process, despite the challenges posed by the pandemic restrictions. While Nieswiadomy (2002) suggests that a pilot study can be conducted with a sample size of 10 participants, Hassan et al. (2006) recommend a larger sample size of 20 participants or between 10 and 30 individuals. The rationale behind this recommendation is that a larger sample provides practical benefits, including simplicity, ease of calculation, and the ability to test hypotheses more effectively. To meet the recommended range of participants outlined by Hassan et al. (2006) and considering the study's demographics and sample size criteria, a total of 36 visitors were selected for the pilot research, ensuring sufficient data for analysis. In accordance with guidelines, the survey questions were assessed to determine if they offered an appropriate range of responses and effectively captured the necessary information, as suggested by Peat et al. (2002). The next section will delve into a more detailed discussion of the outcomes derived from the pilot research.

The pilot data, obtained from 36 respondents selected from the same participant pool as the main study, were entered into IBM SPSS 26 for analysis. Descriptive statistics were then generated to accurately characterize and summarize the dataset, as recommended

by Hinton (2014). It should be noted that the demographics of the pilot participants are similar to those discussed in Section 5.5.4.

As mentioned in the previous section, the process of item development was discussed. To assess the internal consistency and reliability of the survey measurement items, Cronbach's alpha was employed. Cronbach's alpha is a commonly used metric for measuring scale reliability (Taber, 2018; Field, 2005). In this study, Cronbach's alpha was calculated for all 56 variables to evaluate their internal consistency. Reliability testing is commonly conducted when designing surveys that include multiple Likert scale statements. In this study, the survey consisted of several Likert scale statements, ranging from one to seven, where one represented "strongly disagree" and seven represented "strongly agree." In addition to reliability testing, exploratory factor analysis was employed to assess the usability of the survey tool, considering its experimental nature and the inclusion of specific measurement questions tailored for this study. Table 5.5 provides insights into the Cronbach's alpha values for the initial constructs and suggests potential methods for enhancing the internal consistency of the measurement items.

The scale demonstrated a high level of internal consistency with a Cronbach's alpha of 0.980 for the 57 items, based on the pilot sample of 36 participants. The initial 12 constructs exhibited the following Cronbach's alpha values:

Table 5.4 Pilot Study Cronbach's Alpha for Initial Constructs

Cronbach's Alpha for initial constructs:	α	Increased α	
Atmospherics (A):	,793	,832	*if question A7 (navigation) is deleted.*
Mixed Reality Atmospherics (MRA):	,787		
Multi-Sensory Experience (MSE):	,826		
Interaction (INT):	,866		
Narrative engagement (NAR):	,859	,862	*if question NAR2 removed (satisfied my intellectual needs).*
Immersion (IMM):	,932		
Functional Value (FVAL):	,889		
Hedonic Value (HVAL):	,905		
Symbolic Value (SVAL):	,834	,850	*if question SVAL1 removed (attraction has strong symbolism).*
Eudemonic Value (EVAL):	,720	,733	*if question EVAL4 removed (during the visit I reflected my childhood).*
Cost/Sacrifice Value (CSVAL):	,614	,722	*if question CSVAL2 removed (key benefit of visiting SC office is low cost)*
Behavioural Intent (BI):	,922	,939	*if question BI1 removed (I intend to visit this place again).*

5.5.4. Survey Population, Sample Size and Data Collection Process

Despite the benefits of online surveys, there are also substantial challenges. Among others, these include low response rates, scepticism about survey usage, survey length, privacy and security concerns, spam, and excessive questioning (Evans and Marthur, 2005). However, online surveys are extremely flexible. Surveys can be conducted using different methods, such as sending surveys through email with an embedded questionnaire, providing a survey link in an email, or inviting internet users to visit a website where they can participate in a survey. Specifically, valuable for this study was, due to Covid-19, that online surveys may be performed in a timely way, reducing the time it takes to send a survey into the field and gather data. Kannan et al. (1998) argue that the internet's speed and worldwide reach enable near real-time interactions with geographically different response groups.

Table 7.1 presents the demographic profile of the survey respondents. The collected data indicates that the visitor profile aligns with the customer relationship management

database of the attraction under study. Thus, the majority of respondents (61.2 percent) were female, and over 70% (67.3 percent) were between the ages of 35 and 64.

Because sample sizes in quantitative studies are generally significantly bigger than in qualitative research, statistical procedures that ensure representative samples can be utilised (Carey, 1993). A larger sample size reduces the likelihood of errors when generalizing findings to the population (Saunders et al., 2012). Given the scarcity of similar studies, previous research in the field of VR was referenced for comparison. These studies employed quantitative survey methods and included sample sizes ranging from 151 to 200 participants (Huang et al., 2016), with some even reaching up to 274 individuals (Shin, 2009). This allowed for a contextual understanding of sample size considerations within the broader research domain. In this study, with a sample of 317 participants, the formation of multisensory mixed-reality tourism value was examined. To ensure data completeness, respondents were required to answer all the questions in the survey before submitting the questionnaire, which was conducted using the Webropol 3.0 platform. This resulted in a total of 317 survey answers being analysed, which appears to be an adequate quantity based on earlier research with comparable focus indicated above.

All respondents had already experienced the multisensory mixed-reality Santa Claus office prior to completing the survey. Figures 4.1. and 4.2. depict the multisensory mixed-reality touchpoints along the visitor journey. Within the journey touchpoints, both time bending machine, and snowball had interactive elements, where the content, or the haptic stimuli was controlled with hand or body movement.

5.5.5. Data Analysis

The survey data was analysed using covariance-based (CB) SEM. SEM, a widely used statistical approach in social science and hospitality management research, allows for the analysis of theoretical structures and interactions between constructs (Ali et al., 2018). This method has been successfully applied in various studies, such as investigating consumer adoption of smart in-store technology (Kim et al., 2020) and exploring the relationship between soundscape and tourist satisfaction (Liu et al., 2018). Its versatility lies in its ability to analyse both linear and causal hypotheses based on theory, making it a valuable tool in marketing research (Statsoft, 2013). By utilizing SEM, researchers can visually examine the relationships between variables of interest, prioritize resources effectively, and improve customer service, enhancing overall marketing strategies. Because it permits the use of difficult-to-observe and quantify hidden variables, SEM is a valuable tool for doing business research (Wong, 2013). This study, in particular, used a CB-SEM method and was carried out using SPSS Amos 26 software. If the sample size had been smaller, the other structural equation modelling technique, PLS-SEM, would have been more appropriate (Wong, 2010; Hwang et al., 2010). Numerous researchers in marketing (e.g., Henseler et al., 2009) and behavioural sciences (e.g., Bass et al., 2003). In tourism and experience context, SEM has been used when examining the influence of atmospheric cues in museums (Loureiro, 2020), place attachment in tourism (e.g., Loureiro, 2014), and VR related consumer behaviour in tourism (e.g. Loureiro, 2020). As a result, this method was deemed the best for analysing value production in a technology-enhanced multisensory mixed-reality tourist setting. CB-SEM, unlike PLS-SEM, is a confirmatory strategy, which necessitates the definition of the entire theoretical model prior to data analysis (Assaker, Huang, and Hallak, 2012).

In the two-stage analysis and interpretation of the CB-model, the first step involves reviewing the reliability, convergent validity, and discriminant validity of the measures employed (Assaker, Huang, and Hallak, 2012). This ensures the appropriateness of the measures. In the second stage, the focus shifts to evaluating the structural model. This evaluation includes assessing the relationship between the measures and their

corresponding constructs, known as the loadings (Loureiro and Ferreira, 2018). This examination provides insights into the item dependability at the first-order construct level.

According to Hair et al. (2017), the sample size in SEM design is determined by the significance level, the statistical power, the minimum coefficient of determination (R2 values) utilised in the model, and the maximum number of arrows pointing to a latent variable. According to Wong (2013), a typical marketing research study would have a significance level of 5%, a statistical power of 80%, and R2 values of at least 0.25. CB-SEM requires larger samples than PLS-SEM since the relationships between all variables must be assessed. To ensure an adequate sample size for conducting CB-SEM analysis, it is commonly recommended to have a sample that is at least fivefold larger than the number of indicators present in the original model (Assaker, Huang, and Hallak, 2012). Therefore, in this study with 56 indicators, a sample size of 280 individuals (5 times 56) would be recommended. As a result, including 320 samples in this study meets the requirement for conducting CB-SEM analysis effectively.

5.6. Reliability and Validity

The following is a description of the reliability and validity issues that were investigated during the investigation. Regularly reviewing reliability and validity is essential in mixed-methods study designs, as emphasized by Saunders et al. (2016). While the principles of reliability and validity may differ between qualitative and quantitative research, they both address the trustworthiness and accuracy of study outcomes. Reliability focuses on the ability to replicate and maintain consistency, while validity pertains to the extent to which the findings genuinely reflect the issue being investigated (Saunders et al., 2016). By ensuring rigorous examination of reliability and validity, researchers can enhance the credibility and robustness of their research findings. External reliability relates to whether the data collecting techniques and analysis procedures would provide similar results if they were duplicated at a later time or with a different sample of respondents (Nunkoo, 2018).

Hair et al. (2017) emphasize the importance of convergent validity, which pertains to the extent to which the researcher accurately represents the phenomenon being studied. It encompasses various aspects such as the appropriateness of measurement instruments, the accuracy of data analysis, the generalizability of results, and the ability to draw meaningful conclusions based on the study design and controls employed. By ensuring strong convergent validity, researchers can enhance the reliability and credibility of their study outcomes. Contextual validity in qualitative research refers to the credibility of the evidence and conclusions (Ryan et al., 2002), which should authentically capture people's experiences and convey the results in a persuasive narrative that displays the researcher's thorough comprehension of the situation (Nunkoo, 2018). According to Veal (2006), tourism studies are fraught with validity concerns since empirical fieldwork focuses mostly on individuals' behaviour and opinions. Given the emphasis on analysing the value development of visitors through their perceived multisensory mixed-reality stimuli in tourist attraction, this concern may also apply to this study.

In this study, the researcher largely depends on the individual's own reports as replies to instruments such as focus group interviews and survey-based interviews, which may have a variety of faults. Although Greenfield and Greener (2015) recommend that qualitative analysis be conducted by two or more independent coders to maximise the reliability and validity of analyses and interpretations of the data, this is not always the case. Consequently, given that this is an independent study, only the lead researcher could do the analysis.

Validity in research is not solely dependent on reliable data collection methods, but also on appropriate sampling techniques (Okumus et al., 2020). When utilizing non-probability sampling, as was done to gather qualitative data, it becomes questionable whether meaningful conclusions can be generalized to the entire population. The reason for this is that the sample is not representative, since not every individual in the population has the possibility of being selected (Teeroovenkadum and Ryan, 2018). Therefore, researchers should be cautious in drawing broad conclusions based solely on non-probability sampling methods and consider the limitations in generalizing their findings to

a larger population. The focus group interviews were stratified. Before sampling, stratification divides a population into homogeneous subgroups. Strata should specify a demographic subdivision. The stratified random selection helps compare subgroups of visitors (Creswell, 2007) and is acceptable since visitors may easily access both sites (Saunders et al., 2007). To reflect population diversity, the researcher planned to add subgroups such as age or nationality based on their percentage to the general population, as specified in section 5.4.4. In order to evaluate the suggested theoretical model and allow for the generalisation of the findings, the survey was done after the interviews and distributed to a wider sample size. In fact, sampling is crucial in quantitative research for the statistical validity of a study, which permits conclusions about the entire population and generalisation of the findings (Altinay and Paraskevas, 2015). The larger the sample size, the less likely a mistake in generalising to the population is (Saunders et al., 2012). Due to the scarcity of comparable studies, the sample size and representativeness were compared to prior VR research that used a quantitative survey approach and sample sizes ranging from 151 to 200 (Huang et al., 2016), and up to 274 persons (Shin, 2009).

In survey research, internal validity refers to the survey's ability to measure what the researcher planned to analyse (Saunders et al., 2016). Internal validity may be jeopardised throughout the study process, such as during data collection, analysis, and interpretation, emphasising the importance of a strong research design (Ryan, 2018). The amount to which the measuring instrument appropriately covers the study topics is referred to as content validity (Saunders et al., 2016). According to Greenfield and Greener (2015), validity in survey design may be managed by ensuring that the items measure the construct. This was done mostly by adjusting items from previous study to the context of the current examination. Similarly, as recommended by Zamanzadeh et al. (2015), an expert panel reviewed the items for content during the pilot experiment.

Reliability refers to the survey's tenacity and its potential to produce consistent findings over time and in a variety of contexts (e.g., with different samples or interviewers) (Saunders et al., 2016). To enhance the reliability of the survey, careful attention was given to its design, ensuring that the questions were clear and unambiguous, thereby

eliciting consistent responses from participants. Saunders et al. (2016) emphasize the importance of visually appealing and well-structured surveys in maximizing reliability and validity. Furthermore, Altinay and Paskevas (2015) suggest that Likert scales with a minimum of five response categories demonstrate high levels of reliability and validity. In line with this recommendation, the current study employed a 7-point Likert scale, further enhancing the reliability and validity of the survey instrument. In addition, Cronbach's alpha, which quantifies the consistency of responses, was employed to compute internal consistency while analysing the data from the pilot study. Additionally, the design of the survey plays a crucial role in ensuring the reliability and validity of the gathered data (Zamanzadeh et al., 2015). In this study, meticulous attention was given to maintaining reliability and validity during the collection of quantitative data. Participants were given the freedom to complete the survey at their own pace, without any imposed time constraints. This approach aimed to encourage thoughtful and accurate responses from the participants. Moreover, the online survey tool was specifically designed to require respondents to answer all questions in order to successfully complete the survey and be included in the analysis.

5.7.   Ethical Issues

In every research endeavour, the methods utilized to collect data, such as surveys and interviews, carry the risk of intrusiveness and can present challenges for the participants involved. Hence, it was imperative to address ethical concerns and ensure the well-being of the participants, as recommended by Altinay and Paraskevas (2015). Prior to commencing the research project, approval was obtained from the Manchester Metropolitan University Ethic Committee. Adhering to ethical standards is fundamental in safeguarding the privacy and confidentiality of the participants, as highlighted by Altinay and Paraskevas (2015). These practises are implemented to protect participants throughout the whole study, from participant recruitment to data collection to disseminating the results in a private, courteous, and confidential manner. Thus, several ethical standards were considered during the entire investigation. Additionally, the

research project was approved by EThoS, the university's ethical approval system (see appendix C).

Fundamental to all ethical rules guiding research is the requirement that subjects provide their informed permission willingly before to participation (Gilman, 2008). This involves educating participants about the study's methods, risks, and rewards (Losch, 2008). During the collection of primary data, informed permission was given by all respondents. Participants were informed of the nature and aim of the study, what was expected of them, and the length of the study (Altinay and Paraskevas, 2015). The goal of this phase was to ensure that each subject understood the implications of involvement and made an educated, deliberate, and voluntary decision regarding continuing participation in the study (Saunders et al., 2012). Participants were provided with the necessary information that they had the freedom to discontinue their participation in the study whenever they wished and had the option to skip any questions that caused them discomfort (Altinay and Paraskevas, 2015). The appendix E contains the participant information sheet, participant permission form, and consent form for both the interviews and surveys.

It is also important to make sure that participants are anonymous (that is, that the data collected can't be used to find out who they are) and that the information they give is kept secret. So, each person who took part was given a code to make sure no one in the study knew anything about them. Also, all possible participant characteristics were taken out of data that was available to the public so that the researcher couldn't use the data set to find out who the participants were (Kennedy, 2008a). This meant putting the participant code on the recordings.

Saunders et al. (2012) emphasised the significance of anonymity in data collecting, which is crucial since promises of privacy may encourage volunteers to contribute more. Participants in this survey were entitled to privacy, anonymity, and the secrecy of their responses. This was done by without requiring anyone to disclose personal information. Keeping commitments about privacy, anonymity, and confidentiality throughout data analysis and reporting is crucial. Variables that might threaten the privacy of participants

were not included (Altinay and Paraskevas, 2015). This is crucial because erroneous attribution or identification might cause harm. Importantly, the data will likely be more reliable if privacy and anonymity are respected.

Moreover, it is imperative to identify and assess potential risks in any research study to ensure the protection of both the researcher and the participants involved. These risks may encompass various negative factors that could impact emotional well-being, mental or physical health, as well as social or group cohesion (Altinay and Paraskevas, 2015). The quality of research is evaluated based on its integrity and objectivity, and in accordance with the guidelines outlined by Saunders et al. (2012), the researcher conducted the study with transparency and honesty, emphasizing accuracy and avoiding any form of deception or misrepresentation of data and findings.

5.8.   Summary

This chapter has presented and discussed the methods and methodologies used in this in relation to pragmatic philosophical standpoint. Considering the intricacy of the phenomena under investigation, a mixed-methods approach was deemed the most suitable for achieving the objectives and goals of this study. The research commenced with an inductive approach, aiming to uncover context-specific emergent subthemes, which were then integrated into a proposed theoretical model. Subsequently, a deductive method was employed to validate the proposed theoretical model, facilitating a more profound comprehension of the theoretical aspects. To facilitate this process, an exploratory form of covariance-based Structural Equation Modelling (SEM) was utilized, in conjunction with a sequential double-phase research design that encompassed both exploratory and explanatory phases. For the sake of determining the antecedents of value formation in a technology-enhanced multisensory mixed-reality tourist environment, an exploratory approach was used in Research Phase 1. To discover context-specific characteristics, exploratory semi-structured interviews using convenience sampling were done in two multisensory mixed-reality tourism attractions in Finland. Semi-structured exploratory focus groups were identified as the optimal method for acquiring a

comprehensive insight into the phenomena and establishing the essential background and context for the subsequent explanatory investigation (Saunders et al., 2016). The data was analysed using thematic analysis, resulting in the identification of themes, sub-themes, and hypotheses that contributed to the development of the proposed conceptual Value Creation S-I-V-A Model. The sub-themes were utilized as variables within the model. This analysis led to the achievement of goal number three, which was to examine the antecedents of value formation in a technology-enhanced multisensory mixed-reality tourism environment. During the subsequent stage of the research, the proposed model underwent evaluation using a survey-based approach to accomplish objective four, which focused on testing and validating the conceptual model. By employing CB-SEM analysis on the survey data, a final theoretical model was derived. This outcome led to the development of a novel Value Creation S-I-V-A Model specifically designed for the context of technology-enhanced multisensory mixed-reality tourism. Furthermore, practical recommendations were generated for attraction and mixed-reality experience developers and managers based on the study's findings.

In conclusion, this chapter has provided a comprehensive presentation and discussion of the methods and methodologies employed in this study, specifically in relation to the critical ontological perspective. It has highlighted the significance of instrument development and sampling methods, in collaboration with two selected multi-sensory mixed-reality attractions, in situating this study within the broader societal context and drawing general conclusions that can be applied to other similar attractions, markets, and destinations.

By carefully designing and developing research instruments tailored to the study's objectives and adopting appropriate sampling methods, this research aims to capture a comprehensive understanding of the subject matter. These methodological choices contribute to the study's validity and reliability, ensuring that the findings are applicable beyond the specific context of the selected attractions.

The insights gained from this study will not only shed light on the dynamics and value perceptions within these attractions but will also offer valuable implications for similar attractions and markets in other locations. By adopting a critical ontological perspective and employing rigorous methods, this research aims to provide valuable knowledge that can be generalized and applied within the broader domain of multi-sensory mixed-reality attractions. Further, by extending the scope of analysis beyond the specific attractions and considering other markets and destinations, this study seeks to contribute to the existing body of knowledge, enabling a deeper understanding of the societal implications and value perceptions associated with such immersive experiences.

The following chapters present the findings from each phase of the study in a sequential manner, starting with an analysis of qualitative data obtained from focus group interviews conducted with visitors.

Chapter 6 - Focus group analysis

6.1.   Introduction

Commencing with an introduction to the analysis of focus group interviews, this chapter presents the qualitative analysis conducted with tourists visiting two technology-enhanced multisensory mixed reality attractions in Finland (Ähtäri Zoo and Santa Claus Office). The subsequent sections delve into the presentation and discussion of the themes derived from the initial framework, as well as the emergence of new themes during the analysis. The findings will be then compared with existing value creation theories, frameworks, and ontologies in order to extend the proposed value creation framework within a tourism related technology enhanced multi-sensory mixed reality environment and therefore contributing to the PhD objectives 3 and 4:

3. To explore antecedents of tourism value creation in the mixed reality environment; and

4. To further develop the proposed value creation framework for a multi-sensory, mixed reality environment within tourism context.

6.2.   Profiles of participants

The purpose of the focus group was to examine the formation of value and perceptions of sensory stimuli in the context of multisensory mixed-reality tourism. To achieve this objective, ten focus groups were conducted in two technology enhanced multi-sensory MR attractions in Finland

To ensure a representative sample, appropriate pre-screening variables were utilized, stratified by gender and nationality, encompassing both Finnish and overseas visitors for each focus group. The discussions within the focus groups were conducted in English, aiming to gather insights into participants' emotions, beliefs, experiences, attitudes, and values (Lutenbacher et al., 2002), which are essential in uncovering the intricate multi-

sensory experiences of tourists within the mixed reality tourism environment (Lindroth et al., 2007: 55). Therefore, ten focus groups are considered suitable for this study. Considering the novelty of multisensory, technology -enhanced MRE, group sessions will be divided into two sessions first held prior to experience, and second part immediately following the experience to compare the antecedents of tourism value prior and after experiencing the multisensory technology -enhanced tourism MRE. Consequently, participants were assigned to pre-experience and post-experience focus groups, each engaging in discussions before and after their respective experiences. Thematic analysis will be employed to analyse the data gathered from the focus groups. The outcomes of this analysis will be utilized to identify the factors influencing tourism value creation, refine the proposed value creation framework, and elucidate the stages of value formation. A descriptive overview of the participants is presented in Table 6.1.

Table 6.1 Descriptive statistics of the ten focus group interview participants (n=73)

Total	73	100.00%	Age Group	73	100.00%	Nationality	73	100.00%
Male	32	43.84%	AG 19-24	2	2.74%	China	1	1.37%
Female	41	56.16%	AG 25-29	6	8.22%	Philippines	1	1.37%
			AG 30-34	9	12.33%	Lithuania	1	1.37%
			AG 35-39	16	21.92%	Netherlands	1	1.37%
			AG 40-44	16	21.92%	New Zealand	1	1.37%
			AG 45-49	15	20.55%	Portugal	1	1.37%
			AG 50-54	7	9.59%	USA	1	1.37%
			AG 55-59	1	1.37%	Vietnam	1	1.37%
			AG 60-	1	1.37%	France	2	2.74%
						Denmark	4	5.48%
						UK	4	5.48%
						Norway	5	6.85%
						Spain	5	6.85%
						Estonia	7	9.59%
						Sweden	8	10.96%
						Russia	10	13.70%
						Finland	20	27.40%

A code was assigned to each participant of the focus group interviews. The individual codes were used to record nonverbal expressions and to trace back certain opinions and expressions. The coding of the participants is described in Table 6.2.

Table 6.2 The coding of the focus group particUU3pants

Location	No. Focus Group	Date	No. Of participants	Participant codes
Santa Claus Office	1	December 18th 2019	7	S1P1-7
Santa Claus Office	2	December 18th 2019	8	S2P1-8
Santa Claus Office	3	December 19th 2019	8	S3P1-8
Santa Claus Office	4	December 19th 2019	8	S4P1-8
Santa Claus Office	5	December 20th 2019	6	S5P1-6
Santa Claus Office	6	December 20th 2019	8	S6P1-8
Zoo	1	February 11th 2020	8	Z1P1-8
Zoo	2	February 11th 2020	8	Z2P2-8
Zoo	3	February 12th 2020	8	Z3P3-8
Zoo	4	February 12th 2020	8	Z4P4-8

6.3.   Similarity of coded themes

Some topics were discussed more by participants (extensiveness) and some comments were made more often (frequency) than others. These topics could be more important or of special interest to participants and therefore were highlighted in the transcripts. Figure 6.2 illustrates the top 50 (stemmed) words within the focus group discussions thus highlighting the general discussion topics and their initial connections based on the transcripts. Comprehensive list of most frequently mentioned words can be found in appendix B.
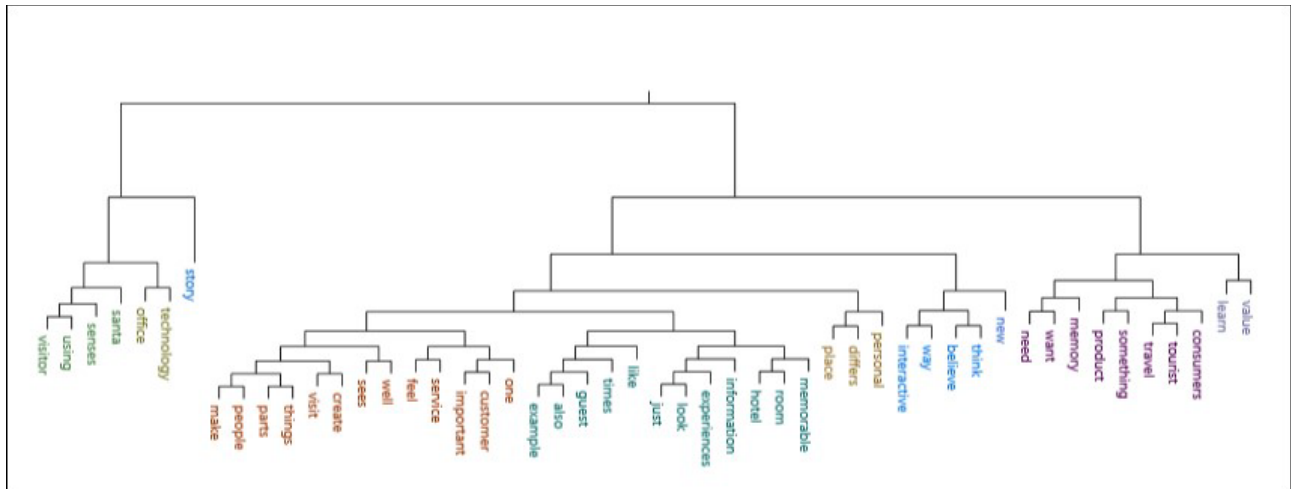
Figure 6.1 Top 50 (stemmed) words within the focus group discussions

The discussions encompassed a diverse range of ideas, prompting the use of a conceptual framework to establish overarching codes that aided in the organization of the data. These abductive codes often served as primary themes, aligning with specific interview questions, and were represented as parent nodes in NVivo. Additionally, subthemes emerged through an inductive process, without rigid adherence to a pre-existing coding framework, and were represented as child nodes in NVivo. The analysis of the interview data followed an iterative approach, with the coding evolving throughout the process (Nowell et al., 2017).

6.3.1. Coding of the transcriptions

Extracting the results from the transcriptions follows the guidelines of Morrow (2005). Following the Morrow's model, quotes are included in order to substantiate the investigator's interpretations (Tuason, et al., 2007). The first analysis yielded the following themes: (a) tourism experience, (b) immersion, (c) value formation, and (d) experiencescape. Furthermore, the emerging themes external the initial value framework include (e) storytelling and (f) technology-enhanced experience. Table 6.3 presents the domains and sub-themes that emerged during the initial open coding analysis and were

further developed through the focus group discussions and transcript analysis. These findings encapsulate the themes and sub-themes that were discovered, merged, and derived from the data.

Data is presented according to each domain, and then by regrouping, and consolidating the themes into new concepts and themes. All domains are illustrated with participant quotations, and data is presented using coded aliases. Furthermore, one quotation, in each section, has been highlighted to represent the most valuable, and meaningful expression of the analysed theme.

Table 6.3 Initial coding framework in NVivo 12 Plus software with parent nodes derived from conceptual framework

Theme	Description
Experience	Memorable tourism experience (MTE), co-created, engaging, immersive, interactive, multi-sensory, personalised (experience)
Experiencescape	Built environment with tangible and intangible elements; technology enhancing the experienced environment; the interaction between the "space", "actors", and the "participants".
Atmospherics	The intended atmosphere/theme: the designed environment; the perceived atmosphere/theme: and the visitor's perception of the space.
Interaction	The possibilities for the visitor to interact with the environment, XR-tech, the actors etc.
Technology (immersive)	The availability and the possibilities to detect/experience content enhanced with MR technology.
Technology enhanced experience	Augmentation, Visual, Haptic, Scents, Soundscape, Service, Interaction, Personalization,
Immersion	
Detached immersion	Person feels detached from real world
Mediated immersion	Losing one's sense of embodiment whilst concentrating on mediated environment.
Participative immersion (Sensory)	Result of perceiving an (extended) environment and interacting with sensory stimuli provided by the (technology enhanced multi-sensory) environment.

Theme	Description
Psychological immersion (Mental)	Imagining the narrative and "jumping into the story". Experiencing a state of complete immersion and active engagement within virtual environments that provide a continuous stream of stimuli and experiences
Value	
Sacrifice Value	Economic, Worth (Psychological), Investment, Risk
Hedonic Value	Sensory, Emotional. Social, Relational, Epistemic
Functional Value	Correct and accurate, appropriate performance or outcome
Symbolic Value	Self-identity, personal meaning, self-expression, social meaning, conditional meaning
Storytelling	Developing and distributing stories that engage emotions and stimulate fantasies and thoughts.

6.4.   Theme 1 - Experience

The focus group interviews confirmed that visitors are motivated by a desire for distinctive, extraordinary, and authentic tourism experiences that align with their aspirations. These encounters often involve venturing outside their familiar comfort zones, which leads to a sense of disorientation that intensifies their emotions, understanding, and engagement with unfamiliar environments. This immersive experience in the unknown contributes to the perceived authenticity of their tourism journey. Through travel, individuals can transcend their everyday lives and immerse themselves in new cultural contexts, where encounters with the unfamiliar challenge and broaden their existing perspectives. One of the interviewees (S6P1) emphasized that for a tourism experience to be truly memorable, it must evoke powerful emotions and fully captivate the tourist with their surroundings.

"When I travel, I'm motivated by the desire to explore different cultures, broaden my life experience… and take advantage of the possibilities to learn".

Moreover, the intangibility of tourism services adds complexity to the evaluation of the experience for the visitor. Also, the sensory dimensions and the unique characters of services provided during the trip makes it difficult for the visitor to describe the tourism experience. Most importantly, visitors are actively involved on emotional, mental, physical, and intellectual levels during their experiences, making the interpretation of these experiences highly subjective and sometimes hard to categorize.

According to participants, tourism experience is a value-based construct built on personal narratives. Also, according to interviewees, the narratives that enable the value formation connects to other experience concepts like peak experiences and flow, and in a personal level, these narrative experiences are perceived transformative and hedonistic with an element of feeling of loss of self. The following quotes from the participants highlight the personal and narrative lead transformative experiences expected from a tourism attraction.

"changing expectations are driving the evolution of the places we visit, and this new customer like me seeks enriched experiences that mix place, technology, culture and entertainment, and they have to be in a state of constant renewal" (S2P2).

"People visit a place to be overwhelmed, because just participating in an experience is not enough" (S6P4).

Furthermore, tourism experiences enable transformations on consumers by experiencing the real or imagined event and communicating the narrative of the experience through fantasy, emotion and entertainment.

"To experience this [transformation], everything needs to breathe the same message, the building, entrance, garden, shop, art works. This is how I felt during last hour and half. I believe this was amazing." (S2P5).

The degree of tourists' curiosity, participation, drive, utilization of resources, and active involvement in value creation profoundly influence their perceptions of value and intentions for future engagements. This deep sensory immersion is intricately connected to emotional attachment, which serves as a pivotal factor in crafting unforgettable experiences. Furthermore, the various elements comprising the physical environment, commonly referred to as the servicescape, exert a substantial impact on consumers' cognitive and affective responses within a service context. Consequently, visitors' assessment of their service experience can be anticipated by examining their satisfaction with the tangible aspects of the servicescape's presentation. S6P6 continues the description:

"after the etheric opening set-up, we [were] able to enjoy a streamlined experience right in the heart of the office, vividly enhancing our understanding of the phenomena of santa and Christmas in general. It's all about caring and love and family."

Moreover, the synergy between the servicescape and the individuals involved plays a momentous role in shaping the overall encounter. The interviews underscored the significance of fostering engagement and involving tourists in activities that align with their interests and capture their focus. Active participation and dynamic interaction with the immersive environment hold significant value, as does the interconnectedness between the location, the offerings, and the services provided. This process, where visitors actively engage with their surroundings and co-create their distinct and personal journeys, epitomizes the essence of the tourism experiencescape. Meticulous design, seamless integration, and intelligent management of this interplay are essential to ensure the establishment of an emotional bond with the attraction. Beyond interaction with the environment, the participants highlighted the need for sharing the experience with

someone. The following quotes from the participants highlight the need for shared experiences.

"during an experience there is a connection between all customers which links all customers to each other and the surroundings" (S4P2).

"Normally, I was used to experience an activity together with someone and therefore I could also discuss that experience with someone." (S2P5).

"I'd prefer going with my family or friends, cause like Christmas, for me is a very, … happy festival and then it should be very warm and then we should be sharing our love and then unite each other within the family and my friends" (S4P2).

However, the level of interaction and connection to other visitors varies between people. Also, the feeling of scripted tour or experience is not always perceived positive. A visitor has to have at least the possibility to conduct and guide his/her personal experience and control the level of interactions. The company can facilitate the platform for social and environmental interactions. Experiences are fundamentally engaging, immersive, and interactive so the company intervention has to be well thought and allow levels of interpretation and participation.

"the social components can't be too much planned when creating an experience" (Z3P1),

"the tourist like [to] create the social components more themselves."
(S1P5).

"Although some memorable experiences are without involvement of other human beings, one almost always interacts with the environment" (Z2P5).

During the focus group discussions, participants reached a consensus that tourism revolves around the creation of captivating narratives aimed at connecting with travellers. However, it was acknowledged that in some instances, these narratives may become embellished, lacking factual substantiation, or excessively dramatized. While maintaining genuineness is crucial, especially in the context of safeguarding intangible cultural heritage, it was acknowledged that conflicting historical accounts also contribute significantly to the framework of local heritage and tourism encounters.

> *For the first time I could experience the Christmas like never before in a fully immersive scene which truly made me feel like I'm part of the story (S3P6).*

> *Customisation to kids and aesthetics are obviously all something they have been thinking as their average audience to keep with the times they have been looking at how immersive technologies can be adapted within their approach (S2P1).*

When it comes to the tourism experience, the participants emphasized that the value derived from it is influenced greatly by the tourists' curiosity, and enthusiastic participation in shaping their own experiences. These factors have a profound effect on how they perceive the value of their experiences and their intentions for future engagements. The participants also highlighted that positive tourism experiences are often deeply transformative and centred around pleasure-seeking, involving a sense of immersion and a release from one's usual self. The upcoming sub-chapters will delve into a comprehensive exploration of immersion, interactive encounters that stimulate multiple senses, and the significance of the pleasure derived from these experiences.

6.4.1. Experiencescape

The experiencescape refers to the immersive environment in which consumers actively curate their individualized and personal encounters. In contrast to the service environment, the experiencescape encompasses a holistic and encompassing approach to consumption, encompassing not only the physical surroundings but also the diverse range of products or services offered, as well as the dynamic interactions among staff and fellow visitors (Agapito et al., 2017). Notably, studies conducted by Kastenholz et al. (2012) and Walls et al. (2011) underscore the pivotal role of destinations as experiential environments. These destinations provide a vibrant platform and tangible dimensions for diverse encounters, exposing consumers to a plethora of multisensory stimuli and social interactions. Through active engagement and immersion within the experiencescape, visitors apply considerable influence over the unfolding of their overall journey, effectively shaping its outcome.

> *For a touristic experience, I can imagine that introducing all the senses will give value to the happening. People visit a place to be overwhelmed with someone or something. (Z3P3).*

Expanding the traditional concept of a visitor centre or attraction, the interviewees often elaborate and combine elements to the physical surroundings. Although not being able to verbalize the exact term, most of the visitors refer to a space where experience happens, or an experiential environment, hence the experiencescape, when analysing the venue where their experiences take place.

In many ways, experiencescape is perceived as not only the physical setting and environment, but also a combination of different visual, olfactory, and auditory cues. In addition, this wider and more holistic perception of the experience environment, and the activities within the environment, influences the visitors' rational and emotional feelings and influences one's behaviour.

Another aspect of the experiencescape is the physical formation of the environment. The perceived elements of the experiencescape include signage, buildings, spatial layout, equipment, and symbols. Beyond the tangible elements, the physical formation also includes the perceived ambiance. Together, the elements of physical layout of a servicescape influence the level of immersion and the formation of memorable experience. Beyond the built environment and the staging of the experiencescape, visitors connect other elements to experiencescape in multiple ways. In an example, (S6P1) explains that,

> *"Ever-changing expectations are driving the evolution of the places we visit,*
> *and this new people like me are seeking enriched experiences that blend*
> *place, technology, culture and entertainment".*

An experiencescape with a clear theme can provide the symbolism around the experience and by conveying meaning helps immersion. Immersion stimulates involvement and connection to the experience. The level of immersion can be enhanced with well-planned customer journey that combines traditional elements, narrative and where these elements are augmented with technology. An interesting notion emerged also related to the security of the environment and being able to fully enjoy the experience. Feeling of security, and of being safe is a noteworthy aspect of the experiencescape.

> *"We were thrilled to be offered a new and exciting digital experience to us.*
> *We were expecting old fashion experience but instead our creative*
> *boundaries were pushed, and we think this will be a fantastic opportunity to*
> *give the public a different and in-depth understanding of this much-loved*
> *character through new technology" (S6P3).*

> *"If I have to worry about my health, belongings or someone else's security, I*
> *cannot concentrate or enjoy." (S2P4).*

In addition, limited space is seen as key element of the experiencescape by the participants. The boundaries increase the perceived intensity of the experience and

reduces unrelated disturbing stimuli. Intensified experience in a limited space allows the emotional connection and therefore increases the perceived immersion. Another aspect of the limited and confined experiencescape is that things happen in "another world" where the rules and thoughts of the normal life can be forgotten to some extent. The feeling of being in another world helps immersing completely into the experiencescape without self-awareness and boundaries.

> *"Even with confined space, this place attracts visitor to entertain and engage*
> *with santa claus through activities that are not only magical but brought you*
> *into our collection and that you could personalize" (S1P5). "*

Experiences are deeply personal and involve a complex interplay of emotions and individual processes. As such, experience providers have the ability to create conducive circumstances and environments that allow consumers to actively shape their own unique encounters. It is important to recognize that providers cannot control or dictate the experiences, but rather play a role in facilitating them. Understanding the dynamic relationship among engagement, immersion, and the overall experiential environment is key in enabling meaningful and impactful experiences.

> *"Although some [memorable] experiences are without involvement of other*
> *human beings, one almost always interacts with the environment [whether it*
> *is designed or not]" (S6P2).*

Considering the experiencescape, and the interaction within this environment, the participants highlighted that the environment is perhaps one of the most significant contributors to the popularity and attractiveness of a destination, but it does not work by itself. Everything has to be considered and aligned to complement the built environment. Especially in tourism environment, the flow of the guests, interaction, and how the narrative build from the built environment is essential.

6.4.2. Multi-sensory and interactive experiences

The emotional connections with consumers and how the activation of all human senses increases the likelihood of getting closer to a customer's heart and mind have been studied to some extent in management literature. However, the focus group interviews highlighted how the intangible tourism services call for complex, multidimensional, inspiring and innovative communication techniques that can benefit from multisensory stimuli. The creation of a multisensory experience and the perception of value emerge from the dynamic interplay among the multisensory service environment, the service provider, and the visitor. This complex interplay, as highlighted in previous research (Grönroos, 2008), imbues the multisensory experience with inherent value, which is then individually captured and interpreted by each person's unique perception.

> *"We make use of all our senses. We actively listen, feel, hear or look at everything that happens around us. This is a key moment for an experience delivery" (S6P1).*

Therefore, it is vital for service providers to deliberately and tactically integrate the human senses into their initiatives. Consequently, the central focus of service development should revolve around crafting experiences that actively stimulate visitors' senses and shape their perception and behaviour.

The modern way of considering a destination, or an attraction as an entity, including the destination as the experience environment, providing a stage and the physical dimensions for the experiences, and where consumers, with their motives and choices are exposed to multi-sensory stimuli and social interactions. Sensory stimuli can be facilitated by the company but are experienced by the visitor. Therefore, it is essential, for the service provider, to consider how individuals react to enhanced stimuli. Also, the sensory stimuli should be based on the actual experience and carefully augmented. Likewise, the individuals and their interactions within the interpersonal context give rise to the sensory inputs and stimuli that shape the overall experience. This includes the way

people communicate, engage, and interact with each other, adding another layer of sensory richness to the encounter.

"In merchandise shops, one has to please the experience-based shopper,
they tended to focus on creating moments of surprise and delight –
memorable, themed, theatrical experiences, intending to engage the guest"
(S4P3).

"…but in general, multisensory touchpoints need to be in line with the rest
of the" (S6P1).

"Here [in Santa Claus Office] the experience was disrupted by using simple
and continuous small additions of tech that gave me the confidence to use
my other senses." (S6P1).

The atmospheric elements of the built environment, particularly the interior layout and design, play a pivotal role in creating a captivating experiencescape that significantly impacts customer satisfaction. Among the various sensory components of this experiencescape, immersive elements such as enchanting sounds, evocative scents, ambient lighting, and cosy fabrics evoke feelings of pleasure and enjoyment. When the foundational elements of the service environment successfully elicit positive emotions, service providers can further enhance these aspects by incorporating technology or introducing augmented fragrances, among other possibilities.

Memorable experiences, closely linked to the perception of hedonic value, can be intentionally crafted by engaging all of the human senses. Agapito et al. (2017) argue that these experiences, which cultivate involvement, are perceived as a pivotal for tourism enterprises in terms of competition. Therefore, the visitor experience should be approached as a holistic immersion, encompassing visual, auditory, olfactory, gustatory, and tactile sensations, along with meaningful social interactions, within the experiencescape. This combination creates a rich multimodal experience that is deeply engaging and leaves a lasting impression.

The significance lies in both the tangible aspects and components of the experiencescape, highlighting the essentiality of not only the functionality but also the aesthetics of the servicescape. The focus groups highlighted that a destination is an experience environment providing a stage and the physical dimensions for the experiences, and a place where consumers are exposed to multi-sensory stimuli and social interactions. In an example of multisensory stimuli, one of the interviewees accentuated that scents provide touchpoints for each visitor to connect their experience. The connections are powerful and long-lasting. Scents bring back memories that can be used for the benefit of the actual experience. Scents can be also incorporated to other sensory stimuli. Although the environment is likely the most important element of the attractiveness of a destination, it has to be carefully aligned with other elements. Especially in tourism, the flow of the guests, and how the narrative builds from the built environment is essential. The audible sounds can be utilized to activate other senses of the visitor. Botteldoorn et al. (2011) explored the concept of soundscape, which includes the physical sound sources,, and the surrounding environment. The soundscape is influenced by other sensory stimuli, the characteristics of the environment, the intentions and anticipations of individuals present, and the unique auditory and cultural backgrounds of each participant. The sounds can be used as a calming element, and to reduce the too loud noise when for example a group of tourists arrive to the lobby. Furthermore, the sounds can be used to change the mood of the environment. Consequently, audible sounds and the sound sources should be well planned and suitable for overall narrative concept and how, for example a destination wants to represent the services.

"The whispering of the elf's was amazing and made me think more the story of secrets that only the elf's know". (S6P1)

"sensory experiences are already being used to meet the needs of special audiences, as incorporating sound and other sensations to better serve its audiences" (S6P1).

The concept of mulsemedia enables the integration of diverse sensory stimuli and interactive experiences across multiple sensory channels. The rapid advancement of technology, including wearable technology, offers tourism developers an opportunity to explore limitless possibilities in creating immersive experiences. The more aesthetic the environment, the more enjoyable is the personal experience. While the respondents considered the visual stimuli often a part of the built environment, interviewee S1P5 stated that

"aesthetics is an universal feature, its everywhere".

"might have great impact to energy levels and to the overall experience".

Therefore, the sensory stimuli, and the sources of sensory stimuli should be well planned and suitable for overall narrative concept and how, for example a destination wants to represent the services.

Tourism experience can be considered as the knowledge derived from interpreted sensory stimuli of the surroundings. The findings from the focus groups emphasize the need for service providers to consider the processes of incorporating sensory stimuli into the experiencescape. Additionally, it is crucial for them to understand how the guest's perception of value evolves and changes based on their interaction with the environment. This includes recognizing the dynamic nature of value and how it is shaped by the guest's experiences and interactions during their stay. Considering the multi-sensory mixed reality tourism experience, the different sensory stimuli can be used to enhance the experience.

Sensory stimuli is the key to immersive experiences (Agapito et al., 2017). The importance of the senses in creating memorable and valuable experiences cannot be overstated. Many destinations can create remarkable sensations to their guests and help the formation of valuable experiences.

"Just like this experience, hotels are expanding their sensory experiences, with rooms featuring individually programmable lights chosen to create calm, relaxation, romance or whatever mood guests desire" (S6P1).

"I believe that visitors liked multisensory information, but many had difficulties using multisensory tools" (S6P5).

The possibilities of technology are verbalised by the interviewed visitors, and the management of attractions realize that experiences are mostly subjective; people have different reasons, goals and purposes behind them, and that experiences differ in so many ways, which is part of the richness of life, the technology enhanced multisensory tools may provide new tools to respond to these changes. This open possibilities for new experiencescapes where digital, physical and social layers strongly entwine. These new experiencescapes hold the potential for personalisation and may provide tools for attractions to reply to changing needs and consumer behaviour.

The sensory pleasure within the tourism environment is experienced through the physical milieu, the structures, the architectural style, the varying visual design, objects, shapes, themes, materials and the symbolic design of tourism space. The range of factors in the tourism environment influences the emotional bond that is subsequently reflected in tourists' affinity for sensory pleasure, shaping the perception and character of the destination (Rahman et al., 2016: 120). Furthermore, the aesthetic enjoyment extends beyond the tangible environment, encompassing tourists' engagement with cultural expressions and local communities.

The insights gathered from the interviews emphasize the significance of combining multiple senses to create lasting impressions. In line with the findings of Slocombe et al. (2016), the seamless coordination of sensory inputs and the integration of their meaningful aspects are vital in shaping future experiencescapes. Within these experiencescapes, the enrichment of sensory information and the harmonization of its meaning can further heighten the overall multisensory experience.

6.4.3. Technology enhanced experience

Tourist attractions are actively pushing the boundaries of conventional experiences by adopting a ground-breaking multisensory concept known as "sensescapes." This innovative approach surpasses the limitations of the traditional emphasis on sight and sound, integrating additional dimensions such as touch, taste, and smell to craft a truly immersive and sensorial experience for visitors. By expanding their offerings to encompass these diverse sensory dimensions, attractions strive to provide a more comprehensive and enthralling encounter that stimulates and fully engages all facets of a person's senses. Furthermore, this shift towards sensescapes reflects the growing recognition of the possibilities that immersive technology can unlock, enhancing the potential for transformative and unforgettable experiences.

The focus group discussions revealed that many visitors already think about how technology integrates into the experience.

"Loved the futuristic theme with some kind of virtual reality lightshow and videos and the exceptional decor of every single parts of the office… and how they came up with the craziest ideas. the elves I mean of how to make the cueing nicer" (S1P6).

"like in retail, communications can be tailored to visitors' interests, and the visitor's paths can be analysed" (Z1P6).

Even without the knowledge of the terminology, the visitors used examples from different environments when they described the technology-enhanced multi-sensory experience in the studied attractions. One common reference was to retail business. Several interviewees saw the potential of using technology to tailor the experiences to different audiences. Attractions could take this even further as Z3P2 highlighted:

"Customisation to kids and aesthetics are obviously all something they should be thinking and to keep up with the times they should look at how

*immersive technologies like VR headsets can be adapted within the
experience."*

According to interviewees, however, the developers have to think the places, situations and reasons thoroughly before the integration of technology. Many interviewees described examples where the technology was not part of the overall experience but a replacement of a traditional audio guide or and information with fancy gadget. Digital revolution in destinations and attractions require thoughtful redefinition of the role of the built environment and the actors within. Many visitors had experienced some level of technology-enhanced experiences like black rides in amusement parks or 4D cinemas. Technological advances, however, hold the potential to further develop and integrate technologies and integrate multiple senses into an experience.

*"Santa office is like a perfect case study for the successful synthesis of
stories and technology. The way that it creates the interactive experience
with the touch screens and through the introduction of mirrors in which a
visitor's reflection will trigger more layers and stories" (S3P4).*

Not all the visitors were able to accentuate the details of the technology in detail, but the technology perspective was still discussed in relation with experience journey. In the Zoo environment, Z4P4 explained his experience in the following way:

*"Digital technology came into play right from the start, but the key was that
they've designed the experience from the visitor's point of view and had
eliminated any potential friction from the journey".*

*"In my opinion, the guided experience in the Panda centre can be made
truly interactive with integrated touch interaction and video (Z1P3).*

*"the way the experience being in augmented reality as opposed to virtual
reality as they don't want to replace what is already existing but rather
enhance it" (S1P7).*

Relating to this information sharing, and the notion of learning through interactive technology, the visitors accentuated the importance of maintaining the authenticity. Mixed reality (MR) systems used in the studied visitor centres incorporate both virtual and real inputs. MR would appear to have been adopted more rapidly by the visitor than virtual reality (VR).

> *"it's a game changer for connecting people with santa office in a new and amazing way. I can still walk through the physical surroundings of santa's office in a way we could never do without this technology. The way they have done it is another vehicle, another tool to capture and reveal my personal meaning of Christmas" (S1P2).*

According to Neuhofer et al. (2014), in the realm of technology-enhanced experiences, technology assumes a pervasive role and becomes a crucial element of the tourism experience. Nevertheless, as highlighted by the focus group participants, the essence of the visitor experience should continue to reside in the authentic environment and the human interactions within the attraction. The visitors appreciated the approach where the technology is mostly hidden and unobtrusively augments the experience. Also, allowing the visitor to choose the ways and amount of technology has advantages and allows the use of imagination and the use of all senses. Although the environment, the provided multi-sensory stimuli, and the technologies would be the same, each visitor combines these elements with their own past experiences, memories and moods.

> *"The way the experience being augmented as opposed to virtual reality as they don't want to replace what is already existing but rather enhance it" (S3P2).*

> *"I saw that instead of full-blown virtuality, mixing layers [of reality] has strong links with philosophy" (S3P5).*

> *"levels of reality, when enhanced with tech, is our own projection of reality that we have created from our senses" (S3P2).*

"For example, this experience used new technologies and showed people
what you can achieve [with] clever new hardware allowing people to create
their own experience (S6P3).

Spatial augmented reality-based mixed reality environments (MRE) merge the physical and digital realms by superimposing computer-generated elements onto real surfaces like walls, columns, window sealings, doors etc. This is accomplished by aligning the virtual imagery with the contours and surfaces of the real-world objects. Notably, the form and appearance of the computer-generated visuals are adjusted to seamlessly integrate with the physical environment. Furthermore, users can perceive this merged reality without the requirement of wearing or holding any display devices.

This creates an advantage compared to other technologies because, specifically in tourism context, sharing experiences is paramount. Emerging technologies provide innovative ways to create shared experiences. The possibilities of new technologies are also acknowledged by the visitors. With the fast development of consumer electronics, some visitors may become less interested in traditional experiences and would rather try something new. This naturally creates challenges to service providers to keep up with the latest technology.

"being together in an experience is more important than differences
between levels of virtuality" (S3P3).

"New technologies can help [companies] with personalization,
enhancement and innovation of the experiences. Adding touches of virtual
reality could be an example of both implementing digitalization and game
like experience" (S3P2).

"people may become less interested in traditional experiences that appeal
primarily to one sense at a time" (Z3P3).

Within attractions, the utilization of new technology and the incorporation of multi-sensory stimuli offer a multitude of possibilities. Drawing inspiration from Pine and Gilmore's (2011) framework of the four realms of experience, these innovations not only enhance the aesthetic aspects of the environment but also serve as valuable tools for enriching the realms of entertainment, education, and escapism. By leveraging technology and integrating multi-sensory elements, attractions can effectively amplify the overall experience across these different realms. Likewise, indicated by several interviewees, beyond education and entertainment, technology can act as a driver of other value formation. For example, technology can be used to deliver and augment the narrative. Technology can also help to guide the visitor through optimized customer journey. Further, technology allows the experience designer multiple tools to create different version and interpretations of the experience. Attractions may increase the appeal for different clientele by utilizing multi-sensory technology along the experience. Considering for example multi-generation parties visiting attractions, new technologies may provide interesting interpretations of the same experience to different generations.

"I saw the technology, checked it out, and saw there was another layer of it, and I saw that the kids were also excited to try it. I saw that it interests them and it draws them back in…. However, they are a different generation, and so I think the technology really speaks to them" (Z4P2).

"the experience can be personalised to the user – targeting specific interests for example: music and facts in the panda exhibit or different tones and perspectives" (Z3P6).

It is noteworthy, that even if the provided technology with the experience does not appeal to a person, it can still contribute the overall positive evaluation through e.g. kids or observing other participants enjoying the provided augmentations.

"Just like this experience, hotels are expanding their sensory experiences, from the Nordic Lights, with rooms featuring individually programmable

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lights chosen to create calm, relaxation, romance or whatever mood guests
desire, or some hotels inviting guests to lay down with art, including video,
sound, light, digital and text installations" (S4P6).

The visitor experience is profoundly shaped by the integration of immersive technology, sensory stimuli, and various engaging elements, all of which contribute to a heightened sense of immersion and flow. The focus groups expressed a desire for technology-enhanced experiences, while also emphasizing a preference for a conservative level of technological disruption. Based on the focus groups, it can be concluded that in an optimal situation experience is disrupted by using simple and continuous small additions of tech that give the visitor the confidence to use other senses. However, the design of future multi-sensory, technology enhanced experiences is not straightforward. The service providers should allow visitors to choose the level of augmentation within the experience. The development is unavoidable. Already now the focus group participants saw the potential of experienced augmentation in positive light:

"children and adults use the motion of their bodies to explore time-bending
machine and how santa is able to deliver the gifts… and I think that was
amazing" (S5P6).

"The objects can move also. And they changed. As we were walking the
objects walked through a world that wasn't physically there moments ago"
(S2P5).

"now places like this santa's office [should] quickly develop technologies
that stimulate the other senses as well" (S4P5).

Based on the focus group interviews, it is evident that visitors are already familiar with a wide range of technologies and are open to adopting new applications. However, the challenge lies in how attractions can stay relevant by effectively integrating multisensory technologies into the customer journey. While immersive technologies have gained

popularity in attractions, participants have expressed concerns about the quality, usability, and appropriateness of these technologies in certain experiences.

Nevertheless, based on the feedback from participants, it is apparent that the integration of multisensory mixed reality can significantly enhance users' perception and understanding of their surroundings. By combining visual imagery, auditory cues, haptic feedback, and olfactory stimuli, these technologies provide enriched information to users. The participants also highlighted the interactive nature of mixed reality environments, which allow users to interact with virtual elements, as a key factor contributing to their enjoyment of interactive systems.

However, blending physical and digital elements and content harmoniously poses challenges. Some interviewees emphasized that technology should only augment the real experience rather than overshadow it. To achieve success, careful design is required to ensure seamless transitions between physical and digital components, while deeply intertwining the various layers of the experience. Additionally, visitors should be empowered to play essential roles in the utilization of these technologies.

Moreover, the existing body of knowledge and the valuable insights gained from the focus group interviews shed light on a profound aspect regarding the nature of experiences. This goes beyond mere stimuli and the formation of initial value; it encompasses the eventual outcome as well. Echoing the sentiments of Chen and VG (2022), as well as Jeong, Kim, and Kim (2020), the interviews and the information outlined in this section unveil a captivating phenomenon wherein participants encountered challenges when attempting to distinguish between perceived value and actual experience.

In specific instances, respondents conveyed that the experience itself carried such significance that it evolved into the ultimate objective they were capable of expressing. This implies that the value extracted from an experience isn't exclusively dictated by the stimuli or initial expectations, but rather by the entirety of the experience and its influence on the individuals engaged. This underscores the subjective nature of experiences, where

the comprehensive encounter and the resulting emotions, memories, and overall contentment play a pivotal role in moulding the perceived value. These findings highlight the need for attractions and immersive technologies to not only focus on delivering impressive stimuli or creating value at the onset, but also to consider the overall journey and its lasting impact on the visitors. The integration of multisensory mixed-reality technologies should aim to create meaningful and memorable experiences that resonate with the users on a deeper level.

6.5.   Theme 2 - Immersion

Creating immersive experiences should be the primary objective for companies operating in amusement parks, themed restaurants, and destinations, as it is closely linked to the formation of lasting memories through the engagement of multiple senses. The focus group participants emphasized the importance of presenting a cohesive narrative that encompasses all aspects of the experience to enhance the visitor's sense of immersion. The resulting immersion, along with all experienced sensory elements, plays a vital role in memory formation and value perceptions. The participants agreed that immersion (e.g., losing sense of time, being in other world, being surrounded by sounds and visuals) is fundamental for a successful experience, and this connects often to the frivolous consumption mood, and the aspiration to experience something other than everyday life, like one of the visitors emphasised:

"The customer will temporarily forget about their environment, worries, or everyday routine" (S3P5).

Dede (2009: 66) suggests that immersion can be understood as the feeling of actively participating in a realistic and all-encompassing experience, regardless of the specific means through which this immersive experience is created. The participants in the study also emphasized the significance of immersion in their own experiences. The staging of different sections within an attraction, utilizing shapes, colours, and other visual stimuli, significantly influences the behaviours and choices of visitors, as well as impacts their emotions and the formation of memories. However, the risks of sensory overload were also accentuated by the participants. The memories and memory formation, as well as value perceptions can be helped with staging, interaction, and technology but it cannot be the centrepiece of the experience. Based on the reflections of the participants, immersion refers to a mental state where individuals experience a profound sense of engagement and connection with their surroundings. They perceive themselves as being fully enveloped and actively involved in the environment, creating a deeply immersive experience. This immersive environment stimulates various sensations and perceptions,

which are subjectively interpreted by each individual. Consequently, this state of mind or psychological immersion is commonly used to describe this intense level of involvement. This psychological, and participative immersion occurs when visitors, according to one of the interviewees, are exposed to:

"Mind blowing experience that really fuses all the senses. [It is] Simultaneously interactive and immersive, [and] you suspend all reasoning and surrender to the story (S4P2).

Within participative immersive experience, personal interpretation and past experiences entwine with the narrative and symbolic layers provided by the service provider. Staging, interaction, and technology conveys the chosen narrative allowing the personal interaction and interpretation.

"…all the tech provide an immersive layer of interpretation as visitors are invited to step into stories of the elves and santa" (S2P6).

As highlighted by several participants, it is essential to notice that psychologic immersion builds on personal meanings and connects to the narratives through personal interpretations of the provided stimuli. Further, immersion happens in personal level and links closely to the psychologic connection to the story.

"We each see things through our own perspectives as our senses feed to our brain, which feeds back to our senses giving us our reality" (Z3P4).

"For the first time I could experience the Christmas like never before in a fully immersive scene which truly made me feel like I'm part of the story" (S5P3).

"The technological opportunities to present information and entertainment in immersive environment format has clearly massive implications" (S3P5).

"For me an experience can be described as a moment where many elements come together and involve me emotionally, physically, intellectually and spiritually" (Z1P5)

Contemporary theory emphasizes the significance of immersion in the context of tourism experiences. The insights gathered from focus group interviews underscore that tourists visiting destinations and attractions actively seek out transient psychological states where they become fully engrossed in the experience. During these moments, they become completely captivated, losing track of time and their own self-awareness. Based on the insights gained from the focus group discussions, certain triggers, such as personal memories, social interactions, and interactive challenges, elicit internal responses within the visitors. These reactions serve as catalysts, propelling the visitors towards a deeper level of engagement. Moreover, as the visitors become more involved, their attention becomes fixated on the present moment or their own unique narrative, leading them further into a state of complete absorption.

In the realm of immersive multi-sensory environments, digital advancements have the capacity to blur the boundaries between the physical and virtual domains. This integration creates an intensified sense of total immersion within tourism experiences, as visitors find themselves fully immersed in a merged reality that seamlessly integrates elements from both realms. Therefore, immersive visualization with spatial augmented reality, multisensory stimuli and virtual 3D reconstructions can provide alternative, complementary and immersive visitor experiences.

6.5.1. Sensory and mental immersion

Previous section highlighted the challenges for the interviewees to define, and explain the underlying immersion themes (psychological, detached, mediated and participative) in detail, and in the context of tourism. However, due to the relatively limited exploration of the immersion process in tourism research, focus group interviews shed light on the recurring themes of sensory and mental immersion. These constructs emerged prominently in the discussions and offer valuable insights that can be applied to the study of value formation in multi-sensory extended reality tourism environments.

Generally, in gaming- and virtual world related research, immersion is assumed as the "psychological experience of losing oneself in the digital (artificial) environment and shutting out cues from the physical world" (Fox, Arena, and Bailenson, 2009: 96). However, for this study, more fitting definition of immersion has been proposed by Snodrgrass, Dengah II, Lacy, and Fagan, (2013: 235-236), where they postulate that immersion is "*blurring of actual- and virtual-world identities and experiences*". This blurring of actual and virtual was discussed in all of the 10-focus group and therefore provides possibilities to further analyse mental and sensory immersion in multi-sensory extended reality tourism environment.

The participants agree that most of the touristic experiences are generated through immersive interaction with environments. In a multi-sensory extended reality environment, however, the process of being immersed happens in a particular environment where technology-enhanced sensory stimuli extend the sense of reality and the existing staged environment. This immersion, drawing from participants expressions and feelings, has elements of mental and sensory immersion. Whereas sensory immersion is the consequence of being exposed to a digitally enhanced environment, mental immersion is the result of imagining the narrative. However, the distinction between mental and sensory immersion is not easy to draw. After experiencing the multi-sensory Santa Claus office, many interviewees described their experience in a way that

suggests a strong relation between sensory and mental immersion. An example from S1P5 describes the connection:

"Mind blowing experience that really fuses all the senses. Interactive and immersive, you suspend all reasoning and surrender to the story".

Despite the connection, the mental immersion, in pure form, is challenging to define. Multisensory mixed-reality, depending on the chosen theme, provides a set of possibilities to increase the perceived mental immersion, which are amplified with technology. This was accentuated by several participants. Therefore, when the visitor is immersed in a mixed-reality environment, they are not supposed to conceive anything outside what is provided and staged by the experience provider. Hence, when they are immersed in the narrative, like reading a book or a watching a movie, the feeling of immersion is mental and built by one's imagination. Therefore, to maintain the mental immersion, the visitor should not lose the perceptual focus., which creates challenges to experience designers and providers.

There are also other differences between sensory and mental immersions. Snodrgrass, Dengah II, Lacy, and Fagan, (2013), used characteristics of games that facilitate immersion, which can be detected also from the interviews of the visitors. Based on the insights gained from focus group interviews, it was discovered that immersion in tourism experiences can be categorized into two distinct groups, drawing inspiration from game research. The first group encompasses elements that contribute to a vivid cognitive representation of the environment, including the integration of multiple sensory channels, the provision of complete sensory information, the presence of mentally stimulating environments, and the inclusion of a captivating narrative. These elements collectively foster a comprehensive and immersive mental depiction of the surroundings. The second group comprises factors that foster coherence and consistency within the experiencescape, ensuring a unified and engaging experience for visitors. By exploring these two categories, this research aims to unravel the process of value formation in

multi-sensory extended reality tourism environments. Without doubt, these categories are applicable to tourism experience related immersion research also.

In the realm of sensory immersion, it is important to recognize the potential of incorporating multiple sensory stimuli and ensuring their synchronization. Immersion, often associated with virtual reality gaming, has been extensively studied by designers and researchers as a crucial element of interactive experiences. A recent study by Lorenz et al. (2015) emphasized the significant impact of the auditory environment and psychoacoustics on the feeling of presence in mixed reality and virtual reality environments. The interplay between soundscapes and the perception of sound greatly enhances the overall immersive experience. A bird flying overhead, or the crunch of snow is good. Hearing the crunch underneath on each step is even better. Panoramic projections and ambient lights compliment the immersion. Sensory information should also be complete. If the narrative, or the sensory cues have gaps that the visitor has to fill in, the mental immersion might be lost. More familiar the extended environment is, the visitor can fill more blanks without being pulled out of the immersion to think about it.

> *"The visuals are very extensive; these created the feeling of being immersed in their narrative" (S4P1).*

> *"The main hall is definitely worth a visit with all the props and interactive parts. The story goes through the history of santa, from ancient times up to modern times. There are several videos to watch and many displays"*
> *(S2P4)*

Engaging environments that require visitors to concentrate on the unfolding events engage their cognitive capacities. This cognitive demand enhances the level of immersion as mental resources are dedicated to comprehending the experience, allowing potential shortcomings of the artificially enhanced environment to be overlooked. A compelling narrative further captivates mental resources, as intriguing stories draw attention to the experience and lend credibility to the extended experiencescape.

"The experience brings together a dazzling range of his stories and characters" (S5P3).

"I thought it was not interesting enough, but it surprised me. Christmas, Santa and the elves…the story is cool" (S1P4).

Beyond the elements that create a rich mental model of the environment, the immersion requires elements that generate uniformity amongst the experiencescape. These elements of consistency are believable behaviour, unbroken presentation and the interactivity. Believable behaviour in the extended reality environment means that characters, objects, and other elements behave and react like you expect them to. Regardless of the theme or the fantasy in which the experience is based on, the cues has to make sense and be constant all the way through the experience.

"The virtual enhancements developed uses a large display to position virtual objects in view for us. I think it was cool. The objects can move also. And they changed. As we were walking the objects walked through a world that wasn't physically there moments ago. And the sounds. the whispering of the elves was amzing and made me think more the story of secrets that only the elf know" (S2P3).

An unbroken presentation in the extended reality means that the spatial cues, regardless of the output mode, should not be broken at any time during the experience. Naturally, in attractions and visitor centres there are cues, safety instructions, fire exit signs etc. but the trick is to somehow design these into the experience.

"I was particularly excited by the use of technology in this attraction… the combination of stories, characters, actors and technology has the potential to be truly transformative and this innovation is bound to appeal to visitors" (S5P5).

Facilitating interaction with symbols, the built environment, and characters in the extended reality environment allows visitors to receive responsive cues regarding their actions and promotes a sense of alignment among various components of the environment.

> *"Even with confined space, this place attracts visitor to entertain and engage with Santa claus through activities that are not only magical but brought you into our collection and that you could personalize. Santa office is like a perfect case study for the successful synthesis of stories and technology. The way that it create the same interactive experience without the touch screens and through the introduction of mirrors in which a visitor's reflection will trigger the more layers and stories"* (S4P1).

In summary, sensory immersion happens when the experience environment allows the physical interaction via (e.g. touching, smelling, walking) visitors are able to immerse themselves, and become a part of the experience. Tourism environments that allow deep engagement with the activities are viewed generally more immersive. Multi-sensory immersion increases emotional engagement, and this connection produces deeper and memorable experiences. Similarly, immersive experiences that engage the senses create a heightened emotional and cognitive connection that ignites the imagination. Therefore, discovering new things or learning in an immersive experience facilitates the formation of meaningful experience. Besides sensory immersion, mental immersion plays significant role in memorable tourism experience. In mental immersion, visitors are entirely absorbed in the environment and engrossed in the activities involved in the environment. Mental immersion is often defined as transportation into the narrative. Narrative should be perceived by the senses to unfold its possible multidimensional composition in imagination. In commercial environment, narratives are used to change or maintain an emotional state, which is meant to lead to enjoyment.

6.6.   Theme 3 - Value

Value creation has become an imperative element of many organisations' mission statements and goals. The concept of perceived value relates to how customers perceive the worth of a product. Despite extensive research on perceived value, there is a lack of agreement among academics regarding its precise meaning and definition. To illustrate, Zeithaml (1988:14) presents a definition of perceived value as the overall evaluation made by consumers regarding the usefulness of a product. This assessment is based on their perception of what they receive from the product, with a primary focus on product quality, and what they give in return, with a primary emphasis on the price they pay. Zeithaml's definition is widely recognized and accepted within the field. Furthermore, research widely agrees that perceived value may predict the repurchase intentions on a more accurate level than either satisfaction or quality.

"I believe that value formation is fundamentally different, as we are all individuals and our personal experiences in life effect on how we perceive and experience value" (Z2P3).

"The overall experiences are an increasingly important for value creation, there is not one single thing that creates the value for the customers, however, all aspects together will have the value for the customer" (Z3P6).

The interviews shed light on the close relationship between perceived value and the management of the value creation process. An important aspect in this regard is the concept of experience value, which serves as both an empirical construct and a theoretical framework. Experience value has gained significant traction in the field of hospitality and tourism research, as evidenced by its popularity and widespread adoption (Prebensen et al., 2013a). Experience value is based on tourist's own motivation, involvement, and knowledge, and through continuous interactions immerses the tourist in experience value creation.

"value is subjective [and] the definition of value differs per person and situation" (S4P1).

"levels of value perceived are individually different and our personal experiences in life effect on how we perceive and experience value" (S4P3).

As outlined by Park, Jaworski, and MacInnis (1986), consumer requirements play a pivotal role in shaping the perception of value. They identify three fundamental needs - utilitarian, symbolic, and experiential - that encompass various dimensions of value. Utilitarian needs drive the quest for problem-solving products, while symbolic needs pertain to the desire for products that satisfy self-enhancement and group affiliation. Experiential needs are associated with the longing for products that offer sensory gratification, diversity, and cognitive stimulation. These consumer needs form the bedrock for how individuals perceive and evaluate the value of products and services.

"the creators of the experience solely created value" (Z3P6).

"Interaction can elevate value creation, as it gives people access to more information, which should make it easier to understand the experience" (S6P3).

" The destination is already an experience on itself, however, that the customer might learn something new about the culture, the country, or even the local people, adds the value to the experience" (Z2P6).

In the context of value creation within a multi-sensory technology-enhanced tourism environment, the focus group data is examined through the lens of visitor experiences. This analysis is divided into four perceived value types, drawing inspiration from Smith and Colgate (2007). The first type is "sacrifice," which relates to minimizing perceived costs and sacrifices during purchase and ownership. The second type is "symbolic," which pertains to the product's symbolic meaning and the associations it carries. The third type is "usefulness and performance," which focuses on the product's practical benefits

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and performance. Finally, the fourth type is "hedonic," which encompasses the product's ability to create enjoyable experiences, evoke emotions, and cater to customers' desired feelings. This analysis aims to shed light on how these different value types of manifest within the multi-sensory technology-enhanced tourism context in the minds of the interviewees.

6.6.1. Sacrifice Value

Sacrifice value relate to economic, psychological and personal investment risks. By addressing these risks, service provider helps consumers to evaluate alternatives, lessens decision related stress, and (occasionally) helps lower prices by competition. Hospitality and tourism operators aim to mitigate customer-perceived risks (personal, operational, financial, or strategic) associated with product purchase, ownership, and usage. They employ strategies like guarantees, warranties, flexible return policies, and third-party endorsements to instil confidence and reduce perceived risks. This is also noted in the interviews.

> *"Nowadays, value is not only created by price/quality comparison, there are many other factors involved" (S2P4).*

Enhancing cost and sacrifice value can be achieved through various means, such as offering flexible payment terms, diverse delivery options, customer-friendly return policies, accurate billing, and providing comprehensive after-sales and customer care support. However, visitors still factor in the monetary aspect, i.e., the cost, when evaluating perceived value. Some individuals assess the cost/sacrifice ratio directly, while others consider the costs in relation to the overall experience. For instance, in the case of Santa's office, one participant expressed dissatisfaction with the high cost compared to the offering, while another participant connected the cost of the same photo-op with the entire experience. Overall, many participants consider sacrifice value in a broader context, taking into account long-term planning, quality considerations, and past experiences.

"Although I do not think that this is anywhere as good as it could be the final part where you can have a picture done and sent to your email is nice… although pricey (S2P5) ".

"Beautiful and worth every penny - whoever says it's too expensive has no idea the amount of work that goes into this play (S3P6)".

Sacrifice value has been the most frequently used foundation for most of the customer value, perceived value and value creation research. In the analysed focus group, there were instances where consumers sought to optimize the value benefits derived from a product while concurrently mitigating the potential drawbacks and compromises associated with its purchase, ownership, and utilization. Interaction, experiencing something together and building memories are considered worth the (monetary) sacrifice. Essentially, sacrifice value revolves around the costs involved in these transactions and relying solely on "price" to determine perceived value overlooks the intricacy and multidimensionality of pricing as well as the mindset of today's consumers.

"Kids signed the Santa book. We all hugged Santa and took a memorable photo (obviously at a price). But well worth it" S4P2.

"today's customers want to be involved in producing the services they want for their time and money" (Z4P5).

"People used to look at the price, quality comparison in order to say if something was valuable or not" (Z3P4).

Nowadays, value is not only created by price/quality comparison, there are many other factors involved" (S2P4).

"At the end, this experience was definitely value for my money. I felt stronger and more confident" (S5P5).

Within tourism, value is embedded in customers' personalised activities and companies must develop positive interventions and actor engagement opportunities to enhance this (embedded) value. Therefore, designers, marketers and service providers are simply providing the stage and the elements of a specific experience. The perceived sacrifice value will be evaluated based on the overall experience rather than by individual transaction during the journey.

6.6.2. Hedonic value

Hedonic value refers to how well a product or service generates enjoyable and emotionally fulfilling experiences for customers. In the travel and entertainment industries, organizations prioritize the creation of hedonic value by aiming to provide pleasurable, fun, exciting, adventurous, and humorous experiences for their customers. The sources of experiential and hedonic value lie in the capacity of service attributes to provide or enhance sensory, affective, social, and knowledge-based experiences for customers, as well as in the effectiveness of service recovery and customer support. Moreover, meeting delivery and service promises and pride of ownership or experience and product or service potency can enhance the customer experience and perceived hedonic value.

> *"peeking through windows, they make some weird toys and… modern stuff!*
> *Although the time-bending interactive part was a fairy-tale, it teached me a*
> *lot about the story"* (S1P4).

Hedonic value, as highlighted by Prebensen et al. (2014), is derived from tourists' personal motivation, involvement, and knowledge. It involves immersing the tourist in the creation of experiential value through interactions. On the other hand, emotional value is a multidimensional element influenced by the product or service's capacity to evoke various feelings and emotional states. Consumers assign significant importance to the practical aspects of everyday consumption, but they attach an even greater significance to the enjoyable, spontaneous, and indulgent aspects of consuming. This hedonic value represents a subjective element that encompasses feelings of joy and play.

As illustrated by S2P5, "the value that it holds for me is that, to take a break", emotional value depicts the service's capacity to stimulate feelings or sentimental states, and it plays a significant role in tourist experiences, where emotions, in large part influence satisfaction evaluations.

"For me, this was ultimate relaxation; sleeping in a tent, back to the basics and surrounded by nature with my family. For all of us this was the perfect experience when our need was to get away from our daily lives" (Z2P5).

"For us, this was rather outside our comfort zones, which made it extra special and memorable afterwards." (Z1P2).

These associations do not only reflect visible consumption but reflects also to the consumer's prerequisite to bond or perform shared transactions and social interaction. In a cultural heritage tourism context, social values, traditions, customs, practices, spiritual beliefs and aesthetics, amongst other human activities are embraced in intangible cultural heritage. The epistemic value (novelty value), another sub-dimension of hedonic value, is created when the curiosity of the consumer is aroused, when the product or service provides originality, and/or when it fulfils a desire for information.

"I often think about the learning aspect. Someone has mentioned that all travel experiences should be somehow intellectual" (S3P6).

"They want apps that can not only inform but also educate them of their trips – see information that they were not expecting to see" (S4P6).

Hedonic value provides fresh insights into tourists' evaluations, shedding light on the key factors that shape their perceived value, including levels of pleasure and future behavioural intent. Taking into account the extent to which the experience aligns with visitors' expectations and evokes specific feelings and emotions, hedonic value offers numerous implications for the development and management of attractions. In for example zoo environment, visitors can observe the flora and fauna and therefore

participate in an educational experience. This educational experience entails consumers enhancing their knowledge and skills. Enjoyable and pleasant moments convoyed by educational experiences may serve as a catalyst to sharing their memorable experiences with others as well as to revisit.

Connecting closely to the hedonic value, epistemic value attaches to intellectual accomplishments such as true beliefs, justified beliefs, knowledge, understanding, and is highly important in experience-related consumption. Epistemic value underscores consumers' inherent curiosity and eagerness to acquire knowledge and encounter diversity through consumption. As an example, participant S2P2 described.

> *"had to try to travel on [her] own, since [her] parents concluded that it is*
> *good for personal development." …learned to trust [herself] and to be more*
> *independent."*

Epistemic experiences play a significant role in the perceived hedonic value and are particularly prominent in adventure tourism, offering novel activities and destinations. The desire for exploration, innovation, and diversity among tourists highlights the importance of generating epistemic value as a key factor in the success of tourism products. In all types of experiences, the creation of hedonic value primarily relies on sensory cues, establishing a connection with the concept of sensory value shaped by the experience context (Holbrook, 2005; Lapierre, 2000; Sheth, Newman, and Gross, 1991). Initially mentioned elements such as themed decorations, television programs, music, video games, and retail stores illustrate the applicability of sensory value to the modern multi-sensory mixed reality environment. Presently, certain restaurants and retailers prioritize sensory value by focusing on aesthetics, ambiance, aromas, and tactile experiences.

When dining at a restaurant, customers seek hedonic experiences by immersing themselves in the appealing atmosphere and savouring delightful cuisine, which elicits positive emotional responses. In hotels and restaurants, it is crucial to align the style, decor, and offerings with aesthetic labour to ensure customer satisfaction, particularly in

terms of visual enjoyment. As a result, hedonic well-being emphasizes emotional aspects and encompasses positive emotions like happiness and the pursuit of sensory pleasure. Understanding hedonic dimensions, such as escape, relaxation, learning, discovery, thrill, self-esteem, social recognition, and bonding, allows us to comprehend travellers' motivations.

"Ability to adjust the lighting, heating and air conditioning, certain bathroom utilities found like towels, bathrobes, shampoos etc, the location of the electronic plugs conveniently close to the bed, the cleanliness of the room and so on" (S6P6).

"If the tourist feels emotionally well, the experience will turn out as positive whereas if the tourist feels stressed or anxious, they will connect negative feelings to the experience and there is a possibility that the negative feelings overplay any positive feelings that the tourist may have felt" (Z3P6).

"Is it well planned and informed which makes it easier for the tourist as they don't have to stress. All these plays important part in making the experience smooth for the tourist" (Z2P5).

Hedonistic value reveals the emotional value of the consumer's touristic experience and can also be seen as the return of investment in terms of enjoyment and playfulness. Thus, hedonism plays a significant role in leisure experiences. In addition to hedonic enjoyment, memorable experiences in tourism context are also linked to eudemonic enjoyment and perceived symbolic value but these sub-themes were not accentuated by focus group participants, or they were closely connected to hedonic value. Hence, the positive associations, and the enjoyment of the experience accent the hedonic well-being and often contains strong symbolism. Additionally, while hedonic enjoyment is about positive sensations during an activity, it also contains the pursuit, demonstration, and experience of virtue, individual development, achievement, superiority, and personal meaning.

6.6.3. Functional value

Functional value pertains to the degree to which a product or service possesses sought-after traits, usefulness, or the capacity to fulfil a specific purpose. According to Woodruff (1997), functional value encompasses various essential components. These encompass ensuring the product exhibits accurate features, functions, and attributes, such as aesthetics, quality, customization, and ingenuity. Furthermore, it involves providing suitable performance regarding dependability, performance quality, and outcomes related to service support. Lastly, functional value encompasses yielding desired outcomes, such as effectiveness, operational advantages, and environmental benefits. These facets collectively contribute to customers' evaluation of functional value, reflecting their assessment of how effectively the product satisfies their requirements and expectations. Every leisure activity provides functional benefits (i.e. instrumental value). The functional value provides features, functions, and characteristics allowing the embodiment of performances and outcomes. The service interactions and responsiveness of the service provider, and interactions with delivery or service systems provide or enhance desired performance and outcomes. In addition, the ambiance, and the attributes of the purchasing or consumption environment contribute to value by enhancing or detracting from product performances and outcomes. In the context of hospitality and tourism, functional value is often associated with key attributes such as quality, reliability, durability, and price. These factors are widely recognized as the primary sources of functional value. For instance, attributes like safety, timeliness of service, seat comfort, and price can significantly impact customers' perception of functional value in the industry. This is particularly crucial in operations like adventure tourism, where ensuring safety and meticulous planning are paramount to minimizing risks. Thus, functional value assumes even greater importance in such contexts.

"For tourism experiences this can mean the quality of the service the tourist gets as well as how the experience is organised" (S6P3).

"Is it well planned and informed which makes it easier for the tourist as they don't have to stress. All these plays important part in making the experience smooth for the tourist" (Z4P4).

Offering convenience in planning and purchasing phases, and speed and efficiency in the delivery of the services, as well as administrative help will increase the functional value of for example tour operator.

Functional value, as described in the literature, encompasses the perceived usefulness and practicality that individuals associate with evaluating the performance of a specific option. Through focus groups, various attributes associated with functional value were identified, including the overall quality of the experience, pricing considerations (including photo opportunities), sensory cues, the physical layout of the environment, the availability of refreshments, and interactions with other customers. The characteristics mentioned play a crucial role in shaping the satisfaction levels experienced throughout the entire engagement process. For a visitor, functional value can be as simple as the stress-free entrance as one of the interviewees explained. Utilitarian value, often used interchangeably with functional value, is closely tied to the extent to which a service is deemed useful, possesses desired features, or fulfils its intended purpose.

"The same roach works when we went to Santa office's shop. The ticketing, admissions, was optimized for speed and simplicity. Digital technology came into play right from the start, but the key was that they've designed the experience from the visitor's point of view and had eliminated any potential friction from the journey." (S3P5).

"If the tourist feels emotionally well, the experience will turn out as positive whereas if the tourist feels stressed or anxious, they will connect negative feelings to the experience and there is a possibility that the negative feelings overplay any positive feelings that the tourist may have felt" (S4P5).

According to the focus groups, functional value is a noteworthy component of visitors' value perceptions. The overall appraisal of the service encounter and the interaction between service providers and customers significantly contribute to the determination of value in use. Moreover, functional value is contingent on time and can be classified into three distinct categories: (1) proper, accurate, or suitable qualities; (2) appropriate performances; and (3) appropriate outputs.

"prior,- during, and after the experience. Together, they form the overall experience. Prior experiences are highly personal and dependent on the customer" (Z2P1).

"During the excursion, besides the planned program, we had room for own interpretations and completion. For instance, we could choice between different routes beforehand, leaving the difficulty [of the route] in our own hands. Having the opportunity to make these decisions myself, gave me a feeling of freedom and excitement" S4P2).

"Even before the experience, there was already much excitement. The brochure already warned us that this activity was breath taking as well as challenging, only a few people are able to perform the activity completely. Completing the whole activity would give a satisfied feeling, as well as it would leave one with an awesome experience" (S4P1).

"In my opinion, the guided experience in the Panda centre can be made truly interactive with integrated touch interaction and video. Also, we have given our background info and our experience could be easily updated based on our info and allowed for a quick change in exhibit story [fort he kids]" (Z3P4).

"The ultimate visitor experience. Once we arrived at the Santa office experience we were taken with a group and guided round the office with plenty of information and history" (S2P3).

The discussion surrounding the formation of value and the various types of perceived value presents a challenge due to the tendency of the average visitor to describe their experience as a whole, focusing on overall positive or negative emotions rather than pinpointing specific perceptions of value. Furthermore, the described relations to perceived value often combine multiple value types. Specifically, functional value and cost-sacrifice value is commonly combined when a visitor feels like the experience has been "worth the visit" or they have received "value for money". Therefore, in order to build a survey tool for measuring the perceived value, value will be measured from two different perspectives, namely hedonic and functional. Following this notion, and deriving from the themed discussion, six additional hypotheses are proposed for the empirical study.

6.6.4. Symbolic value

Symbolic value encompasses the extent to which customers ascribe psychological meaning and significance to a product, going beyond its utilitarian purpose. Certain products, particularly those associated with luxury and prestige, have the ability to appeal to consumers' self-perception and self-esteem, elevating their sense of worth and personal satisfaction. This can manifest in the joy of ownership or the act of presenting the product as a gift, evoking feelings of pride and fulfilment. When assessing products and services, consumers consider not only their functional attributes, value for money, and versatility, but also the emotional gratification derived from their use or possession (symbolic value) and the social implications conveyed to others (expressive value). Symbolic value is intertwined with the psychological associations customers form with a product or service, capturing the deeper meanings and symbolic connections it holds for them. Some services (fine dining, for instance) make us feel good about ourselves and therefore appeal to our personal self-concepts and self-worth both in possession (e.g., enjoying the dinner) or in giving (e.g., taking someone out for a dinner). Also, symbolic value can derive from personal needs, self-esteem and pure indulgence.

> *"The value that this experience brought me, besides relaxation and quality*
> *time with a friend, is recognition; recognition for the hard work I did" (S3P2).*

Symbolic value is derived from the personal associations and meanings individuals attach to products and services. Some items hold significance only for specific consumers, as they evoke memories or connections related to people, events, or locations. These products serve as a means of self-expression, reflecting individual identities and experiences. They may also intersect with hedonic value, fulfilling personal needs and desires. Additionally, certain products allow consumers to showcase their personalities, tastes, and values, while others focus on the social meaning and how they are perceived by others. Overall, symbolic value encompasses the diverse ways in which consumers connect with products, deriving personal and social fulfilment from their engagement. For example, participant S1P5 explained:

"in my opinion, the need for friendship and esteem is one of the most basic needs of the human being".

Branded products, for instance, are regularly bought because of their image, prestige or status. Furthermore, linking to sociocultural events and traditions, some products and services have conditional meaning or symbolic value. In contrast, personal meaning is specific to an individual person, and while marketers repeatedly try to promote individual meaning, symbolic value appears to be more problematic to deliver. Symbolic value, especially in the era of social media and image sharing platforms connects often to memories. Also, the evaluation of symbolic value of an experience happens during a prolonged period.

"The memory has the opportunity to be more positive and stronger when great social interaction happens in the location" (S1P6).

"the feeling of satisfaction afterwards made it an unforgettable experience" (S4P2).

When effective, symbolic value can create long-term competitive advantage and can be reinforced with the tools of marketing and for example loyalty programs.

6.7.   Theme 4 –Storytelling

The tourism industry, particularly in experience-based activities, has recognized the significance of creating narratives and crafting distinctive experiences. However, integrating storytelling into the overall experiencescape poses challenges for tourism developers and operators. The experiencescape with tangible and intangible cues influences strongly consumers' behaviour (Mossberg, 2007; Bitner, 1992). In the tourism industry, the focus extends beyond mere service transactions to encompass the creation of exceptional experiences that evoke positive emotions and lasting memories for tourists (Mei et al., 2018). With a desire to fulfil visitors' quest for meaning in life, tourism companies strive to develop unique experiences. Stories play a crucial role in this process as they absorb emotions, spark fantasies, and provoke thoughts, ultimately captivating and connecting with tourists on a deeper level (Kent, 2015).

In the realm of technology-enhanced tourism experiences that stimulate multiple senses, the importance of storytelling is magnified. However, in the tourism industry, there is a dearth of research exploring the relationship between storytelling and the experiencescape (Mody et al., 2018; Koll, 2015; Mossberg, 2007). It is worth noting that tourism companies frequently encounter resource limitations, impeding their capacity to enlist professionals who can effectively curate the experiencescape through storytelling.

> *"I think the key to making an unforgettable experience is to start by crafting*
> *a compelling story. Stories can be interesting and can add an extra*
> *dimension and deeper meaning to the experience" (S4P1).*

It is clear to visitors that stories and storytelling play a crucial role in the creation of memorable tourism experiences. They compare other experiences and acknowledge the positive impact the stories have to their experiences. Visitors also expect to experience new ways of storytelling, and the integration of stories into the experiencescape.

> *"We see this storytelling aspect more and more in the hospitality industries,*
> *but I think they can learn from how performers do that" (Z2P4).*

"storytelling or wow to create compelling stories in immersive environment"
(S4P5).

Storytelling is a powerful tool that allows individuals to share information and experiences through compelling narratives. It goes beyond mere communication, as it enables people to convey knowledge, ideas, and the interconnectedness of events. By composing stories, individuals can effectively communicate lessons, concepts, and the cause-and-effect relationships that underpin them. Storytelling serves as a means to delve deeper into the essence of a service or environment, unlocking its hidden meanings and enriching the overall experience. It also plays a crucial role in creating immersive experiences, drawing participants into the narrative and making it come alive. When harnessed effectively, storytelling has the remarkable ability to captivate and engage individuals, leaving a lasting impact.

"The experience brings together a dazzling range of his stories and
characters" (S1P6)

"thereby offering the users multiple version of the same story" (S3P1).

"The whole experience is exciting because there is always an exciting story
behind" (S3P2).

As stories possess inherent entertainment value, they have the power to captivate and sustain people's attention, as noted by multiple participants (e.g., S6P1, S2P4, and Z3P4). According to Lundqvist et al. (2012), it is essential for listeners or viewers to identify themselves with a character or element in the story to truly engage with it. Additionally, stories have the ability to steer individuals away from pessimistic thinking and guiding them towards a more positive frame of mind. Gabriel (2000) describes stories as emotionally and symbolically charged narratives. They serve a purpose beyond the mere conveyance of facts and information; their intention is to enrich, enhance, and imbue meaning into those facts, ultimately creating a captivating story around a concept. The goal is to immerse visitors into the storyline, and through the integration of the

experiencescape into the narrative or concept, unique and unforgettable stories are created. Moreover, the experiencescape itself can serve as a facilitator of storytelling.

"the question to ask is how to evoke that emotion. Here it is done through the story evolving from our childhood. The man himself. Santa. And the magic" (S6P1).

"storytelling or wow to create compelling stories in the world of immersive environment" (Z3P4).

"the extra layers of interactivity you can add which have no effect on the storyline but create an added sense of realness and immersion for the audience" (Z3P4).

Experience providers have multiple modes of storytelling. Recent studies encourage the development of sensorially-enriched media to enhance the user experience by stimulating senses other than sight and hearing. Digital storytelling uses personalised stories and distributes these with new technologies thus creating interactive and engaging experiences to visitors. By facilitating a rich and multi-dimensional sensory experience that engages multiple senses and encourages interactive participation, immersive technologies and environments have the ability to provide a layered and interconnected sensory encounter. This integration of diverse sensory inputs allows for a more immersive and captivating experience, stimulating various senses simultaneously and creating a multisensory environment. Storytelling is also important to the development of the self as the emotions in the stories are directly connected to the creation of meaning in regard to cause, consequences, and goal attainment.

"The story goes through the history of Santa, from ancient times up to modern times. There are several videos to watch and many displays" (S3P5).

"The Santa office is a storytelling platform" (S2P5).

The stories can be experienced in multiple ways. In experience, storification enables the formation of multiple perspectives, interaction potential and depth on a specific area of interest, thus maintaining the visitors' curiosity and focus. Furthermore, the implementation of storytelling can significantly influence how visitors interpret and perceive the experiential environment. In tourism communication, authentic cues promote an information process that elaborates the experienced stimuli. However, myths and legends have also a significant role in communicating visitors with meaningful and memorable experience. Additionally, from the management perspective, unique myths and legends provide a narrative structure for the development of experiences, and the formation of emotions and memories. Storification is significant for tourism, and any developments in technology that enable companies to tell stories in compelling ways can have profound impact.

"I believe our visit to Santa office was a kind of a scavenger hunt that led us to the history and stories of Santa and the elves and the virtual elements complimented the story" (S2P2).

"The next generation 3D photos, and other content on different displays that visitors can carry around the office made it easy to follow the story and we learned a lot about Christmas" (S4P1).

"When creating these narratives, how will the user respond to what you are showing them" (S3P4).

Successful storytelling has the power to guide the listener or viewer away from negative thoughts, fostering a shift towards a more positive mindset. To fully immerse oneself in the story and access the potential for an extraordinary experience, two conditions must be met. To begin with, the experience should take place within a context that emphasizes the prioritization of enjoyable and pleasurable service encounters, where the main emphasis is placed on activities that bring pleasure and delight. Secondly, the experiential environment must offer an escape from the mundane realities of everyday life. This

environment serves as a captivating realm that is both thrilling and secure, allowing visitors to observe, participate, and assume roles outside their ordinary existence. Well-presented immersive narrative connects the visitor's own experiences and the objects within the experience environment. Additionally, the personal connection makes visitors care. The authentic and storified elements, as well as positive emotions increase the visitors' perceived memory of the story and their intention to revisit.

"The whole experience [will become] exciting because there is an exciting story behind (S1P5).

"Just like here, the [story of] elves play a big role in the experience" (S52).

In the tourism industry, which is centred around providing immersive experiences, tourists are not simply consumers of products or services. They actively seek out unique and pleasurable experiences. Mei et al. (2018) highlight that the interaction between hosts and guests goes beyond a transactional relationship. It is perceived as a personal connection, where hosts are seen as more than just business entities. The presence and constant accessibility of hosts during the tourists' whole stay are recognized as integral elements that contribute to shaping the narrative and creating a memorable experience.

"the use of technology in this attraction… the combination of stories, characters, actors and technology has the potential to be truly transformative and this innovation is bound to appeal to visitors" (Z2P3).

Therefore, the experienscape can be seen as the foundation for creating memorable tourism experiences and creating value for the visitors. Higher emotional arousal positively influences perception and likelihood that the details of an emotional experience are remembered. Besides, emotions are likely to impact the experiences with which visitors choose to engage, the memories they make, and ultimately the learning that takes place. A meaningful story heightened with multi-sensory immersion can activate visitors' imaginations, conveying them to the selected time, place or story. Memory can be enhanced by an emotional narrative stimulus. In the creation of stories and concepts,

several factors come into play, including available resources, perceptions of authenticity, the historical context, and the surrounding environment. Tangible elements within the experiencescape, such as the physical setting, and intangible elements like the interaction and dynamics between hosts and guests, facilitate the art of storytelling. The presence of authenticity lends significance to the stories and leaves a lasting impact on tourists. It is of utmost importance to carefully consider the utilization of symbols, including language and artifacts, as they significantly influence how tourists perceive both the narrative and the physical environment. Through storytelling, tourism organizations have the opportunity to curate immersive experiences that portray a comprehensive depiction of the concept, convey relevant themes, and provide tailored services.

Highlighting the themed focus group discussions, this section aimed to collect visitor experiences, and the visitor's interpretations of how they experience, and how they see the value formation in a multisensory mixed-reality tourism experience. Specifically, the focus group discussions tried to reveal visitors' interpretations of value formation, differences between perceived value and how might the atmospherics, and multi-sensory mixed-reality technology influence the experienced immersion, and how the perceived immersion influences the value formation. Drawing from the literature-based themes and the insights derived from the focus group interviews, the following subsection will provide a summary of the findings and elucidate the construction of the conceptual model for value formation in technology-enhanced multisensory mixed-reality experiences.

6.8.   Comparison of key findings with previous research

In this section, the discussion will delve deeper into the key findings and their comparison with the existing literature. The literature and the key findings from the focus group interviews will be presented in Table 6.4, offering a concise summary of the findings and their alignment with the existing knowledge. Furthermore, the table will play a crucial role in outlining the development of hypotheses and the conceptual framework that will undergo empirical testing in the subsequent chapter.

Table 6.4 Summary and comparison of key findings grounded on the literature review and focus group interviews.

Themes and sub-themes	Related studies	Present theory	Emerging findings from focus group interviews
Experience	Bec et al.(2019); Prebensen et al. (2018); Oh et al. (2007)	Value-based construct built on personal narratives. Perceived personally transformative and hedonistic.	Visitors' curiosity, involvement, motivation, and participation play a significant role in shaping the impact of the experience. Positive experiences are often transformative and hedonistic, characterized by deep absorption and a sense of self-transcendence.
Immersive experience	Blumenthal (2020); Bec et al.(2019); Jung et al (2016)	Consumer is entirely captivated in the experience losing one's awareness of time and self-consciousness.	Stories, sensory stimuli, and augmented features provide triggers for visitors, capturing their attention and drawing them into the present moment or their personal life narrative, ultimately leading to a state of immersion.
Interactive experience	Richards (2014)	The participation/interaction in activities between tourists, operator, and environment.	Through interactive activities and technologies, visitors may connect with service staff, the environment, and locals while learning about the culture or the narrative. Increases arousal, memorability, and connection to a place.
Memorable experience	Coudounaris and Staphit (2017); Chadralal and Valenzuela (2013); Kim et al. (2012)	Formed through the individual evaluation of subjective experiences by travellers.	Tourists are more likely to develop and compose their own memorable tourism experiences in a storified environment. Hedonism, culture, meaningfulness, and novelty are all required.
Multi-sensory experience	Agapito (2020); Martins et al. (2017); Matteuci (2016)	Experiences, hence, emotions, are linked to sensory impulses at the destination. Explain the positive emotions and the learning outcomes associated with tourism.	Built on emotional, informative, entertaining, and immersive components (stimuli) that allow visitors to fully immerse themselves in tourism environment and experience.
Personalised experience	Buhalis and Amaranggana (2015); Mahmood and Salam (2012)	Leveraging personal preferences to develop services that cater to customers' needs.	Personalised services based on metamorphic designs and multimedia-assisted exploration of the destination/attraction that deepen the interaction.
Technology-enhanced experience	Santoso et al., 2021;Lee at al. (2020); Bae et al. (2020); Bogicevic et al. (2019)	Vividness and interactivity influence consumer evaluations positively through increased immersion.	Positive impact through heightened immersion. Combining real and digital, offers information using multisensory modalities such as visual, auditory, touch, and smell to augment user's sense of the environment.
Experiencescape	Mei et al. (2020); Chen et al. (2020); Campos et al. (2018)	A cognitive process of perceptions, visualizations, and thoughts of the elements of the environment.	By facilitating interactions among stakeholders and integrating physical and virtual elements of the environment, as well as service delivery characteristics, it shapes how tourists experience and derive hedonic benefits.
Atmospherics	Mattila and Gao (2017); Ruy et al. (2012); Kotler (1973); Booms and Bitner (1981)	Elements such as shapes, sounds, and scents are strategically designed to evoke specific emotional responses in the minds of customers.	Dimension of atmosphere, such as ambience, spatial layout and design, and sensory aspects, such as temperature, lighting, aroma, and sound, all have an impact on the construction of value perception.
Interaction	Campos et al. (2018); Bertella (2014)	Possibilities to interact, and involving tourists in activities that meet their interests and capture their attention.	Consumers engage with the environment and curate their distinct experiences through interactive encounters with the experience setting, as well as the interplay between products and services.
Technology	Chen et al. (2020); Deng, Benckendorff and Wang (2019)	Increases immersion and engagement and enhances the ways tourist interacts with the experience.	Digital solutions and multisensory technologies in the tourism environment offer creative opportunities for engaging, resulting in notable changes in the ways in which tourists interact with, and experience tourism destinations and services.
Immersion	Dede (2009); Fox, Arena, and Bailenson, 2009;	Engagement resulting in a heightened sensory attachment to the experience, or the consumption environment.	Immersion is a subjective process in which the customer disconnects from their daily lives and enters the experience environment either abruptly

	Snodrgrass et al., (2013)		or gradually. Some people have a stronger immersion tendency.
Sensory immersion	Lunardo and Posignon (2019); Bec et al. (2019); Xu et al. (2021)	The emotional connection that sparks the imagination as a result of activity/environment's sights, sounds, and scents.	Possibility to immerse and become a part of the experience when the experience setting allows for physical engagement (e.g. seeing, hearing, touching, smelling).
Mental immersion	Lunardo and Posignon (2020); Chen et al. (2020)	Transportation into narrative/being entirely absorbed in the activities and the environment.	Narratives are linked to sensory immersion (seeing, hearing, smelling, and feeling) and are utilised to change or sustain an emotional state that leads to pleasure.
Value	Prebensen and Rosengren (2016); Smith and Colgate (2007)	Widely agreed on four value types. In tourism, the customer as a co-creator of hedonic and functional value is important.	Value perception is influenced by personal life experiences. Value is subjective, and each person's concept of value is different. The interaction may increase a visitor's sense of perceived value by providing them with additional information.
Sacrifice Value	Peppers and Rogers (2016); Pandza (2015); Boksberger and Melsen (2011)	The overall assessment of a service's value by consumers is determined by their perception of the benefits received compared to the costs incurred. This evaluation is influenced by the hedonic aspects of leisure tourism.	In the context of leisure tourism, the value framework differs, with the perception of value for money being closely tied to the enjoyment and novelty derived from the experience. As a result, the hedonic attributes of the experiences play a significant role in determining their value.
Hedonic Value	Tsai and Wang (2017); Tasci and Ko (2016); Miao et al. (2014	Influenced by sensory and emotional experiences, and by the creativity and ambiance of the environment.	Hedonic attributes are thought to have the most influence on perceived value. The emotional value of the tourism experience, as well as delight and fun, are shown by hedonistic value. As a result, hedonism plays an important part in leisure activities.
Functional Value	Jamal et al. (2011); Lee et al. (2011)	In tourism, factors like safety, timeliness, comfort, and pricing may all impact functional value perceptions.	Value refers to the extent to which a product or service satisfies customer needs, provides utility, or fulfils a specific purpose. It often relates to the perceived "worth of a visit" or "value for money."
Symbolic Value	Gazley and Watling (2015); Ekinci et al. (2013); Gross and Brown (2006)	Consumption of a product or service adds value by offering personal or societal significance. Connected with hedonic attributes.	Customer attachment refers to the degree of psychological connection a customer has with a product or service. Certain services have the ability to evoke positive feelings and resonate with our sense of self-worth and self-identity.
Storytelling	Mei et al. (2020); Kim and Youn (2017); Kent (2015); Mossberg (2007)	Communication process, with the goal of augmenting and infusing facts with deeper meanings or fantasies.	Stories can be presented orally or visually, but they can also be metaphors, and they can elicit fantasies, ideas, and emotions. Destinations are storyscapes in which the story evolves with the environment and the people.
Emotional story	Moscardo (2020); Kim and Youn (2017); Robinson (2012)	The emotional story has an effect on how people perceive their experiences and how often they remember them.	Visitors' imaginations can be sparked by a meaningful story that is augmented with multisensory stimulation, transporting them emotionally to the chosen time, location, or story.
Immersion into the story	Waysdorf and Reijnders (2018); Dancstep et al. (2015); Hansen and Mossberg (2013)	Allows for remarkable experiences and is dependent on two factors: a hedonistic consuming environment and escapism.	A well-presented immersive narrative links the visitors to the experience environment, and the resulting emotions increase the visitors' immersion in the story and personal connection to the experience.

The findings of the focus group interviews highlight the overlapping themes within the initial conceptual framework and in the discussed focus group themes. As described earlier, both the visitor and the researchers are challenged with the strict categorization

of discussed themes. The following sections will conclude the findings and further justify the formulation of the conceptual framework, the constructs, and the derived hypotheses.

6.8.1. Mixed-reality experience atmospherics construct

The mixed-reality atmospherics construct, derived from the literature findings and focus groups as shown in table 6.4, integrates the themes of experience, experiencescape, and storytelling from the initial conceptual model. Similarly, this construct incorporates the sub-themes of immersive, interactive, multisensory, and technology-enhanced experiences, enabling empirical research on the impact of mixed-reality technologies on value formation. Accentuating the findings of VR, and game immersion literature, participants in the focus groups underlined that storytelling, sensory stimulation, and atmospheric cues may be employed in such a manner that one loses track of time and self-awareness during a tourism experience. In this experience, the multisensory mixed-reality technology-enabled atmospherics allow visitors to connect with service staff, the surroundings, and the narrative while learning about the culture or story through interaction. Furthermore, sensory stimulation encountered at the destination or an attraction, according to participants, boosts arousal, memorability, and emotional connection to the narrative and the specific location. Moreover, focus groups suggested that emotional, educational, entertaining, and immersive mixed-reality components (stimuli) let visitors fully immerse themselves in the tourism environment and experience. In addition, atmospheric sensations, visuals, and imagined ideas are part of a cognitive process, and greater immersion, vividness, and engagement possibilities of the atmospherics positively affect customer experience. Similarly, temperature, lighting, fragrances, and noises, as well as other atmospheric elements including spatial arrangement, and architecture, all trigger different emotional reactions in customers potentially impacting the value perception. Hence, mixed-reality atmospherics will be used as the other stimulus construct for value creation in the proposed conceptual model for technology-enhanced multisensory mixed-reality value creation.

6.8.2. Mixed-reality experience construct

In the same way, grounded on the literature and focus group discussions, the mixed-reality experience construct combines elements from the experiencescape and storytelling themes, and the sub-themes of a multisensory, personalised experience, interaction and technology-enhanced experiences to allow the empirical research of the effect of mixed-reality atmospheric cues on value formation.

Participants in focus groups described their experiences as personally transformative and enjoyable. According to the literature and interviews, visitors' curiosity, involvement, motivation, and participation in the experience play a significant role. Extraordinary experiences are frequently characterized as hedonistic and transformative, necessitating deep engagement and a sense of immersion in the experience. Additionally, emotions experienced during a tourism experience, are linked to sensory impulses at the destination. Mixed-reality experiences enable visitors to fully engage and immerse themselves in the tourist environment and the overall experience, incorporating emotive, educational, entertaining, and immersive elements. Likewise, personalised services in mixed reality attractions, according to the participants, are based on metamorphic (adaptable) designs and multimedia-assisted exploration of the destination and attraction.

The mixed-reality environment facilitates interaction among all stakeholders, seamlessly blending the tangible and virtual components of the environment, while also leveraging the attributes of service provision. This holistic integration greatly shapes visitors' experiences and enhances their hedonic benefits. By engaging with the experiential environment and establishing a connection between the offerings and services, a mixed-reality environment enables visitors to forge a personal and distinctive experience within the surroundings. Moreover, according to participants, narratives can be told orally or visually, and they can elicit desires, ideas, and feelings. Narratives can also be seen as metaphors and destinations as storyscapes. In these storyscapes, people's perceptions of their experiences are influenced by emotional stories. A meaningful narrative paired with multisensory stimulation may spark visitors' imaginations, transferring them

emotionally to the selected time, location, or story. As a result, in the suggested conceptual model for technology-enhanced multisensory mixed-reality value creation, the mixed-reality experience will be employed as the other stimulus construct for value creation.

6.8.3. Mental immersion construct

The introduction of the mental immersion construct to the conceptual model is suggested by the findings of the literature and focus group talks. Building upon the original concept, this construct expands to incorporate elements derived from immersive, interactive, multisensory, and technology-enhanced experiences, as well as storytelling. This extension enables empirical investigation into the impact of mental immersion in mixed-reality environments on value formation within the realm of multisensory mixed-reality tourism.

Engagement leads to a heightened sensory attachment to the experience, or the consumption environment, as highlighted in gaming immersion literature and emphasised by focus group members. Immersion is a personal experience in which the client disconnects from their normal life and joins the experience environment either abruptly or gradually. Some people have a higher proclivity for immersion and a tendency for transportation into the story, in the events and surroundings. Narratives are used to modify or maintain an emotional state that leads to pleasure and mental immersion. The narratives are connected to sensory immersion (seeing, hearing, smelling, and feeling). As a result, in the suggested conceptual model for technology-enhanced multisensory mixed-reality value creation, mental immersion will be employed as the other immersion construct for value creation.

6.8.4. Sensory immersion construct

The confirmation of the relevance of sensory immersion in the conceptual model is derived from both the literature and the findings of focus group discussions. Additionally, the construct has the ability to incorporate context-specific enhancements from sub-themes such as immersive, interactive, multisensory, and technology-enhanced experiences, among others. After all, immersion is a subjective process in which the consumer disconnects from their regular life and joins the experience environment either abruptly or gradually, resulting in a heightened sensory connection to the experience, or the consuming environment. Even if some people have a higher immersion propensity, any visitor can immerse and become a part of the experience if they have an emotional connection that ignites imagination as a consequence of the activity/sights, environment's sounds, and scents. As a result, when the experience environment allows for physical involvement (e.g., seeing, hearing, feeling, and smelling), the sensory immersion that results allows for extraordinary experiences. Consequently, participants emphasised that sensory immersion is based on two factors: a hedonistic consuming environment and escapist elements, which supports previous game immersion literature. Moreover, a well-presented immersive narrative connects visitors to the experience environment, and the resulting emotions heighten visitors' immersion in the story and personal connection to the experience. As a result, in the proposed conceptual model for technology-enhanced multisensory mixed-reality value creation, sensory immersion will be employed as the other immersion construct for value creation.

6.8.5. Functional value construct

The functional value construct is incorporated in the original conceptual model based on literature and focus group discussions. As part of the multisensory technology-enhanced mixed-reality value construction, the construct, its connections to the results, and the issues presented in the experience theme will be experimentally examined. The research generally agrees on four categories of value, although the hedonic and functional value is particularly important in the tourist environment. Personal life experiences impact value assessments, according to the participants. Furthermore, value is subjective as a result

of an experience, and each person's sense of value is unique. The interaction may boost a visitor's feeling of perceived worth by giving them new information, according to the focus groups.

Also, in the tourist industry, elements such as safety, punctuality, comfort, and cost may all influence functional value views, but this is more common in travel and adventure tourism than in attractions. Based on the literature, functional value pertains to the degree to which a product or service aligns with a customer's needs, provides utility, or serves a specific purpose. The concept is frequently associated with thoughts of the "worth of a visit" or "value for money," according to participants. Participants also stressed the importance of emotional and social components in the consumer's appraisal of the experience's usefulness, in addition to functional goals such as facilities and food services.

Consequently, the functional component of perceived value encompasses customers' rational and economic assessments, encompassing pricing, service quality, and interactions with service personnel. In the proposed conceptual model for technology-enhanced multisensory mixed-reality value creation, functional value will be employed as one of the key value constructs.

6.8.6. Hedonic value construct

The hedonic value construct integrates the elements of experience, experiencescape, and narrative from the first conceptual model, based on literature and focus group discussions. To facilitate empirical exploration of value creation in technology-enhanced multisensory mixed-reality value creation, this construct pulls from the sub-themes of sensory immersion, immersion into the story, technology-enhanced experiences and symbolic value.

The existing tourism literature reinforces the notion that tourists play a crucial role in co-creating hedonic value. Nevertheless, the participants emphasized the significance of the experience providers' involvement in organizing and overseeing the event. During the

focus groups, participants likened co-creation to "having a role in a staged play." Furthermore, subjective and personal life experiences influence value perception and involvement may improve a visitor's impression of perceived value by adding additional information, joy, and purpose to the experience, regardless of the amount of participation, or intensity. Hedonic qualities, according to participants, impact value judgments in leisure travel. Furthermore, the value structure for leisure tourism is different, implying that the overall value is determined by the hedonic qualities of experiences. Hedonic characteristics, which are impacted by sensory and emotional experiences, as well as the inventiveness and atmosphere of the place, are regarded to have the greatest impact on perceived worth. As a result, the participants believe that hedonistic value demonstrates the emotional worth of the tourism experience, as well as joy and fun. As a result, hedonism plays a significant role in leisure activities, and service consumption adds value by providing personal or social meaning linked to hedonic qualities and symbolic value. As a result, in the suggested conceptual model for technology-enhanced multisensory mixed-reality value creation, the hedonic value will be employed as the other value construct for value production leading to intended behavioural intentions.

6.9.   Development of the conceptual framework for value creation

The aim for the PhD is to empirically test and analyse the proposed value creation framework in multi-sensory mixed reality tourism environments and how the different sensory stimuli affect the perceived value and actual in-situ experience. Through empirical research, the PhD will aim to validate the value creation framework in the Finnish tourism context. The objectives 1 and 2 were achieved during MPhil study, and the PhD will be further developed to achieve objectives 3 and 4:

3. To explore antecedents of tourism value creation in the mixed reality environment; and
4. To further develop the proposed value creation framework for a multi-sensory, mixed reality environment within tourism context.

In the focus group discussion, the antecedents of tourist value generation in the mixed reality tourism environment were explored in relation to existing literature. The findings support the classification of the antecedents into two constructs, namely mixed-reality atmospherics and mixed-reality experience. However, the findings and earlier game immersion research imply that, while sensory and mental immersion are a result of mixed-reality stimuli, they also operate as a direct antecedent of value creation in a mixed-reality environment. As a result, mixed-reality atmospherics, mixed-reality experience, mental immersion, and sensory immersion constructs will be incorporated in the conceptual framework for technology-enhanced multisensory value creation in a mixed-reality tourist setting and will be researched further in the following chapter.

Based on the initial theoretical model for value creation presented in section 3.7 and the key findings of the focus group interviews highlighted in section 6.9, a conceptual value creation framework is proposed in figure 6.3. The framework follows the linear cause-effect model starting from Stimulus which leads to Immersion, Value formation which eventually influences behavioural intent, namely action. Drawing upon the recent literature discussed in section 3.6 and insights gathered from the focus groups, the initial

conceptual framework has evolved to incorporate two distinct constructs related to technology-enhanced experiences and the management of the experiencescape. These constructs, namely MR atmospherics and MR experience, encompass the physical and digital elements as well as the interactive aspects of the mixed-reality environment. Consequently, in the proposed framework, the resulting immersion constructs have been updated with the findings of literature and focus group findings thus highlighting the role of sensory and mental immersion. In contrast to the initial model and the four value constructs, the proposed conceptual S-I-V-A framework introduces a division within the perceived value in use. Specifically, this division consists of two distinct value constructs: hedonic value and functional value. This refinement is informed by the focus group findings discussed in detail in section 6.6. Table 6.5. summarises the development of the ten hypotheses in relation to existing literature and focus group findings.

Table 6.5 Comparison of existing literature in relation to focus group findings and formulated hypothesis

| Hypothesis	Related literature	Present hypothesis	Amendments to present hypothesis
H1 Mixed-Reality Atmospherics positively influence Mental immersion.	Mei et al. (2020); Chen et al. (2020); Campos et al. (2018)	Combining built and virtual elements of the surroundings and service delivery are likely to immerse and engage tourists.	Highlighting the mental immersion, thus the transportation into the narrative through MR atmospherics.
H2 Mixed-Reality Atmospherics positively influence Sensory immersion.	Santoso et al., 2021; Agapito (2020); Lee at al. (2020)	Combining real and digital, offers possibilities to augment user's sense of, and the immersion into the environment.	Emotional connection and increased use of imagination (sensory immersion) through MR atmospherics.
H3 Mixed Reality Experience positively influences Mental Immersion.	Santoso et al., 2021; Lee at al. (2020); Bae et al. (2020)	Vividness and interactivity influence consumer evaluations positively through increased immersion.	MR experience allows the personalisation of the narrative through interactive possibilities.
H4 Mixed Reality Experience positively influences Sensory Immersion.	Agapito (2020); Martins et al. (2017)	Experiences are linked to sensory impulses at the destination and explain the positive emotions and the learning outcomes associated with tourism.	Sensory impulses can be augmented with MR.
H5 Mental Immersion positively effects the Hedonic Value.	Tsai and Wang (2017); Tasci and Ko (2016)	Hedonic Value is influenced by sensory and emotional experiences, and by the creativity and ambiance of the environment.	Dividing mental and sensory immersion into separate constructs, thus the transportation into the narrative and the events in the surrounding.
H6 Mental Immersion positively effects Functional Value.	*	*No confirmed hypothesis in MR tourism context.*	Narratives are used to explain the experience, and to change or sustain an emotional state that leads to pleasure and perceived "worh of a visit".
H7 Sensory Immersion positively effects Hedonic Value.	Tsai and Wang (2017); Tasci and Ko (2016)	Hedonic Value is influenced by sensory and emotional experiences, and by the creativity and ambiance of the environment.	Dividing mental and sensory immersion into separate constructs, thus the physical involvement (e.g., seeing, hearing, feeling, and smelling) in the surrounding (Sensory immersion).
H8 Sensory Immersion positively effects the Functional Value.	*	*No confirmed hypothesis in MR tourism context.*	The emotional connection to the experience increases the perceived "worth of a visit".
H9 Hedonic Value positively impacts Behavioural Intention.	Joseph-Mathews et al., (2009)	Consumers' symbolic, and hedonic perceptions of the surroundings impact their behaviour.	Perceived hedonic value increase the visitors' personal connection to the experience thus influencing the behavioural intent.
H10 Functional Value positively impacts Behavioural Intention.	Smith and Colgate, (2007); Sheth et al., (1991)	Perceived functional value enhance desired performance and outcomes and drives consumer choice.	No amendments.
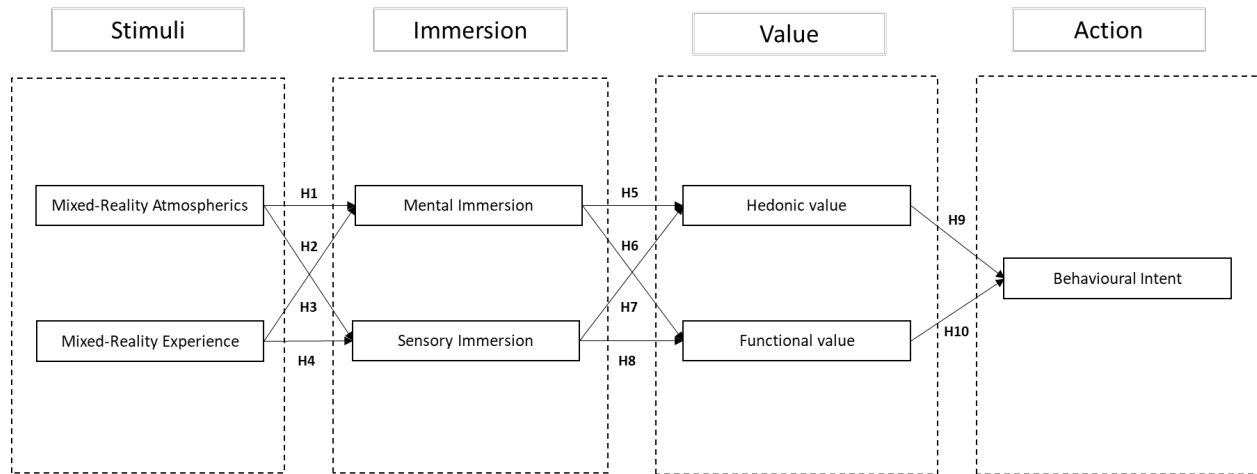
Figure 6.2 Proposed S-I-V-A value creation framework for technology enhanced multisensory mixed reality tourism environment.

The developed model elucidates the interconnectedness of the seven constructs. According to this model, the Mixed-Reality Atmospherics and the Mixed-Reality Experience serve as the stimuli (S), prompting a subsequent state of mental or sensory immersion (I), which in turn influences the perceived value, whether it be hedonic or functional (V). Finally, the model proposes, that he perceived value, alongside with the indirect effects from the antecedent variables positively influence the behavioural intent (A). Drawing upon the literature and the summarized findings from the focus groups (see table 6.5), the formulated model incorporates ten hypotheses that capture the anticipated relationships. These hypotheses will undergo quantitative testing and analysis in the subsequent chapter.

H1 Mixed-Reality Atmospherics positively influence Mental immersion.

H2 Mixed-Reality Atmospherics positively influence Sensory immersion.

H3 Mixed Reality Experience positively influences Mental Immersion.

H4 Mixed Reality Experience positively influences Sensory Immersion.

H5 Mental Immersion positively effects the Hedonic Value.

H6 Mental Immersion positively effects Functional Value.

H7 Sensory Immersion positively effects Hedonic Value.

H8 Sensory Immersion positively effects the Functional Value.

H9 Hedonic Value positively impacts Behavioural Intention.

H10 Functional Value positively impacts Behavioural Intention.

6.10. Summary

This chapter extensively reviewed the existing literature and incorporated insights from 73 participants in 10 focus groups. Its primary focus was on identifying the factors that contribute to value creation in a technology-enhanced multisensory tourism environment. The proposed framework serves as a foundational basis for quantitative analysis, offering empirical evidence to support the author's theoretical model.

Existing scales and instruments have faced challenges, yielding weak or insignificant statistical relationships and experiencing operationalization issues (Prebensen et al., 2017). Therefore, the developed value S-I-V-A framework will be instrumental in operationalizing future research across various tourism contexts.

Utilizing a research methodology that involves conducting focus group interviews, both before and immediately after participants interact with the attraction, offers a fresh and innovative viewpoint to delve into the tourist experience from start to finish. This approach presents a distinctive angle, bridging a gap highlighted by Godovykh and Tasci (2020), who recognized the complex difficulty of measuring the intricate aspects, and the temporality of customer experiences using only one method. Unlike various other researchers (such as Williams and Soutar, 2000) who employed separate groups to study the pre- and post-consumption phases, the approach chosen for this study allowed for comparison, learning, and thereby enriched insights from both participants and the observed phenomena.

Conducting interviews before the experience allows researchers to gain insights into participants' initial expectations, motivations, and preconceived notions about the attraction. This pre-experience phase establishes a baseline understanding of participants' attitudes and enables exploration of the factors influencing their anticipations.

Follow-up interviews immediately after the experience offer a valuable post-experience perspective. This timing captures participants' immediate reactions, emotions, and impressions while the experience remains fresh in their minds. The data collected provides a rich source of information that reflects their actual experience, unveiling nuances that may have been overlooked or forgotten if interviews were conducted at a later time.

The combination of pre- and post-experience focus group interviews enables a comprehensive analysis of the touristic experience, encompassing both anticipated expectations and actual experiences. This methodological approach offers a unique opportunity to examine the alignment or divergence between participants' preconceptions and their real encounters, shedding light on the dynamic nature of the touristic experience.

In conclusion, this research method captures the temporal dimension of the touristic experience and delves into participants' expectations, reflections, and immediate reactions, enhancing the understanding of their perceptions. It contributes to the advancement of knowledge in the field of touristic experiences. Moreover, this research will provide empirical evidence on the potential and dynamics of incorporating technology-enhanced sensory stimuli and leveraging mixed reality environments in various aspects of the tourism industry, including destinations, marketing, and development. The findings will offer practitioners a model for enhancing customer experiences, increasing perceived value, and ultimately obtaining competitive advantages and economic benefits such as repeat patronage and extended stays.

Chapter 7 - Quantitative Data Analysis

7.1.   Introduction

This chapter offers a comprehensive exploration of quantitative data analysis. It starts by providing a concise overview of the steps and analysis techniques utilized. Following that, it presents the demographics and descriptive statistics derived from the survey data. Additionally, the chapter delves into the results of the survey tool analysis and provides detailed insights into the structural model analysis. Finally, it concludes with the development of the S-I-V-A model, integrating all the findings.

7.2.   Quantitative findings

The subsequent sections provide a detailed examination of the collected survey data through the utilization of statistical analytic tools such as IBM SPSS 26 and IBM SPSS Amos 26. In total, 317 complete responses were collected via targeted e-mail inquiry of the visitors of the Santa Claus Office in Rovaniemi, Finland. At the outset, the survey invitation was distributed to a targeted audience of 1200 customers who had visited the attraction during the period between November 21st, 2019, and February 28th, 2020, via the mailing list of the studied company. The data for the survey was gathered using the Webropol 3.0 survey and reporting tool. Before delving into the covariance-based structural equation modelling, this section will provide an overview of the descriptive statistics pertaining to the respondents, as specified by Henseler (2010).

7.3.   Descriptive statistics

Table 7.1 presents a summary of the demographic characteristics of the survey participants. The data collected aligns with the visitor profile as derived from the customer relationship management database and the visitors of the Santa Claus office. Thus, the highest portion of respondents was female (61.2%) and nearly 70 per cent (67.3%) belong to the age groups of 35-64 years.

Concerning occupation, the Table illustrates that the majority of participants were self-employed (33.8%) or employed (27.8%).   18.3 percent of the respondents were unemployed, and the remaining were students (10.7%) or retired (9.5%). Considering the income of the respondents, the reported annual pre-tax income was mostly above €29,000 (85.2%). Furthermore, the country of origin of the respondents is divided similarly to the overall visitor data, one third being domestic (33.4%), one third from neighbouring countries (Sweden, Norway, Estonia, and Russia, 36.6%). The remaining third (30%) of the respondents were from 11 different countries in Europe, Asia, and North America. Despite the variety of participant's native languages, no respondents reported difficulties with the English language, and so, this did not affect the respondents' ability to experience the multi-sensory mixed reality attraction or understand the data collection process. The questionnaire started with the question of if they had visited the attraction between the mentioned period, and only the ones visited were eligible to continue with the survey.

Table 7.1 Demographic Profile of Survey Respondents

	Total/317	%			Total/317	%
Gender				**Country of Origin**		
Male	121	38.2%		Belgium	3	0.9%
Female	194	61.2%		Denmark	6	1.9%
Prefer not to say	2	0.6%		Estonia	11	3.5%
				Finland	106	33.4%
Age				France	15	4.7%
18-21	8	2.5%		Germany	15	4.7%
22-34	33	10.4%		Italy	4	1.3%
35-44	94	29.7%		Japan	1	0.3%
45-54	44	13.9%		Netherlands	17	5.4%
55-64	75	23.7%		Norway	32	10.1%
65+	34	10.7%		Russia	29	9.1%
Prefer not to say	29	9.1%		Singapore	6	1.9%
				Sweden	44	13.9%
Occupation				Switzerland	3	0.9%
Employed	88	27.8%		UK	16	5.0%
Self-employed	107	33.8%		USA	9	2.8%
Unemployed	58	18.3%				
Student	34	10.7%				
Retired	30	9.5%				
Annual pre-tax income						
Less than €10,000	1	0.3%				
€10,000-€29,000	46	14.5%				
€30,000-€49,000	71	22.4%				
€50,000-€69,000	139	43.9%				
More than €70,000	60	18.9%				

7.3.1. Measurement model

The primary objective of this study is to contribute empirical evidence to the research community by introducing a theoretical model that facilitates future investigations into the development of sensory experiences and the integration of immersive technologies in the creation of tourism value. Informed by both focus group interviews and relevant literature, the proposed value creation model centres around the concept of Stimuli (S) represented by Mixed-Reality Atmospherics and Experience, which exert an influence on the level of

immersion (I). Positive Immersion effects the perceived value (V) and contributes to the desired action (A). Hence, the proposed model is called S-I-V-A. To test the model (Figure 7.1), the following 10 hypotheses were developed, and will be statistically tested using IBM SPSS, and Amos software.

H1: *Mixed-Reality Atmospherics positively influence Mental immersion.*

H2: *Mixed-Reality Atmospherics positively influence Sensory immersion.*

H3: *Mixed Reality Experience positively influences Mental Immersion.*

H4: *Mixed Reality Experience positively influences Mental Immersion.*

H5: *Mental Immersion positively effects the Hedonic Value.*

H6: *Mental Immersion positively effects Functional Value.*

H7: *Sensory Immersion positively effects Hedonic Value.*

H8: *Sensory Immersion positively effects the Functional Value.*

H9 *Hedonic Value positively impacts Behavioural Intention.*

H10 *Functional Value positively impacts Behavioural Intention.*
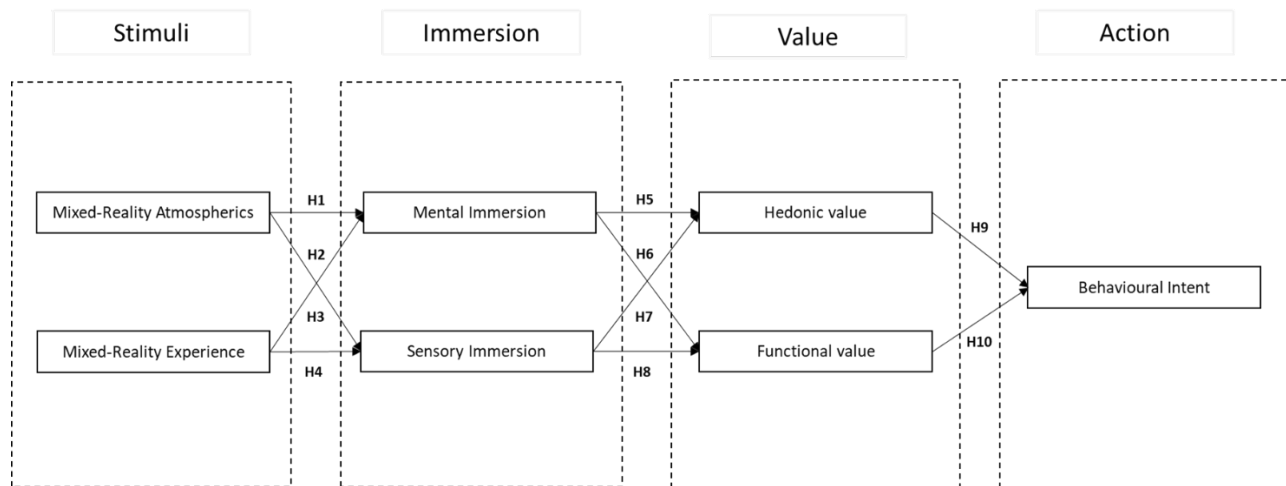
Figure 7.1 Proposed S-I-V-A Measurement model for Value Creation in Multi-Sensory Mixed-Reality Environment

7.3.2. Assessment of Value Creation Model Constructs

As previously mentioned, the survey administered in this study consisted of questions pertaining to seven constructs: Mixed-Reality Atmospherics, Mixed Reality Experience, Mental Immersion, Sensory Immersion, Hedonic Value, Functional Value, and Behavioural Intent. A total of 53 measurement items were used to capture the nuances of these constructs. Figure 7.1 presents the measurement model, illustrating the hypothesized relationships between the constructs and their corresponding indicator variables (Hair et al., 2017). The developed model adopts a reflective measurement approach, wherein the latent variables are derived from observed measurement items (Wong, 2013). In the subsequent section, the reflective model will be rigorously assessed to ensure the reliability and validity of the measurement items, thereby strengthening their suitability within the structural equation model (Hossein, 2017). This evaluation will follow the recommended steps proposed by Hossein (2017), encompassing the examination of consistency and validity across the items, constructs, and the overall model.

1. Evaluation of internal consistency: This will be done using measures such as Cronbach's alpha and composite reliability to assess the reliability of the measurement items and their ability to consistently measure the underlying constructs.

2. Evaluation of convergent validity: Indicator reliability and average variance extracted (AVE) will be examined to assess the extent to which the measurement items within each construct are reliable and converge to measure the same underlying construct.

Evaluation of discriminant validity: Fornel-Larcker (1981) criterion analysis and Heterotrait-Monotrait Ratio (HTMT) by Henseler, Ringle and Sarstedt (2015) will be utilized to examine discriminant validity. Fornel-Larcker criterion analysis compares the square root of the AVE for each construct with the correlations between constructs to ensure that each construct is distinct from others. HTMT calculation provides further insight into discriminant validity by comparing the correlations of the constructs with their respective confidence intervals.

These steps will comprehensively assess the measurement model, ensuring the reliability and validity of the measurement items, as well as establishing the distinctiveness of the constructs. Additionally, measures to control for common method bias (CMB) will be implemented. The following sub-sections will provide a detailed discussion of the aforementioned steps.

7.3.3. Internal Consistency

Internal consistency refers to the degree of consistency or reliability of survey instruments in measuring a construct from multiple perspectives (Revicki, 2014). A traditional way to assess survey instruments' internal consistency, especially in social sciences, is Cronbach's alpha (Wong, 2013). Yet, Cronbach's alpha tends to fluctuate depending on the number of items in the scale and often underestimates the internal consistency of the instrument (Hair et al., 2017).

Among others, Hossein (2017) support the use of composite reliability along the Cronbach's alpha. Therefore, both criteria have been used to analyse the internal consistency of the survey instrument.

7.3.3.1. Cronbach's Alpha

To assess the internal consistency of the constructs, Cronbach's alpha was computed for all seven constructs comprising a total of 54 items. The analysis was performed using IBM SPSS 26, following the same procedure as the pilot study (refer to Figure 6.6). The goal of the reliability analysis was to identify and eliminate items that did not adequately contribute to the reliability and validity of the proposed constructs. Mixed-Reality Atmospherics comprised of 10 items and Cronbach's alpha displayed the construct to reach acceptable reliability (α =0.849). All items appeared to be worthy of retention, resulting in a decrease in the alpha if deleted. Therefore, all items in the scale were retained at this moment. The Mixed-Reality Experience construct consisted of 10 items, and its Cronbach's alpha value (α = 0.882) exceeded the commonly accepted reliability threshold of 0.7 (Hair et al., 2017). Additionally, for the Mixed-Reality Atmospherics

construct, all items were found to be valuable and retaining them led to a decrease in the alpha if any of them were deleted.

The Mental Immersion construct consisted of 10 items and demonstrated an acceptable Cronbach's alpha value ($\alpha = 0.848$). The reliability analysis indicated that it is advisable to retain all items for this construct. Similarly, the Sensory Immersion construct, comprising eight items with a Cronbach's alpha of 0.827, was also deemed suitable for retention in its original form.

The Hedonic Value construct consisted of 6 items, with a Cronbach's alpha of 0.875. The analysis indicated that removing one item ("This attraction has a reputation for being socially responsible") would increase the alpha to 0.882. However, since the item theoretically belongs to the hedonic value theme and the construct's alpha is already high, there is currently no need to remove the item.

The Functional Value construct comprised 5 items and demonstrated an acceptable Cronbach's alpha of 0.749. Given that the alpha is at a high level, there is no need to remove items from the scale at this time.

The Behavioural Intention construct consisted of 5 items with a Cronbach's alpha of 0.836. The results indicated that removing one item ("The services offered are generally positioned as 'good deals'") would increase the alpha to 0.846. However, since the alpha is already at a high level, the item was retained and will be monitored in later steps of the analysis.

Overall, none of the measurement items were removed at this stage, resulting in 54 measurement items remaining. Table 7.2 presents the final Cronbach's alpha scores for each construct and the items that were retained.

Table 7.2 Final Cronbach's Alpha for Model Constructs

	Cronbach's Alpha	No. of Items	Items
MR Experience	α =0.885	10	1. During the visit, I reflected my own childhood. 2. This attraction is considered prestigious. 3. The experience was easy to understand and explore. 4. The multi-sensory mixed reality elements (scents, sounds, sights) increased my emotional involvement. 5. This attraction had positive ambiance and atmosphere. 6. The mixed reality technologies and multi-sensory stimuli assisted me to understand the overall narrative storyline, characters and theme. 7. This attraction offered a service with right features and attributes. 8. The stories extended my knowledge of the theme and the characters. 9. The exiting and mysterious elements of the story intrigued my imagination. 10. The environment allowed me to choose my level of engagement with the experience.
Mental immersion	α =0.848	10	1. After experiencing the multi-sensory mixed reality Christmas experience, I felt like I came back to the "real world" after a journey. 2. I ended up spending more time in the attraction than I had planned. 3. During the visit, I lost track of time. 4. During the visit, I felt like being part of the story. 5. The interactive possibilities increased my feeling of presence. 6. The stories and characters triggered my emotional states. 7. I felt that my senses were in high alert during the experience. 8. During the visit, I thought about the meaning of life. 9. The visit helped me to grow as a person. 10. The story elements satisfied my intellectual needs.
MR atmospherics	α =0.849	10	1. I felt that, the visit in the Santa Claus Office was: Boring 2. I felt that, the visit in the Santa Claus Office was: Unexciting 3. I felt that, the visit in the Santa Claus Office was: Unremarkable 4. I felt that, the visit in the Santa Claus Office was: Conventional 5. I felt that, the visit in the Santa Claus Office was: Unattractive 6. MR The technology, and the analogue elements of the environment were aligned and created a uniform experience. 7. MR The technology enhanced atmospherics and mixed reality elements influenced my emotional states and feelings. 8. MR The mixed reality technology promoted a perception of quality. 9. MR The built environment and staging promoted a perception of quality. 10. I felt that, the visit in the Santa Claus Office was: Unlively
Hedonic value	α =0.875	6	1. This experience was fun, interesting and exciting. 2. This attraction extended my knowledge of Christmas. 3. This attraction was quite attractive. 4. This attraction has strong symbolism. 5. This attraction offered high quality experience.

			6. This attraction has a reputation of being socially responsible.
Sensory immersion	α =0.832	8	1. MR haptics (touch- and movement activated sounds and visuals) increased the involvement with the environment.
			2. MR technologies along the journey were stimulating
			3. MR technologies along the journey allowed me to use my senses more thoroughly.
			4. MR scents along the journey activated my memories of Christmas.
			5. MR visuals (projections, screens, lights and moving images/patterns) complemented the aesthetic interior design.
			6. During the visit, I felt that sights, sounds and smells surrounded me.
			7. The Santa Claus Office experience had a high degree of interactivity.
			8. The attraction enabled me to interact with the environment, the story, and other visitors.
Functional value	α =0.749	5	1. This attraction offered an experience with superior outcome.
			2. Visiting Santa Claus Office helps me express my attitudes, interests and opinions.
			3. This attraction offered a useful experience.
			4. The services of Santa Claus Office offered value in use.
			5. The visit helped me to think about my skills and potential.
Behavioural intent	α =0.836	5	1. I will encourage friends and family to visit this attraction.
			2. It is very likely I will visit other attractions that utilize multi-sensory mixed reality technologies.
			3. I intend to visit this place again.
			4. The services offered are generally positioned as "good deals".
			5. I am willing to recommend this attraction.

7.3.3.2. Composite Reliability

The data was entered into SPSS to calculate the composite reliability. As shown in Table 7.3, all latent variables surpass the acceptable threshold of 0.6. This indicates that a high level of internal reliability has been attained among the latent variables, aligning with the findings of Hair et al. (2017). The composite reliability achieved for the model provides additional confirmation of the previously reported Cronbach's Alpha reliability results.

7.3.4. Convergent Validity

In addition to discriminant value, the evaluation of convergent validity plays a crucial role in assessing the construct validity of the model (Krabbe, 2017). Convergent validity examines how the items positively correlate with other similar items of the same construct. Conversely, the items should not correlate significantly with dissimilar or unrelated

constructs (Krabbe, 2017). To evaluate the convergent validity of the model constructs, the indicator reliability and average variance extracted (AVE) will be taken into account, as suggested by Hair et al. (2017).

7.3.4.1. Indicator Reliability

Indicator reliability, as defined by Hamid, Sami, and Sidek (2017), measures the degree to which the variance of a measured item is accounted for by the corresponding latent variable. Strong convergent validity is indicated when items demonstrate high loadings on the relevant construct and low loadings on unrelated constructs (Hair et al., 2010). The literature suggests that standardized indicator loadings should be 0.70 or higher (Hamid, Sami, and Sidek, 2017). Table 7.3 presents the results, demonstrating that all measurement items exceed the minimum acceptable threshold of 0.4, with the majority reaching or surpassing the preferred level of 0.7. These findings affirm satisfactory indicator reliability in the model.

7.3.4.2. Average Variance Extracted

To further assess the convergent validity of the measurement model, the Average Variance Extracted (AVE) analysis was employed. This involved calculating the squared factor loading for each latent variable and then dividing the sum of all squared standardized factor loadings by the number of items. A commonly accepted threshold for convergence is an AVE of 0.50 or higher (Hair et al., 2009).

Initially, the Average Variance Extracted for the constructs did not meet the acceptable level. Therefore, in order to improve the convergent validity measures discussed earlier, certain low-loading items were excluded. This decision was based on considering the combined impact of composite reliability, item reliability, and average variance extracted. The following list highlights the omitted items within the seven constructs:

- Items MRATM8 (0.465) and MRATM6 (0.505) were omitted from the Mixed-Reality Atmospherics construct due to low loadings and in order to increase the composite

reliability (0.836) thus seven items remained in the Mixed-Reality Atmospherics construct. Still, the Average Variance Extracted remained below the suggested 0.5 threshold (0.423) and will be further monitored analysed in the following analysis phases.

- In order to improve the composite reliability and Average Variance Extracted of the Mixed-Reality Experience construct, the following items were excluded: MRX3 (0.606), MRX7 (0.514), MRX9 (0.602), and MRX10 (0.574). After removing these items, the construct was left with 6 remaining items, which yielded a high composite reliability of 0.853 and an acceptable AVE of 0.503.Mental Immersion construct contained 10 items but scored low on Average Variance Extracted. Omitting MIMM4 due to high cross-loading and removing low items with low reliability MIMM8 (0.497), MIMM9 (0.405), and MIMM10 (0.402) resulted in high composite reliability (0.855) and acceptable AVE (0.497).

- Sensory Immersion construct resulted in very low score on composite reliability and Average Variance Extracted. After several iterative rounds of omitting items, the final construct consists of 4 items. Removal of items SIMM1 (0.553), SIMM3 (0.588), SIMM7 (0.538), and SIMM8 (0.590) resulted an acceptable Composite Reliability of 0.758 while the Average Variance Extracted still remained below acceptable threshold (0.440). This will be addressed in the later stages of the analysis.

- The Hedonic Value construct originally consisted of six items. To enhance the composite reliability and Average Variance Extracted, one item (HV6) with a loading of 0.557 was removed. As a result, the construct demonstrated high composite reliability (0.882) and a satisfactory AVE (0.602) with the remaining five items.

- Containing five items, Functional Value construct also had acceptable composite reliability but low Average Variance Extracted (0.374). Omitting two items, FV1

(0.456), and FV5 (0.371) resulted in acceptable composite reliability (0.751) and AVE (0.509) with remaining three items.

- Behavioural Intent construct resulted in acceptable composite reliability and Average Variance Extracted. However, due to low Item Reliability, BI5 (0.426) was removed from the scale resulting in high composite reliability (0.852) and acceptable AVE (0.549) with remaining four items.

As observed in Table 7.3, three out of the seven latent constructs have Average Variance Extracted (AVE) values that are still below the suggested acceptable threshold of 0.5 (Urbach and Ahlemann, 2010; Hair et al., 2009; Borsboom et al., 2004). This indicates a partial lack of support for the convergent validity of those latent variables. However, it is important to consider the recommendations of authors such as Borsboom et al. (2004) and Heeler and Ray (1972), who suggest examining all available validity and reliability values before deciding to remove an entire latent variable based solely on low AVE. Therefore, while acknowledging the low AVE values, the constructs with lower scores will be further analysed after evaluating the discriminant validity of the measurement model.

Table 7.3 Summary results of Convergent Validity and Indicator and Composite Reliability with Retained Items.

Latent Variable	Measurement Item	Item Reliability	Composite Reliability	AVE
Mixed-Reality Atmospherics	The services offered are generally positioned as "good deals". (MRATM10)	0.566	0.836	0.423
	The mixed reality technology promoted a perception of quality. (MRATM9)	0.614		
	The technology, and the analogue elements of the environment were aligned and created a uniform experience. (MRATM7)	0.588		
	Conventional/Creative (MRATM4)	0.636		
	Unremarkable/Remarkable (MRATM3)	0.707		
	Unexciting/Exciting (MRATM2)	0.684		
	Boring/Interesting (MRATM1)	0.739		
Mixed-Reality Experience	The stories extended my knowledge of the theme and the characters. (MRX8)	0.627	0.853	0.503
	The mixed reality technologies and multi-sensory stimuli assisted me to understand the narrative storyline, characters, and theme. (MRX6)	0.691		
	This attraction had a positive ambiance and atmosphere. (MRX5)	0.749		
	The multi-sensory mixed reality elements (scents, sounds, sights) increased my emotional involvement. (MRX4)	0.774		
	During the visit, I reflected my own childhood. (MRX2)	0.706		
	The experience was easy to understand and explore. (MRX1)	0.700		
Mental Immersion	I felt that my senses were in high alert during the experience. (MIMM7)	0.674	0.855	0.497
	The stories and characters triggered my emotional states. (MIMM6)	0.698		
	The interactive possibilities increased my feeling of presence. (MIMM5)	0.644		
	During the visit, I lost track of time. (MIMM3)	0.782		
	I ended up spending more time in the attraction than I had planned. (MIMM2)	0.693		
	After experience, I felt like I came back to the "real world" after a journey. (MIMM1)	0.730		
Sensory Immersion	MR technologies along the journey allowed me to use my senses more thoroughly. (SIMM6)	0.652	0.758	0.440
	MR haptics (touch- and movement activated sounds and visuals) increased the involvement with the environment. (SIMM5)	0.624		
	MR technologies along the journey were stimulating (SIMM4)	0.676		
	The attraction enabled me to interact with the environment, the story, and other visitors. (SIMM2)	0.698		
Hedonic Value	This attraction offered high quality experience. (HV5)	0.667	0.882	0.602
	This attraction has strong symbolism. (HV4)	0.780		
	This experience was fun, interesting and exciting. (HV3)	0.857		
	This attraction extended my knowledge of Christmas. (HV2)	0.764		
	This attraction was quite attractive. (HV1)	0.798		

Functional Value	Visiting Santa Claus Office helps me express my attitudes, interests and opinions. (FV4)	0.865	0.751	0.509
	This attraction offered a useful experience. (FV3)	0.593		
	This attraction offered an experience with superior outcome. (FV2)	0.653		
Behavioural Intent	It is very likely I will visit other attractions that utilize multi-sensory mixed reality technologies. (BI4)	0.821	0.852	0.549
	I will encourage friends and family to visit this attraction. (BI3)	0.909		
	I am willing to recommend this attraction. (BI2)	0.831		
	I intend to visit this place again. (BI1)	0.611		

7.3.4.2.1. Discriminant Validity

The next step in assessing the validity of the measurement model and its latent constructs is to examine discriminant validity. According to Hubley (2014), measures of constructs that are theoretically distinct should not exhibit significant correlations with measures of unrelated constructs. To evaluate discriminant validity, three analyses were conducted: cross-loadings comparison, the Fornel-Larcker (1981) criterion analysis, and the Heterotrait-Monotrait Ratio (Henseler, Ringle, and Sarstedt, 2015) calculation. These analyses aim to determine whether the measurement items differentiate between their intended constructs and exhibit limited overlap with other constructs, providing evidence of discriminant validity.

In the initial step of assessing discriminant validity, the cross-loadings of the indicators were examined. The analysis indicated that all indicator loadings were higher on their intended constructs compared to the cross-loadings on other constructs. This finding suggests that discriminant validity has been established, supporting the distinctiveness of the measurement items for their respective constructs (Hair et al., 2017).

After evaluating the cross-loadings, the Fornell-Larcker (1981) criterion was employed to further examine the discriminant validity. According to Fornell and Larcker (1981), for a model to demonstrate good discriminant validity, the square root of each construct's average variance extracted (AVE) should exceed the correlation between the latent variables and other latent variables. The results of this analysis are presented in Table

7.4 below. The analysis revealed that according to Fornell-Lacker criterion, the discriminant validity is established although two latent variables, namely Sensory Immersion and Mixed-Reality Atmospherics (0.658) are moderately correlated and higher than the square root of Mixed-Reality Atmospherics AVE (0.650). This has been noted and will be further analysed with HTMT Ratio. After all, literature suggests that the Fornell-Larcker criterion lacks sensitivity (Rönkkö and Evermann, 2013), and specificity (Voorhees, Brady, Calantone and Ramirez, 2016) and therefore requires comparative analysing before final judgements.

Table 7.4 Fornell-Larcker Criterion Analysis for Examination of Discriminant Validity (Source: Authors' Own)

	Mixed-Reality Atmospherics	Mixed-Reality Experience	Mental Immersion	Sensory Immersion	Hedonic Value	Functional Value	Behavioural Intent
Mixed-Reality Atmospherics	**0.650**						
Mixed-Reality Experience	0.309	**0.709**					
Mental Immersion	0.280	0.363	**0.705**				
Sensory Immersion	*0.658**	0.608	0.545	**0.663**			
Hedonic Value	0.311	0.585	0.171	0.495	**0.776**		
Functional Value	0.377	-0.165	0.501	0.478	0.311	**0.713**	
Behavioural Intent	0.319	0.592	0.289	0.502	0.647	0.128	**0.741**

* latent variables are moderately correlated and higher than the square root of Mixed-Reality Atmospherics AVE (0.650)

After considering the concerns raised by the Fornell-Larcker criterion, the HTMT ratio was calculated to further assess discriminant validity. Introduced by Henseler, Ringle, and Sarstedt (2015), the HTMT ratio has gained popularity as an indicator of discriminant validity. It provides an estimate of the true correlation between two constructs if they were perfectly measured and reliable (Hamid et al., 2017).

Originally, Henseler, Ringle, and Sarstedt (2015) suggested that if the HTMT ratio is significantly smaller than one, it indicates established discriminant validity. Subsequently, Hair et al. (2017) proposed a threshold of 0.9 for the HTMT value to support discriminant validity. As shown in Table 7.5, all correlations are below 0.9. Overall, based on the analysis of convergent and discriminant validity, the validity of the items and constructs is confirmed, but some attention is still required.

Table 7.5 HTMT Ratio of the Measured Constructs

Monotrait Correlations		Heterotrait correlations				HTMT Ratio
Mixed-Reality Atmospherics (MRATM)	0.396	BI	>>	FV	0.066	0.121
Mixed-Reality Experience (MRX)	0.479	BI	>>	HV	0.398	0.661
Mental Immersion (MIMM)	0.496	BI	>>	SIMM	0.258	0.494
Sensory Immersion (SIMM)	0.450	BI	>>	MIMM	0.164	0.299
Hedonic Value (HV)	0.599	BI	>>	MRX	0.331	0.615
Functional Value (FV)	0.499	BI	>>	MRATM	0.160	0.327
Behavioural Intent (BI)	0.605	FV	>>	HV	0.159	0.290
		FV	>>	SIMM	0.204	0.430
		FV	>>	MIMM	0.237	0.476
		FV	>>	MRX	-0.077	-0.157
		FV	>>	MRATM	0.157	0.353
		HV	>>	SIMM	0.249	0.479
		HV	>>	MIMM	0.095	0.174
		HV	>>	MRX	0.321	0.598
		HV	>>	MRATM	0.153	0.314
		SIMM	>>	MIMM	0.253	0.535
		SIMM	>>	MRX	0.278	0.599
		SIMM	>>	MRATM	0.269	0.638
		MIMM	>>	MRX	0.184	0.378
		MIMM	>>	MRATM	0.127	0.286
		MRX	>>	MRATM	0.138	0.317

7.3.5. Common Method Bias

Common method variance, also known as common method bias (CMB), refers to inconsistencies that arise from the measurement method itself rather than the measurement items or constructs being measured (Podsakoff, MacKenzie, and Lee, 2003). Despite the longstanding discussion on CMB, significant unresolved questions remain, such as whether CMB actually distorts empirical findings and how to detect its presence and assess its potential consequences in research (Baumgartner, Weijters, Pieters, 2021). Despite this, this study considers that the CMB's has potential effects on findings and conclusions and therefore it is important to minimize the potential of CMBs (Podsakoff et al., 2003). In this study, after receiving an introductory and explanatory message of the survey theme and included terminology, respondents were prompted to answer all survey questions at once using an on-line self-report method. According to Kim et al. (2018), using on-line survey,

even with a directly targeted respondent group, poses a potential CMB issue. Thus, this potential issue of CMB was addressed using several methods (Conway and Lance, 2010). In accordance with the suggestions put forth by Kim et al. (2016), the survey included an introductory section that outlined the study's objectives and provided assurance of respondent anonymity. Subsequently, the purpose of the research and its relevant themes, such as mixed-reality technology and multi-sensory stimuli, were elucidated in relation to the respondents' experience at the attraction. Hence, the introduction clearly explained in which locations and instances, and in which ways the technologies and sensory stimuli were used. Moreover, the respondents were given reassurance that the questions had no definitive right or wrong answers. Furthermore, to facilitate the survey process, the survey was divided into several sections based on the proposed constructs, utilizing the online survey tool Webropol. This online tool also allowed for the replication of the underlying meanings of each technology or stimuli that were relevant to the questions. The questionnaire concluded with the inclusion of demographic questions.

To assess the presence of common method bias, the authors, such as Kim et al. (2018) and Algharabat et al. (2017), recommend using Harman's (1976) single-factor test. This method is considered effective in identifying potential biases in data. In this study, Harman's single-factor test was conducted using the SPSS program. The exploratory factor analysis (EFA) was performed using the Maximum Likelihood method, with an unrotated factor solution and only one factor extracted, as suggested by Malhotra et al. (2006). The EFA results showed that the extracted sum of squared loadings was 25.381, indicating that the variance explained was 25.4%. Since this variance is well below the recommended threshold of 50%, it can be concluded that no common method bias exists in the data.

7.3.6. Structural Model Analysis

This study aims to find and describe the relationships between multi-sensory stimuli, mixed-reality technologies, atmospherics, interactivity, immersion, value formation, and resulting behavioural intentions. Consequently, a structural equation model was utilized to study and highlight the relationships of all the endogenous variables in the proposed model.

In the preceding section, specific constructs and items in the model were identified as warranting special attention due to varying outcomes in terms of convergent and

discriminant validity. Nonetheless, it was determined that, on the whole, the construct measures demonstrate a substantial level of reliability and validity. Given this context, the subsequent course of action involved evaluating the outcomes of the structural model (Hair et al., 2017). The ensuing section will delineate the procedures undertaken to finalize the model and derive conclusions from the analysis.

The subsequent section is structured into four parts as outlined below. The final model formulation commences with the evaluation of collinearity using Variance Inflation Factor (VIF) analysis. Subsequently, the path coefficients of the model, including their magnitude and significance, are reported and analysed. Following that, the coefficients of determination (R^2), effect sizes (f^2), and model fit indicators (CMIN/DF, GFI, TLI, CFI, and RMSEA) are presented. Building on these findings, the model will be amended, and the analysis is repeated with amended model. At the end of this chapter, the final S-I-V-A model will be presented with empirical evidence.

7.3.6.1. Collinearity

Collinearity among the variables was evaluated using the Variance Inflation Factor (VIF) value. According to Hair et al. (2017, 2011), VIF values should ideally be below 5 to indicate low collinearity. However, in IBM Amos 26, there is no built-in algorithm for directly summarizing the VIF values for each item. As a result, the process had to be performed manually. It involved selecting each variable at a time as a temporary 'dependent variable' and examining the collinearity between the remaining 'independent variable' and the chosen 'dependent variable'. This process was repeated iteratively for each item in the analysis. The results indicated that all items were below recommended value 5 and only two items relating to Behavioural Intent, BI2 and BI3 (I will encourage friends and family to visit this attraction; I am willing to recommend this attraction) resulted and VIF value exceeding the threshold of 4 (4.004 and 4.935 respectively) supporting that overall, no issues concerning collinearity was found in the data. Hence, the remaining number of items in the Structural Model is 35.

7.3.6.2. Structural Model Path Coefficients

Once it was determined that no collinearity was present, the subsequent step in evaluating the structural model involved calculating the path coefficients. Path coefficients depict the anticipated relationships between the constructs in the model (Hair et al., 2017). They provide insights into the magnitude and significance of the effects between variables (Ringle et al., 2015). To obtain the path coefficients, the maximum likelihood algorithm was employed using the IBM Amos 26 program. The resulting path coefficient weights were then utilized to assess the statistical significance of the constructs within the model (Wong, 2013).

As shown in Table 7.6, the findings indicate that Mixed-Reality Atmospherics has a stronger direct effect on Sensory Immersion (0.417) compared to its effect on Mental Immersion (0.273). The hypothesized path relationship between Mixed-Reality Experience (0.417) and Mental Immersion (0.406), as well as Sensory Immersion, were statistically significant (Ringle et al., 2017). Additionally, the direct effect of Mixed-Reality Atmospherics on Sensory Immersion (0.414) and Mental Immersion (0.273) was found to be significant.

Furthermore, the analysis examined the direct effect of Sensory Immersion on other constructs. Sensory Immersion demonstrated the strongest direct effect on Hedonic Value (0.830), followed by Functional Value (0.486). Both effects were statistically significant. Moreover, Hedonic Value had a significant effect on Behavioural Intent (0.857). However, the hypothesized relationships between Mental Immersion and Hedonic Value (-0.075), as well as Functional Value and Behavioural Intent (0.021), were not statistically significant, as the standardized path coefficients were below 0.1.

Table 7.6 Structural model path coefficients

Path			Estimate SRW	S.E.	*t* value	*p* value	Significant (if SRW >0.1)
Sensory Immersion	<---	Mixed-Reality Atmospherics	0.414	0.062	6.669	<0.001	Yes
Mental Immersion	<---	Mixed-Reality Atmospherics	0.273	0.074	3.687	<0.001	Yes
Mental Immersion	<---	Mixed-Reality Experience	0.406	0.071	5.689	<0.001	Yes
Sensory Immersion	<---	Mixed-Reality Experience	0.417	0.057	7.284	<0.001	Yes
Functional Value	<---	Sensory Immersion	0.486	0.149	3.255	0.001	Yes
Hedonic Value	<---	Sensory Immersion	0.830	0.120	6.921	<0.001	Yes
Functional Value	<---	Mental Immersion	0.509	0.109	4.668	<0.001	Yes
Hedonic Value	<---	Mental Immersion	-0.075	0.053	-1.429	0.153	No
Behavioural Intent	<---	Hedonic Value	0.857	0.097	8.842	<0.001	Yes
Behavioural Intent	<---	FV	0.021	0.050	0.419	0.675	No

In order to enhance the analysis of the structural paths and test the significance of the hypotheses, a bootstrapping technique was employed using 5,000 subsamples. Bootstrapping is a resampling method that allows for the creation of a sampling distribution, enabling the estimation of standard errors and the construction of confidence intervals. By utilizing bootstrapping, researchers can assess the statistical significance of various structural equation modelling (SEM) results (Ringle et al., 2015; Byrne, 2010). Using multiple sub-samples of the same size, the results of bootstrapping estimate the normality of data (Wong, 2013). Bootstrapping helps the valuation of both indirect and direct effects, the assessment of effects, and the coefficient of determination estimation (Streukens and Lerio-Werelds, 2016).

Beyond statistical significance levels, bootstrapping results indicate the significance of developed hypotheses in the model. The analysis involves calculating the beta (β) value for each path in the model, as suggested by Hussain et al. (2018). The beta value reflects the strength of the effect that a latent construct has in the hypothesized model. Furthermore, each beta value needs to be evaluated for statistical significance using t-statistics, as mentioned by Hussain et al. (2018). According to Wong (2013), the results of a two-tailed t-test with a significance level of 5% should exceed 1.96 to be considered significant.

Table 7.7 presents the results of the bootstrapping procedure, showcasing the findings of the study. The results demonstrate that there is a positive influence of Mixed-Reality Atmospherics on Mental Immersion (β = 0.273, t value = 2.256, p < 0.05), supporting H1. Additionally, H2 is supported, as the Mixed-Reality Atmospherics positively influence Sensory Immersion (β = 0.414, t value = 3.366, p = 0.001).

Moreover, Table 7.7 reveals that there is a significant linkage between Mixed Reality Experience and Mental Immersion (β = 0.406, t value = 2.082, p < 0.05), as well as between Mixed Reality Experience and Sensory Immersion (β = 0.414, t value = 4.484, p = 0.001). The t-statistics for both paths exceed 1.96, providing support for H3 and H4, respectively.

H5 is not supported because the path between Mental Immersion and the Hedonic Value is not significant (β = -0.075, t value = -0.664, p > 0.05) but instead, Mental Immersion positively effects Functional Value (β = 0.509, t value = 1.586, p < 0.05) and therefore H6 is supported.

Hedonic Value is significantly positively influenced by Sensory Immersion, indicating that experienced sensory immersion has a strong impact on individuals' perception of Hedonic Value (β = 0.830, t value = 2.371, p = 0.000). This finding supports H7.

On the other hand, the analysis revealed that Sensory Immersion does not have a significant positive effect on Functional Value (β = 0.486, t value = 0.457, p > 0.05). Therefore, H8, which proposes a positive relationship between Sensory Immersion and Functional Value, is not supported by the data.

Behavioural Intention is positively influenced by perceived Hedonic Value. (β = 0.857, t value = 5.638, p = 0.001) and therefore the H9 is supported. However, H10 is not supported because Behavioural Intention is not significantly influenced by perceived Functional Value. (β = 0.021, t value = 0.175, p > 0.05).

Table 7.7 Significance Test Results for the Structural Model Path Coefficients (Bootstrapped)

			Estimate	SE	t-value	p-value	Significance (p<0.05)?
Sensory Immersion	<---	Mixed Reality Atmospherics	0.414	0.123	3.366	0.001	Yes
Mental Immersion	<---	Mixed Reality Atmospherics	0.273	0.121	2.256	0.018	Yes
Mental Immersion	<---	Mixed Reality Experience	0.406	0.195	2.082	0.021	Yes
Sensory Immersion	<---	Mixed Reality Experience	0.417	0.093	4.484	0.001	Yes
Functional Value	<---	Sensory Immersion	0.486	1.063	0.457	0.175	No
Hedonic Value	<---	Sensory Immersion	0.830	0.350	2.371	0.000	Yes
Functional Value	<---	Mental Immersion	0.509	0.321	1.586	0.038	Yes
Hedonic Value	<---	Mental Immersion	-0.075	0.113	-0.664	0.560	No
Behavioural Intent	<---	Hedonic Value	0.857	0.152	5.638	0.001	Yes
Behavioural Intent	<---	Functional Value	0.021	0.120	0.175	0.727	No

The examination of total indirect effects between the latent variables was conducted, and the findings are displayed in Table 7.8. The results reveal several statistically significant indirect relationships (t > 1.96, p < 0.05). These include the indirect influence of Mixed Reality Experience on Hedonic Value (0.340, t = 3.656, p < 0.05) and on Behavioural Intent (0.229, t = 2.827, p < 0.05).

Additionally, significant indirect relationships were observed between Mixed Reality Atmospherics and Functional Value (0.231, t = 1.958, p < 0.5), Hedonic Value (0.322, t = 4.128, p < 0.5), and Behavioural Intent (0.216, t = 3.130, p < 0.5).

The indirect impact of Mental Immersion and Sensory Immersion on Behavioural Intent was found to be weak or non-existent, failing to provide statistical support and confirming the earlier findings of the direct effects. Consequently, hypotheses H5, H8, and H10 are not supported.

In summary, the results of the significance tests for both direct and indirect effects provide support for hypotheses H1, H2, H3, H4, H6, H7, and H9. The findings indicate that while Functional Value may not play a significant role in the model, the other constructs have direct and indirect influences on the formation of value and behavioural intent. This confirms

the relationship between Mixed Reality Atmospherics (S), Mixed Reality Experience(S), and behavioural intentions (A) through the mediating factor of Immersion (I).

Table 7.8 Significance Test Results of the Selected Indirect Effects

Path			Total Indirect Effects	*t* Values	*p* Values	Significance
Mixed Reality Experience	>	Functional Value	0.299	1.533	0.019	No
Mixed Reality Experience	>	Hedonic Value	0.340	3.656	0.005	Yes
Mixed Reality Experience	>	Behavioural Intent	0.229	2.827	0.009	Yes
Mixed Reality Atmospherics	>	Functional Value	0.231	1.958	0.009	Yes
Mixed Reality Atmospherics	>	Hedonic Value	0.322	4.128	0.002	Yes
Mixed Reality Atmospherics	>	Behavioural Intent	0.216	3.130	0.003	Yes
Sensory Immersion	>	Behavioural Intent	0.437	1.828	0.004	No
Mental Immersion	>	Behavioural Intent	-0.047	-0.560	0.500	No

7.3.6.2.1. Coefficients of Determination (R^2 Value)

The most commonly used measure for the fitness of the structural model to the observed data is the coefficient of determination, R2, which represents the amount of variance in the latent constructs explained by all the exogenous variables and constructs linked to it (Hair et al., 2017; Wong, 2013). The coefficient of determination, (R2) is calculated in the Amos program with squared multiple correlations of the latent construct. For the latent construct, Sensory Immersion, the reported coefficient determination (R2) is 0.768. Given that higher R2 values indicate greater predictive accuracy (Hair et al., 2017), it can be concluded that the constructs of Mixed-Reality Atmospherics and Mixed-Reality Experience account for a significant proportion (76.8%) of the variance in Sensory Immersion (R2 = 0.768). In contrast, Mixed-Reality Atmospherics, and Mixed-Reality Experience explains only 25.3% of the variance of Mental Immersion (R2= 0.253). Also, the predictive accuracy of Sensory Immersion and Mental Immersion on Functional Value (R2= 0.320) is weak. Sensory and Mental Immersion moderately contribute to predicting the variance in Hedonic Value (R2 = 0.393). Furthermore, the derived R2 for Behavioural Intent was found to be 0.435, indicating that Hedonic Value and Functional Value account for 43.5% of the variance in Behavioural Intent.

7.3.6.2.2. Effect Size (f_2)

In a structural model, the f_2 value specifies the degree to which a latent construct influences on the coefficient of determination (R^2 Value) of a target construct (Hair et al., 2017). Cohen (1988) propose the following scale for the f_2 values; above 0.02 (small), above 0.15 (medium), and above 0.35 (large). Consequently, the effect sizes for the studied model indicate that Mixed-Reality Experience has a large effect on Mental Immersion (f2 = 0.565) and medium effect on Sensory Immersion (f2 = 0.332). Mixed-Reality Atmospherics have a medium impact on both Sensory Immersion (f_2 0.327), and Mental Immersion (f_2 0.273). Furthermore, Mental Immersion represents a small effect on Hedonic Value (f_2 0.059), and large effect on Functional Value (f_2 0.416). Sensory Immersion has a large influence on Hedonic Value (f_2 0.695), and a small influence on Functional Value (f_2 0.019). Finally, Hedonic Value has a small effect on Behavioural Intent (f_2 0.14). The findings suggest that Functional Value does not have a meaningful effect on Behavioural Intent (f_2 -0.007).

7.3.6.2.3. Overall Structural Model Assessment

The structural equation model was employed to examine the hypothesized S-I-V-A model and its ten underlying hypotheses. Previous sections have outlined the process of assessing construct validity and refining the model. This involved reducing the number of items and constructs to arrive at the final structural model.

The fit of the model was evaluated using various measures. A well-fitting model is generally indicated by a CMIN/df value of less than 5, which represents the relative chi-square test. Additionally, the Comparative Fit Index (CFI) measures the extent to which the model can reproduce the covariation in the data. According to Bentler and Bonett (1980), a CFI value greater than 0.90 is considered acceptable. The Root Mean Square Error of Approximation (RMSEA) is another measure used to assess model fit, with values between 0.05 and 0.08 typically indicating a reasonable fit (Hair et al., 2009).

Other indices that contribute to evaluating the goodness of fit include the Goodness-of-Fit Index (GFI) (Schumacker and Lomax, 2004), the Tucker and Lewis Index (TLI), and the Confirmatory Fit Index (CFI) (Bentler, 1990). For these indices, values greater than 0.90 are generally indicative of a good fit for the model.

In the developed model, the discrepancy divided by degrees of freedom is 4.168, indicating a favourable fit of the model based on this criterion. However, other fit indicators such as CFI = .746, GFI = .721, NFI = .695, and RMSEA = .100 are below the acceptable level. These results suggest the need for a re-evaluation of the model and its constructs to achieve a better fit.

7.3.6.2.4. Structural Model Significance

As revealed in Figure 7.2, seven out of ten hypothesised relations exhibit statistical significance. The statistics show the model with the significance for each construct, and the path coefficients between the constructs. Based on the analyses, it can be determined that two Stimuli (S) constructs, namely Mixed-Reality Atmospherics, and Mixed-Reality Experience strongly explain the Sensory Immersion and further, indirectly, the Hedonic Value and Behavioural Intent. These strong relations support H1, H2, H3, and H4. The

analysis also supports the H6 and H7 suggesting the Immersions' (I) significance in the model. The results further support the final path of the model from Value (V) to Action (A) by confirming the H9.

The results of the significance tests for the path coefficients in the structural model indicate that functional value does not play a significant role in the model. Additionally, it is observed that mental immersion does not have a direct effect on functional value, nor an indirect effect on behavioural intent. Also, R2 value of Mental Immersion is weak (R2= 0.253) as well as Functional Values R2 is weak (R2= 0.320). Furthermore, the initial path hypotheses (H5) Mental Immersion positively effects the Hedonic Value, (H8) Sensory Immersion positively effects the Functional Value, and (H10) Behavioural Intention is positively influenced by perceived Functional Value were not supported. Considering the effect size (f2), Mental Immersion and Functional value score generally low effect sizes. Mental Immersion contribution to Hedonic Value is small (f2 0.059) and Functional Value construct does not contribute to the R2 value of Behavioural Intent at all (f2 -0.007).
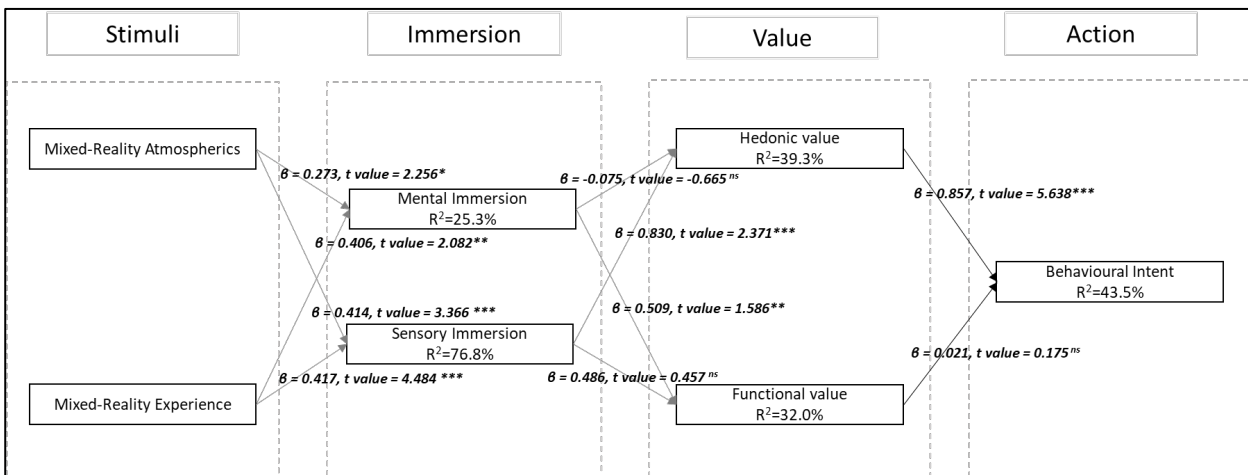
Figure 7.2 Structural S-I-V-A Model with Empirical Results

7.3.6.3. Reducing Constructs in the Structural Model

Building on the aforementioned analysis, the structural model underwent revisions by removing two constructs: mental immersion and functional value. Subsequently, the analysis was repeated, beginning with the estimation of path coefficients. To re-evaluate the hypotheses and path coefficients within the revised model, the bootstrapping procedure was conducted again using the reduced dataset. The subsequent subsections present the outcomes and insights regarding the coefficient of determination (R^2), effect sizes (f^2), and model fit indicators, offering valuable guidance for the final structural model.

7.3.6.4. Reduced Structural Model Path Coefficients

The remaining constructs and items in the model were carefully examined to assess their reliability and cross-loadings. The Cronbach's Alpha coefficients for the remaining constructs were as follows: Mixed-Reality Atmospherics (α = 0.829), Mixed-Reality Experience (α = 0.839), Sensory Immersion (α = 0.770), Hedonic Value (α = 0.882), and Behavioural Intent (α = 0.846). It is worth noting that all constructs, with the exception of Hedonic Value, exhibited slightly lower Cronbach's Alpha values compared to the previous model. However, it is important to highlight that all constructs in the final model still demonstrated acceptable levels of reliability.

In the second phase of the analysis, the significance of the final Structural Model Path Coefficients was determined through Bootstrapping with 5,000 subsamples. The results, presented in Table 7.9 below, highlight the significant effects of the constructs on each other. It is evident that Mixed-Reality Experience (β = 0.609, t value = 8.342, p < 0.001) strongly influences sensory immersion, while Mixed-Reality Atmospherics has a moderate effect (β = 0.428, t value = 7.133, p < 0.001) on sensory immersion. Furthermore, sensory immersion demonstrates a strong impact on hedonic value (β = 0.642, t value = 5.475, p < 0.001), and finally, hedonic value has a strong effect on behavioural intent (β = 0.662, t value = 6.896, p < 0.001). The removal of Mental Immersion and Functional Value from the model has resulted in improved effect sizes for all the remaining paths. Additionally, all path coefficients in the final model are significant (t > 1.96), as illustrated in Table 7.9 below.

Table 7.9 Significance Testing Results of the final Structural Model Path Coefficients

Path			Estimate	SE	t-value	p-value	Significance (p<0.05)?
SIMM	<---	MRATM	0.428	0.060	7.133	<0.001	Yes
SIMM	<---	MRX	0.609	0.073	8.342	<0.001	Yes
HV	<---	SIMM	0.646	0.118	5.475	<0.001	Yes
BI	<---	HV	0.662	0.096	6.896	<0.001	Yes

After conducting significance testing for direct effects, an analysis of total indirect effects was performed for the reduced model. The results, presented in Table 7.10, reveal significant indirect effects between all the remaining constructs. Furthermore, the results indicate that the indirect effects between the remaining constructs are statistically significant ($p < 0.05$). As a result, the stimuli constructs, Mixed-Reality Experience and Mixed-Reality Atmospherics, have indirect effects on both Hedonic Value and Behavioural Intent. Mixed Reality Experience indirectly influences the Hedonic Value (0.394, t = 3.717, p = 0.001) and on Behavioural Intent (0.261, t = 2.806, p = 0.001) and thus has an important role in the structural model. Significantly, but in a lesser strength, Mixed Reality Atmospherics has an indirect relationship with both Hedonic Value (0.276, t = 4.600, p = 0.000) and Behavioural Intent (0.183, t = 3.588, p = 0.000) which also highlights the constructs' role in the model. Finally, Sensory Immersion and Behavioural Intent has a significant indirect relationship (0.428, t = 2.352, p = 0.000). All of the indirect relationships are statistically significant and therefore support the overall structural model.

Table 7.10 Significance Test Results of the Total Indirect Effects

Path			Total Indirect Effects	S.E.	*t* Values	*p* Values	Significance (*p < 0.05*)?
Mixed Reality Experience	>	Hedonic Value	0.394	0.106	3.717	0.001	Yes
Mixed Reality Experience	>	Behavioural Intent	0.261	0.093	2.806	0.001	Yes
Mixed Reality Atmospherics	>	Hedonic Value	0.276	0.060	4.600	0.000	Yes
Mixed Reality Atmospherics	>	Behavioural Intent	0.183	0.051	3.588	0.000	Yes
Sensory Immersion	>	Behavioural Intent	0.428	0.182	2.352	0.000	Yes

7.3.6.5. Coefficients of Determination (R^2 Value)

The coefficient of determination analysis revealed that Mixed-Reality Atmospherics and Mixed-Reality Experience explains substantial amount of variation in the latent variable Sensory Immersion (R^2 = 70.5%). For Hedonic Value, the remaining construct Sensory Immersion explains 41.8% of the variance (R^2 =0.418). Finally, Hedonic Value explains 43.8% of the variance in Behavioural Intent (R^2 =0.438). Both Hedonic Value and Behavioural Intent R^2 values are closer to 50% (medium effect) than 25% (weak effect), thus proposing that they have a moderate explanatory power within the structural model.

7.3.6.6. Effect Size (f_2)

Considering the reduced model with only five constructs, assessing the overall model based on the significance of the correlation between two variables alone may not fully capture the model's performance due to the limited number of constructs. Therefore, when examining the condensed final model using the Amos algorithm and determining the effect sizes (f2), only two f2 values were calculated. It was observed that Mixed-Reality Atmospherics has a moderate impact on sensory immersion (f2 = 0.267), whereas Mixed-Reality Experience has a small influence (f2 = 0.047), slightly below the significance threshold.

7.3.7. Overall model evaluation

The developed structural equation model was utilized to analyse the hypothesized S-I-V-A model and the ten underlying hypotheses. The analysis was conducted using SPSS and AMOS software. Previous sections detailed the process of item and construct reduction, leading to the development of a final structural model that demonstrated a good fit.

Based on the previous discussions on convergent validity, discriminant validity, coefficients of determination, and effect sizes, the model fit indicators presented in Table 7.11 indicate that the model reaches an acceptable level of fit. The reported CMIN/df value of 3.786 is deemed acceptable, along with a goodness-of-fit (GFI) value of 0.900. Additionally, the values for CFI (0.937) and Tucker and Lewis Index (TLI) (0.914) are both above the acceptable threshold. Finally, considering the overall goodness of fit for the model, the RMSEA value of 0.066 falls within the acceptable range as suggested by MacCallum et al. (1996).

Table 7.11 Final S-I-V-A Model Fit Scores

	Final model Fit	Final model after Fit indices/covariation correction.	Final model fit after removing an item with high significant residual.	Target
CMIN/df	3.786	2.252	2.390	<5
GFI	0.826	0.893	0.900	>0.90
CFI	0.843	0.937	0.938	>0.90
TLI	0.811	0.915	0.914	>0.90
RMSEA	0.094	0.063	0.066	0.05>0.08

7.3.8. Final Structural Model of Value Creation

Figure 7.3 showcases the final structural model resulting from the removal of two constructs. It represents the outcomes of the re-analysis with five constructs in the model.

The final model clearly depicts strong and statistically significant relationships between all the constructs. Notably, the model emphasizes the direct positive influence of the two Mixed-Reality constructs (S), namely Mixed-Reality Atmospherics and Mixed-Reality Experience, on Sensory Immersion (I), which represents the level of immersion experienced by individuals. Furthermore, Sensory Immersion directly influences Hedonic Value (V), reflecting the perceived value derived from the immersive experience, and Hedonic Value, in turn, has a direct positive effect on behavioural intent (A), indicating individuals' inclination towards taking action.

Moreover, as indicated in the previous section and summarized in Table 7.11, the results provide evidence for indirect relationships between all the constructs. This further strengthens the understanding of how the two Mixed-Reality constructs impact immersion, value, and behavioural intentions, as well as the indirect relationship between Sensory Immersion and behaviour. Ultimately, these findings underscore the significance of the stimuli (S), Immersion (I), Value (V), and Action (A) in the revised S-I-V-A model.
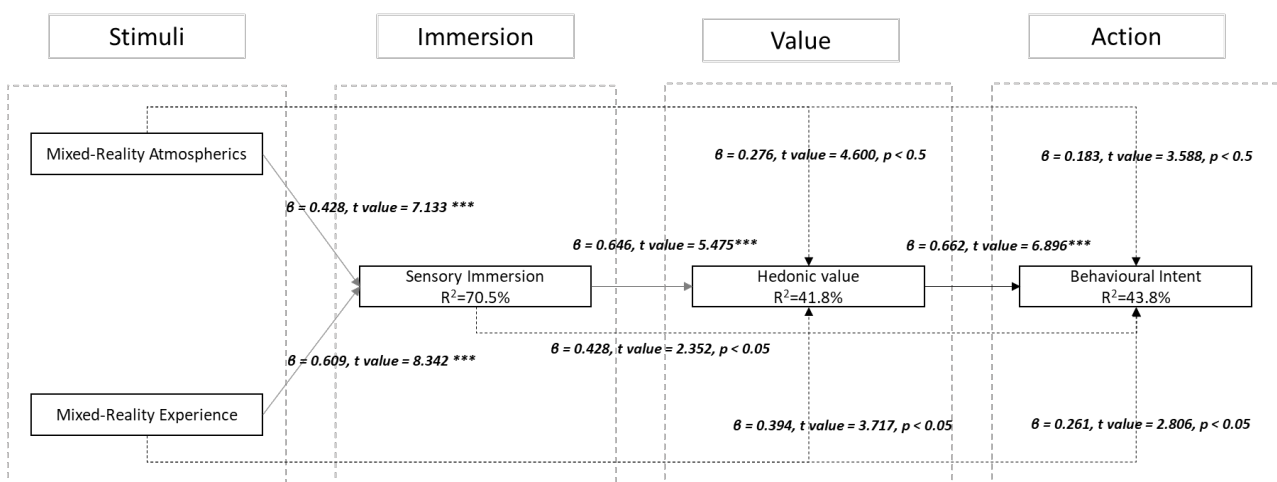
Figure 7.3 Final Structural S-I-V-A Model with Direct and Indirect Effects

7.4.   Summary

This chapter provides an in-depth analysis of the structural equation model building process and presents the quantitative findings of the survey. It also includes an overview of the respondent demographics and descriptive statistics of the survey data.

To validate the Value Creation S-I-V-A model in multi-sensory mixed-reality attraction, IBM Amos 26 covariance-based structural equation modelling (CB-SEM) software, along with IBM SPSS 26, was employed. The SEM analysis confirmed four out of the ten relationships in the final structural model, thus supporting four hypotheses. Specifically, the developed S-I-V-A model demonstrates a strong connection between Mixed-Reality Atmospherics, Mixed-Reality Experience (stimuli), Sensory Immersion (immersion), Hedonic Value (value), and Behavioural Intent (action). This implies that the design of the Mixed-Reality Experience should fully incorporate the consumption of Mixed-Reality Atmospherics. Both the atmospherics and the experience should be crafted to stimulate sensory immersion, as it directly influences the perception of hedonic value, which in turn has a direct impact on positive behavioural intent.

Considering the significant indirect effects within the S-I-V-A model, the subsequent chapter will provide an in-depth analysis that combines first-hand empirical data and existing research findings. This chapter will emphasize the novel insights derived from the primary empirical data, particularly in relation to the refined model.

Chapter 8 - Discussion

8.1.   Introduction

The synthesis chapter consolidates the findings from multiple sources, encompassing technological advancements, existing literature, visitor interviews, and the survey conducted at a multisensory mixed-reality attraction. The discussion builds on the developed S-I-V-I model and aims to connect the existing knowledge with the findings from the primary and secondary data in relation to new findings that emerged from the process. The findings will be compared and expanded with possibilities, and limitations of the technology-enhanced multisensory environments and the proposed S-I-V-I model.

In this light, the findings, and the interpretations will provide justification for the final Technology Enhanced Multisensory Mixed-Reality Value Creation S-I-V-I model in the context of technology-enhanced multisensory tourism attractions. This chapter begins with the presentation of key findings in relation to the main constructs of the proposed model and is followed by a discussion of each construct and the direct and indirect links within the model.

Therefore, the discussion starts by presenting the links between mixed-reality atmospherics, mixed-reality experience, and sensory immersion. The content, the interpretations of the depth, and the width of the mixed-reality construct will be also discussed in relation to the focus group interviews. The discussion continues to describe the role of sensory immersion and the relations to value formation, especially the formation of hedonic value. Finally, the discussion focuses on the relation between hedonic value and behavioural intent in the technology-enhanced multisensory tourism context. In all sections, the direct, and indirect effects will be discussed along the existing literature, focus group interviews and survey data.

8.2.   Key Findings

Building on the S-O-R theory, and using structural equation modelling, this study proposed and tested the Value Creation S-I-V-A model in a multisensory mixed-reality tourism attraction context. Therefore, a theoretical model of the relationships between mixed-reality atmospherics, and experience (stimulus), sensory immersion (immersion), hedonic value (value), and behavioural intent (action) was developed and tested. The analysis confirmed several constructs, and relationships from the initial model. The key findings of the analysis, in relation to literature, and the focus group interviews are discussed in this section.

First, both proposed stimuli constructs (Mixed-Reality atmospherics and experience) were found to directly, and positively influence the formation of sensory immersion. Furthermore, the sensory immersion positively influences the hedonic value formation, and hedonic value influences positively the visitors' behavioural intent. The findings supported four out of ten hypotheses (H2, H4, H7, and H9). Therefore, the results suggest that careful design of atmospherics and strategic planning of the overall mixed-reality experience are crucial in enhancing sensory immersion. Sequentially, sensory immersion, hence, being actively surrounded by multisensory mixed-reality stimuli provides the possibility to positively influence visitors hedonic value perceptions, which, in turn, can positively influence positive actions like a) intent to recommend the visited attraction, b) intent to re-visit the attraction, and c) intent to visit other attractions providing multisensory mixed-reality experiences. Still, the results did not support the intent to recommend the attraction outside the family and close friends.

Second, in contrast with the qualitative findings, the quantitative analysis did not provide support for six hypotheses. The unsupported hypotheses included the ones that contained mental immersion and functional value constructs. Hence, the H1 (Mixed-Reality Atmospherics positively influence Mental immersion), H3 (Mixed Reality Experience positively influences Mental Immersion), H5 (Mental Immersion positively effects the Hedonic Value), H6 (Mental Immersion positively effects Functional Value), H8 (Sensory Immersion positively effects the Functional Value), and H10 (Behavioural Intention is positively influenced by perceived Functional Value) were not supported. In order to synthesise the findings with the existing literature, and to further explore the supported and

non-supported quantitative findings, the qualitative findings have to be analysed in relation to literature, and the SEM-analysis.

Finally, considering the literature, the insights obtained from qualitative analysis, and the identified indirect associations among the constructs, the study supports the S-I-V-A model as an explanatory framework for understanding the dynamics of value formation. This model, consisting of five constructs, underscores the impact of mixed-reality atmospherics and mixed-reality experience on behavioural intentions by means of sensory immersion and hedonic value. The reasons for this approach are discussed in detail in this chapter.
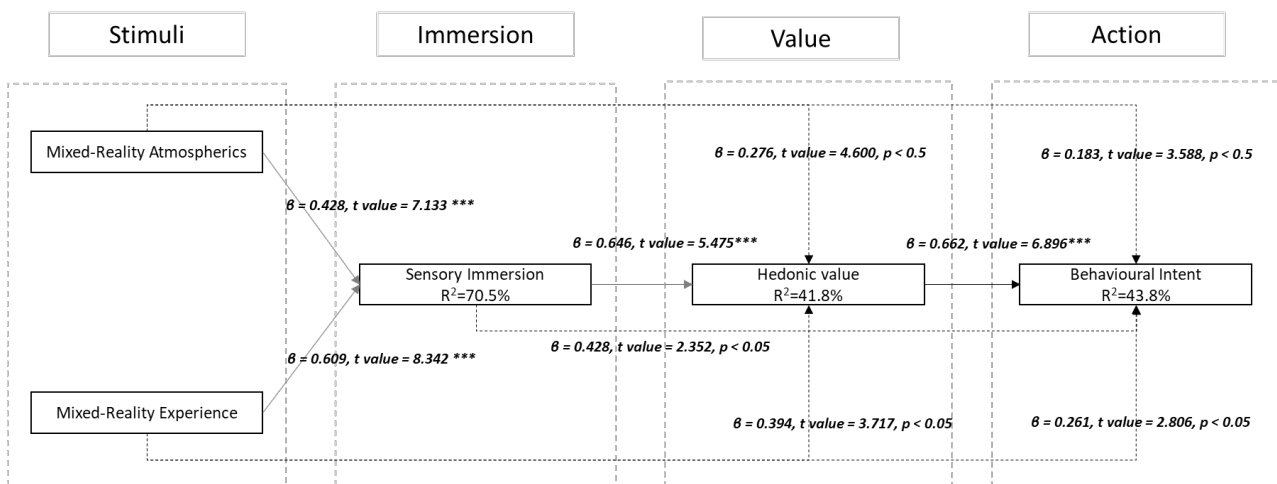
Figure 8.1 Final Structural S-I-V-A Model with Direct and Indirect Effects

8.2.1. Stimuli (S)

The proposed SEM model suggest the mixed-reality atmospherics and mixed-reality experience as the measurable constructs of stimuli influencing the formation of immersion, value formation, and finally the positive behavioural intent.

Mixed-reality atmospherics construct reflects the prior studies where sensory elements in tourism encounters have been identified as critical to assisting decision-makers in improving visitor experiences (Knobloch, 2017; Pan and Ryan, 2009). Also, a growing body of literature concerning mixed reality technologies and blended spaces support the importance of

including and incorporating the existing knowledge and available technologies into the analysis of value formation in multisensory mixed-reality tourism attractions (Deng et al., 2019).

According to Agapito (2020), the creation of unforgettable experiences involves stimulating all human senses, leading to a deep level of interaction. This perspective aligns with the notion of hedonic value, where memorable events are regarded as a source of competitive advantage. In a similar vein, Bitner (1992) explored the concept of servicescape, examining how the physical environment influences both customer and employee behaviour by considering spatially arranged senses and the sensory aspect of the environment. The findings from the focus group interviews and survey results align with the existing literature, as suggested by Agapito (2020) and others. It supports the idea that in the tourism industry, the customer experience should encompass immersive sensory encounters, including seeing, hearing, smelling, tasting, and touching, which are integrated with social interactions in an experiencescape. Connected to immersion, the focus group interviews revealed that the experienced mixed reality technology promoted a perception of quality. Furthermore, the technology and the analogue elements of the environment were aligned and created a uniform creative, exciting, and interesting experience.

Creating engaging interactions with the environment is a fundamental aspect of designing tourist attractions. The validation of this notion was evident in both the focus group interviews and the findings from the visitor survey. It emphasizes that tourist attractions are intentionally crafted to provide immersive experiences within multisensory extended reality environments. In such environments, technology-enhanced sensory inputs are employed to heighten the sense of reality and enhance the overall experience. Consequently, it is crucial for the visual components to synchronize with the auditory environment, the tangible elements of the experiencescape to correspond with visitors' preconceived notions, and the constructed surroundings to function as an enchanting backdrop for blended-reality encounters and engagements.

The measured construct of mixed-reality experience was driven by the literature (e.g.) and influenced by the experiences of the interviewed visitors. The focus group interviews revealed that the experience, within a multisensory mixed-reality environment is challenging to describe. According to the interviews, the aligned elements of the environment blur the

reactions and therefore the interviewees had difficulties in articulating the specific moments, and the elements influencing their experience.

Indeed, the mixed-reality experience construct combines the existing literature (Güzel, 2014; Schmitt, 1999; Holbrook and Hirschman, 1982) confirming that experiences enable changes in consumers by allowing them to experience the actual, imagined, or virtual event and express consuming flows via fantasy, emotion, and fun. As a consequence, the impact of mixed-reality atmospherics on customers' cognitive and emotional reactions to service situations is noteworthy. Therefore, visitors' assessments of the experience should be anticipated based on their satisfaction with the substantive staging and interaction possibilities of the mixed-reality atmospherics (Dong and Sui, 2013).

The interviews revealed that the stories conveyed through mixed-reality technologies extended visitors' knowledge of the theme and the characters. Furthermore, the utilization of mixed reality technologies and multisensory stimuli facilitated visitors in comprehending the narrative storyline, characters, and theme of the attraction. Notably, prior studies in the tourism literature (e.g., Agapito et al., 2017; Kastenholz et al., 2012; Walls et al., 2011a; Walls et al., 2011; Mossberg, 2007; O'Dell, 2005) highlight the destination as a platform for storytelling and recommend practitioners to foster the creation of a narrative interplay that integrates the location, culture, and built environment.

The findings of this study indicate that customer experiences in the tourism industry, particularly within multisensory mixed-reality environments, should be conceptualized as immersive encounters that engage the senses of sight, sound, smell, taste, and touch. These experiences encompass a comprehensive sensory journey, characterized by active engagement and social interactions within the environment. Further, the survey data revealed that positive ambiance and atmosphere, as well as the multisensory mixed reality elements (scents, sounds, sights), increase the visitors' emotional involvement. Therefore, the mixed-reality atmospherics and experience constructs combine the literature, the expressed impressions, and experiences of the visitors into a measurable construct of stimuli. This construct represents the experience environment that provides a stage and physical dimensions for the experiences, and where consumers are exposed to multisensory mixed-reality stimuli and social interactions.

8.2.2. Immersion

The developed model suggests that the mixed-reality atmospherics, and the mixed-reality experience positively influence the formation of sensory immersion. In the initial conceptual model, based on literature and focus group interviews, both mental- and sensory immersion was expected to be positively influenced by mixed-reality atmospherics (H1, H2), and the actual experience in this technology-enhanced multisensory mixed-reality environment (H3, H4). As discussed earlier, the limited research on multisensory mixed-reality atmospherics makes it challenging to directly compare the current knowledge with the results obtained in this study. However, insights from immersion studies conducted in various domains, such as video games (Ermi and Mäyrä, 2005; Sanders and Cairns, 2010), virtual reality (Hudson et al., 2018), amusement parks (Waysdorf and Reijnders, 2018), and nature holidays (Frochot et al., 2017), provide relevant perspectives for discussion. These studies indicate that environmental cues, social interactions, and the overall experiences within a curated environment play a significant role in fostering immersion.

The survey results highlight that the mixed-reality atmospherics positively influence mental immersion and therefore suggests that H1 is supported. Also, H2 is supported suggesting that mixed-reality atmospherics positively influence sensory immersion. Also, H3 and H4 are supported considering the significance of the path from mixed-reality experience to mental immersion and sensory immersion, respectively. Despite the significant influence between the constructs, the survey data did not support the inclusion of mental immersion into the final S-I-V-A -model due to the constructs' low effect size. Hence, even though the path is significant, the mental immersion construct has not been included in the final value creation model. The subsequent discussion will explore potential reasons for this exclusion and examine the alignment between the existing literature, insights from focus group interviews, and the findings from the quantitative survey.

The distinction between mental and sensory immersion is not easy to draw. Overall, as emphasized by Agrawal et al., (2020), the immersion discourse is unclear and suffers dilution due to a lack of definitional consensus. Indeed, this was also emphasized by many in the focus group interviews. After experiencing the mixed-reality multisensory Santa Claus office, many interviewees described their experience in a way that suggests a strong relationship between sensory and mental immersion. However, it was challenging for the

interviewees to specifically define the type of immersion or clearly separate mental and sensory immersion. Instead, in accordance with previous literature, they expressed combinations of immersive feelings and described their thoughts during the experience using elements of both mental and sensory immersion. This also corroborates with Frochot et al. (2017) who stated that participative, mental, or sensory immersion happens when the experience environment allows the physical interaction via (e.g. touching, smelling, walking), and when visitors are able to immerse themselves and become a part of the experience thus combining multiple psychological concepts. Also, Frochot et al. (2017) explained that immersion can take place simultaneously on a mental or sensory level. Patrick et al. (2000) also confirmed that while sensory immersion occurs as a result of being exposed to a digitally enhanced environment or other forms of multisensory stimulation, mental immersion occurs as a result of envisioning the story and thus absorption into it. These findings shed light on the statistical support for H1, H2, H3, and H4, indicating the significance of the paths and the substantial role of immersion in the developed S-I-V-A model. However, it should be noted that the construct of mental immersion had a relatively low effect size, which led to its exclusion from the final model. Nonetheless, it is important to acknowledge that mental immersion is still associated with perceived sensory immersion.

Furthermore, explaining the co-existence of sensory and mental immersion, interviewed and studied visitors were completely captivated in the surroundings and engrossed in the activities involved in the environment when they engaged in themed environment with multisensory mixed-reality stimuli. Mental immersion is indeed frequently characterized as being transported into a story (Adams and Rollings, 2006). However, the senses are used to perceive narrative in order for it to develop its multifaceted composition in the imagination (Ermi and Mäyrä, 2005). Correspondingly, immersion, in this study, took place in a specific context in which technology-enhanced sensory stimulation increase the feeling of storified and the staged environment, thus allowing the formation of *imaginative immersion* (Ermi and Mäyrä, 2005) and fictional immersion (Arsenault, 2005). Therefore, it is easy to understand the difficulties visitors experienced in describing the type of immersion.

The interconnectedness between sensory and mental immersion may contribute to the lack of support for including the mental immersion construct in the final model based on the collected survey data. The focus group interviews, however, support the outer model and benefit from the co-existing constructs of mental and sensory immersion. Mental immersion

is the outcome of picturing the story, whereas sensory immersion is the effect of being exposed to a digitally augmented environment and the narrative. The results of this study align with the findings of Agrawal (2020) and Frochot et al. (2017), further confirming the existence of immersion in a previously unexplored multisensory mixed-reality environment and during the mixed-reality experience within such an environment. Based on the insights gained from the focus group interviews, immersion is characterized by a state of deep concentration where visitors become fully absorbed in the experience, losing track of time and self-awareness. This heightened engagement is often triggered by factors such as personal memories or group dynamics, which elicit internal reactions in visitors and foster a greater level of involvement. These findings align with the observations made by Santoso (2021) regarding the role of involvement in the immersion process.

Existing literature postulates that tourism venues and attractions that allow for deep participation in activities are seen to be more immersive (e.g. Deng et al., 2019). This was supported by quantitative data and qualitative interviews suggesting that the multisensory stimuli heighten emotional involvement, resulting in richer and more lasting experiences. Moreover, the focus group interviews suggested that immersive experiences that engage the senses produce a stronger emotional and cognitive connection that sparks the imagination. Therefore, sensory immersion, including mental involvement plays an important part in the value formation in a multisensory mixed-reality travel experience.

Moreover, the focus group interviews implied that sensory immersion happens when the experience environment allows the physical interaction via (e.g. touching, smelling, walking), and when visitors are able to immerse themselves and become a part of the experience. Hence, the process of discovering new things or acquiring knowledge within an immersive experience plays a crucial role in the creation of meaningful and impactful experiences. This, in turn, has a positive effect on the perceived value derived from the immersive experience. In an immersive experience, personal interpretation and past experiences entwine with the narrative and symbolic layers provided by the service provider. Staging, interaction, and technology convey the chosen narrative allowing personal interaction and interpretation. Indeed, it is essential to notice that psychologic immersion builds on personal meanings and connects to the narratives through personal interpretations of the provided stimuli (Waynsdorf and Reijndeers, 2018). Therefore, immersion happens on a personal level and links closely to the psychological connection to the story.

According to focus group interviews, the visitor is immersed in the multisensory mixed-reality environment, they are not supposed to conceive anything outside what is provided and staged by the experience provider. In contrast, when they are immersed in the narrative, like a book or a movie, the feeling of immersion is mental and built by one's imagination. Therefore, to maintain the immersion, the visitor should not lose the perceptual focus. This creates challenges to experience designers and providers. Snodrgrass, Dengah II, Lacy, and Fagan, (2013), used characteristics of games that facilitate immersion, which can be detected also from the interviews of the visitors. Building upon the principles of game research, the factors that contribute to enhancing immersion can be classified into two categories: those that foster a comprehensive mental representation of the environment, and those that promote consistency within the experiencescape. According to game research, a rich mental model of the environment is achieved through the integration of multiple sensory channels, the availability of complete sensory information, the presence of cognitively challenging settings, and the presence of a compelling and captivating narrative (Ermi and Mäyrä, 2005). Highlighted by the interviewees, these categories also apply to tourism experience-related immersion.

Considering the sensory immersion, it is noteworthy to highlight the possibilities of adding multiple sensory stimuli to the experience and the importance of synchronizing the sensory (Deng et al., 2019) input as highlighted by the focus group interviews. A bird flying overhead, or the crunch of snow is good. Hearing the crunch underneath on each step is even better. Panoramic projections and ambient lights complement the immersion. Sensory information should also be complete. Furthermore, in accordance with Deng et al. (2019) the focus group participants emphasized the importance of uninterrupted experience. Hence, if the narrative or the sensory cues have gaps that the visitor has to fill in, the mental immersion might be lost. More familiar with the extended environment is, that the visitor can fill in more blanks without being pulled out of the immersion to think about it. Demanding environments where visitors have to focus on what's going on will tie up mental resources. This cognitive challenge increases the level of immersion because when the mental processes are allocated to understanding the experience, some of the shortcomings are overlooked that would otherwise remind them that they're immersed in an artificially enhanced environment.

Furthermore, in line with the insights shared by the focus group participants, a compelling and captivating storyline plays a pivotal role in engaging cognitive faculties. Intriguing

narratives not only capture the attention of individuals but also contribute to the perception of authenticity within the expanded experiencescape. In addition to the factors that contribute to a comprehensive understanding of the environment, attaining a state of immersion also necessitates elements that foster coherence and consistency throughout the experiencescape. These elements of consistency, according to focus group interviews, are believable behaviour, unbroken presentation, and interactivity. Believable behaviour in the extended reality environment means that characters, objects, and other elements behave and react like you expect them to. Regardless of the theme or the fantasy on which the experience is based, the cues have to make sense and be constant all the way through the experience.

An unbroken presentation in the multisensory mixed-reality environment means that the spatial cues, regardless of the output mode, should not be broken at any time during the experience. Naturally, in attractions and visitor centres there are cues, safety instructions, fire exit signs, etc. but the trick is to somehow design these into the experience.

The interaction with symbols, the built environment, and characters within the extended reality setting serves as a means of providing visitors with feedback on their actions while fostering a sense of coherence across different facets of the environment. This interactivity not only enhances the immersive experience but also ensures consistency and continuity within the overall environment.

The present theory emphasizes the significance of complete absorption in the tourism experience, as highlighted in previous studies (e.g., Frochot et al., 2017). When individuals visit destinations and attractions, they actively seek temporary psychological states where they become fully engrossed in the experience. Moreover, insights from the focus group discussions suggest that initial engagement with the experience can be triggered by factors such as individual recollections, social interactions, and stimulating tasks that evoke emotional responses and intensify their level of involvement. Consequently, visitors' attention becomes centred on the immediate experience or their unique narrative, facilitating a deeper level of immersion. In the context of technology-enhanced multisensory environments, digital technologies play a crucial role in blurring the boundaries between reality and virtuality, thereby offering the potential to heighten immersion within tourism experiences. Consequently, the integration of immersive visualizations, virtual 3D

reconstructions, and multisensory mixed-reality technologies can provide visitors with alternative, complementary, and captivating experiences.

The findings of Frochot et al. (2017) were supported by the quantitative results indicating a direct effect of mixed-reality atmospherics on perceived immersion. Furthermore, in accordance with Agrawal et al. (2020), these findings implied the need to design appealing, stimulating visitor attractions with features and participation possibilities capable of generating emotional experiences and positive effects. The results of this study make a substantial addition to the current knowledge in diverse domains of immersion research. It is worth noting that a significant portion of tourist experiences is shaped by engaging and immersive interactions with the surrounding environments, as indicated by previous studies (e.g., Deng et al., 2019). This study further confirms that in a multisensory extended reality tourism environment, the process of being immersed happens in a particular environment where technology-enhanced sensory stimuli extend the sense of reality and the existing staged environment. Moreover, the insights obtained from the focus groups and the survey data align with the existing literature regarding the strategies to enhance immersion in virtual environments, as suggested by prior research (Agrawal et al., 2020). Therefore, combining the existing knowledge with the results of this study, sensory immersion is a psychological condition in which people imagine themselves to be surrounded and engage in a technology-enhanced tourism environment. This can be aided by staging and interactive mixed-reality technology. In conclusion, the technology-enhanced multisensory experiencescape creates a continuous flow of interactive stimuli, resulting in a state of sensory immersion. This immersive experience has a significant impact on the perceived hedonic value, ultimately influencing behavioural intentions. These findings support the inclusion of sensory immersion constructs in the final S-I-V-A model, specifically supporting hypotheses H2 and H4.

8.2.3. Value

The initial model proposed two constructs of value, namely hedonic and functional to be positively influenced by mental immersion and sensory immersion. However, in contrast with previous literature, and the focus group interviews, the collected survey data did not support the mental immersion, nor the functional value constructs. Further, the relation between sensory immersion and functional value was nonsignificant. The possible reasons for this

will be discussed, and the possible reasons for constructs' low effect size and nonsignificant relation to sensory immersion will be analysed. Following, the section will discuss the hedonic value constructs' relation to existing literature and how the construct contributes to the proposed S-I-V-A model for value creation in multisensory mixed-reality tourism environment.

Perceived value, a concept closely related to customer value, is the subject of ongoing debate and varying interpretations among academics. However, it can generally be understood as consumers' overall assessment of a product's utility, based on their perceptions of the benefits received relative to the costs incurred (Zeithaml, 1988).

Previous studies have demonstrated that in tourism, interaction, experiencing something together and building memories are considered worth the sacrifice (Smith and Colgate, 2007). However, calculating perceived value exclusively on 'price' fails to account the complexity and the multidimensionality of price and the mindset of modern consumers. This was also highlighted in the focus group discussions. Within tourism, value is embedded in customers' personalised activities and companies must develop positive interventions and actor engagement opportunities to enhance this embedded value. The perceived value will be evaluated based on the overall experience rather than by individual transactions during the journey (Zeithaml's, 1988).

In the literature, quality, reliability, durability, and price are often identified as key contributors to functional value (Smith and Colgate, 2007). However, the findings from the focus group interviews and survey data present a contrasting perspective. While functional value is emphasized in the literature, the survey results suggest that it does not play a significant role in the formation of value in a multisensory mixed-reality attraction. The reason for this may be that within the studied multisensory mixed-reality attraction, traditional attributes related to functional value like safety, timeliness of the service, comfort and price were not present, or did not have a significant role in the experience. Furthermore, unlike adventure tourism operations where functional value holds significance in terms of ensuring safety and minimizing risks, the studied themed attraction did not require such meticulous planning and safety considerations. As a result, the importance of functional value was not as prominent in this context.

Concurrently, the qualitative data revealed a range of functional value attributes that aligned with the literature (e.g., Sheth, Newman, and Gross, 1991a). These attributes included the quality of the experience, entrance procedures, price, cues, physical layout, and interaction with other customers. However, their importance diminished after experiencing the attraction. These findings contribute to the existing literature (Smith and Colgate, 2007; Sheth, Newman, and Gross, 1991a) and highlight that the comprehensive evaluation of both functional and emotional experience consequences is often referred to as value in use. This evaluation, particularly in tourism settings, is influenced by the interplay between the environment, service personnel, and customers. The focus group interviews supported the inclusion of functional value and hedonic value in the initial value creation model.

However, in contrast to the literature and the focus group interviews, the survey results did not support hypothesis 5, indicating that the effect of mental immersion on hedonic value was not significant. On the other hand, according to the survey data, mental immersion positively affected functional value, thus supporting hypothesis 6. However, the effect size of the functional value construct fell below the threshold value, and therefore it was not included in the final value creation model.

In the proposed S-I-V-A model, hedonic value emerges as a crucial dimension for understanding and elucidating perceived value within a multisensory mixed-reality environment. The insights obtained from the focus group interviews shed light on the significance of sensory stimuli and their ability to explain the factors that contribute to hedonic value, including the sensory experiences and emotions evoked. Previous research has predominantly focused on the acceptance or use of technologies (Blumenthal, 2020; Bec et al., 2019; Jung et al., 2016), whereas this study explores the impact of technology-enhanced multisensory immersion on the formation of value. Immersion, as well as all other sensory aspects, play an important role in value perception. The integration of multisensory mixed-reality technologies is effectively erasing the boundaries between the physical and virtual realms, offering visitors diverse and captivating experiences. This phenomenon may elucidate the stronger indirect impact of mixed-reality technology on hedonic value, as opposed to the direct influence of the mixed-reality experience itself. The literature emphasizes the importance of immersing oneself in a multisensory environment during the tourism experience, involving the senses and social interactions within the experiencescape (Agapito et al., 2012). Based on the visitor interviews and survey data, it became evident

that active engagement with the mixed-reality environment, including touch, hearing, sight, and smell, indirectly contributed to a positive perception of hedonic value through sensory immersion. This finding supports the idea that sensory immersion has a direct and significant impact on the perception of hedonic value, thus providing support for H7. This suggests that the level of sensory immersion experienced by individuals influences their perception of hedonic value. Furthermore, this suggests that providing potential visitors with curated, and themed sensory cues through multisensory mixed-reality technologies increases the perceived hedonic value, as indicated by Chalmers (2017) in a low-tech leisure environment.

In the domain of experiences, the presence of multisensory stimuli assumes a crucial role as they act as catalysts for shaping perceptions and, consequently, contribute to the formation of value perceptions (Agapito et al., 2013). The insights gained from focus group interviews shed light on the fundamental role played by our senses in connecting the external world with our conscious mind, wherein the amalgamation of diverse sensory stimuli significantly influences individuals' perception of their surroundings. Additionally, existing literature substantiates that sensory inputs evoke a range of responses, including images, memories, emotions, and sensations associated with past experiences (Chalmers, 2017). As a result, the outcomes and evaluations of visitors are greatly influenced by the quality of their sensory experiences, highlighting an innate inclination to fulfil hedonic requirements.

Previous studies have emphasized the importance of sensory value (Smith and Colgate, 2007; Holbrook, 2005; Lapierre, 2000; Sheth et al., 1991) as the primary driver of hedonic value. This value construct revolves around the consumption environment and is initially experienced through vivid elements. This study aims to validate the applicability of the sensory value concept in multisensory mixed reality environments. The findings contribute to existing literature by highlighting the significance of operators prioritizing the creation of sensory value through technology-enhanced aesthetics, ambient factors, aromas, tactile experiences, and the harmonization of style, decor, and offerings. Operators must recognize that customer pleasure, including visual enjoyment, plays a crucial role in shaping the overall experience.

Further, in accordance with Waysdorf and Reijnders, (2018), the survey data confirmed that that theming and holistic representation of the narrative can be used to increase the sensory immersion of the visitor. This also connects to memory formation and value perceptions

through multiple senses, especially within amusement parks, themed restaurants, and destinations. Therefore, creating an immersive experience is one of the main goals for leisure companies. In this study, the visitor interviews indicated that immersion, together with all sensory aspects, plays a critical part in value perceptions. Hence, achieving immersion becomes crucial for fostering a positive experience and is closely linked to the indulgent consumption mindset and perceived hedonic value.

The hedonic dimension of consumption involves individuals' engagement with multisensory inputs, imaginations, and emotions (Hirschman and Holbrook, 1982). Attractions provide immersive environments filled with evocative elements, allowing for personalized experiences (Willson and McIntosh, 2007). Themed attractions hold subjective significance as each individual seeks their own preferred combination of elements (Petr, 2015). The present study emphasizes the importance of layout design, visitor path, and multisensory stimuli in shaping individual interpretations and happiness. This aligns with existing literature suggesting hedonic preference involves pleasurable emotions and comfort (Huta, 2016; Agapito et al., 2021).

The focus group interviews revealed that hedonic value is closely tied to the ability of a product to provide customers with appropriate experiences, emotions, and feelings. This is especially important in the travel and entertainment industries, where organizations prioritize the creation of hedonic value. The findings from visitor interviews further supported this, emphasizing the significance of creativity, ambiance, and the overall atmosphere of the consumption environment. Additionally, service attributes that enhance sensory, emotional, relational, and knowledge-based experiences play a crucial role in shaping the perceived hedonic value for customers. Meeting service expectations, fostering a sense of pride in ownership or experience, and ensuring the effectiveness of the product or service all contribute to enhancing the customer experience and perceived hedonic value.

In accordance with Calver and Page (2013), the visitor interviews indicated that hedonic attributes of the experience are the most common ways for visitors to evaluate the perceived worth of their historical attraction experience. This was supported by the survey data suggesting that leisure consumption is considered as a combination of creative, affective, and emotional perspectives and this consumption enables the visitors' active engagement, hence the immersion. This immersion influences positively to the perceived hedonic value.

Alongside the formation of multisensory imagery and fantasies, hedonic consumption is linked to emotional arousal, leading to a range of both positive and negative emotions, including happiness, disappointment, surprise, pain, pleasure, enchantment, anger, and excitement (Agapito et al., 2021). These associations do not only reflect visible consumption but reflects also to the consumer's prerequisite to bond or perform shared transactions and social interaction. Indeed, based on the visitor interviews, and supported by the survey data, the epistemic value, another sub-dimension of hedonic value, is heightened when the curiosity of the consumer is aroused, when the product or service provides originality, and when it fulfils a desire for information. In a similar vein, hedonic well-being encompasses the emotional facets of overall well-being and entails the pursuit of positive emotions, including happiness and the pursuit of sensory pleasure. Focus group interviews indicated that dimensions such as escape, relaxation, learning, discovery, thrill, self-esteem, social recognition, and bonding can be used to comprehend the motivations of travellers in terms of hedonic experiences.

In this study, the visitor interviews also indicated that engaging experiences that allow individuals to feel emotionally invested and experience a sense of belonging to the site have a significant impact on value perceptions. These findings were further supported by the survey data, which suggested that hedonistic value reveals the emotional value of the consumer's experience and can also be seen as the return of investment in terms of enjoyment and playfulness. Thus, hedonism plays a significant role in leisure experiences. In addition to hedonic enjoyment, according to qualitative data, memorable experiences in tourism context are also linked to eudemonic enjoyment and perceived symbolic value. Hence, the positive associations, and the enjoyment of the experience accents the performance and psychological well-being. Additionally, while hedonic enjoyment is about positive sensations during an activity, eudemonic well-being includes the pursuit, demonstration, and experience of virtue, individual development, achievement, superiority, and personal meaning. Overall, these discoveries contribute to a paradigm shift, as numerous attractions are transitioning from a knowledge-centred approach to a visitor-oriented strategy (Marshall et al., 2016). Consequently, themed attractions should place emphasis on the hedonic dimension of experiences and the emotional reactions of visitors. This underscores the significance of crafting the environment in a manner that establishes the scene for the experience, offering suitable stimuli for interpretation and interactive

exploration. Moreover, it is essential to empower customers to actively participate in the co-creation of their own distinct and unforgettable experiences.

By nature, tourists are motivated by the pursuit of pleasure, amusement, entertainment, or relaxation. An equally important concern for managers is the ability to manage and shape the customer experience, ensuring it becomes a truly enjoyable and hedonically rewarding experience. Hedonic value provides fresh explanations for the evaluations made by visitors and clarifies the attributes deemed most significant to the outcomes of perceived value, including contentment, loyalty, intention to return, and recommendation (Agapito et al., 2021). Considering the level of the appropriateness of the experience, and the feelings, and emotions it creates for the visitor, hedonic value provides multiple implications to the development, and the management of attractions. Enjoyable and pleasant moments convoyed by educational experiences may serve as a catalyst to sharing their memorable experiences with others as well as to revisit.

Extending the existing body of research (Agapito et al., 2021; Chalmers, 2017; Huta, 2016; Prebensen et al., 2013b), consumers tend to prioritize the utilitarian aspects of their daily, obligatory consumption, while attaching greater importance to the hedonic aspects of light-hearted, spontaneous, and discretionary consumption. Hedonic value, being subjective and personal in nature, encompasses elements such as fun and playfulness. Overall, the following emerging findings in this investigation have been discussed in this subsection. The quantitative results do not support the hypothesised positive association between mental immersion and the hedonic value (H5) and mental immersion on functional value (H6) due to insignificant path and low construct size effect, respectively. In contrast, quantitative results support the hypothesis 7, and that sensory immersion positively effects hedonic value. However, sensory immersions' positive influence on functional value was not supported by the survey data. Additionally, as confirmed by the positive and significant indirect effect of both mixed-reality atmospherics, and mixed-reality experience on hedonic value, the perceived hedonic value can be increased through multisensory mixed-reality technologies and well-curated experience in this environment through sensory immersion. The subsequent subsection delves into a more comprehensive discussion regarding the connection between hedonic value and behavioural intentions, along with the indirect effects of cues in mixed-reality environments on behavioural intentions via immersion and hedonic value.

8.2.4. Action

The literature relating to mixed-reality atmospherics and experiences in relation to behavioural intent is limited, but similarities can be found in VR-related research (e.g.). Moreover, the tourism related mixed-reality research is limited to few conceptual research models and mostly based on wearable VR or MR devices (e.g.). However, some emerging studies considering blended spaces and technology-enhanced tourism experiences do exist. The following section will use this literature in the following discussion.

In line with previous research (e.g., Bender et al., 2020), the focus group interviews revealed that hedonic experiences have the potential to positively impact behavioural intentions, such as recommendations and revisits. In the tourism literature, Chen et al. (2016) found that hedonic experiences play important role in shaping the visitor's future behaviour. Therefore, multisensory stimuli are important in order to encourage the formation of hedonic value formation and consequently positive behavioural intentions. In VR research, this has been confirmed, hence the importance of the possibilities to influence real visitation to actual tourism destinations through VR experiences has been acknowledged (e.g. Jung et al., 2016; Tussyadiah et al., 2017). Similar findings were discovered in this study. However, this study extends the knowledge to multisensory mixed-reality environment in tourism context. More specifically, this study contributes to the literature by postulating that positive tourism-related, multisensory mixed-reality experience increases the positive behavioural intention through sensory immersion.

Considering blended spaces where the real and virtual worlds are blended without wearable devices, Deng et al. (2019) emphasise that the transitions between physical and digital have to be well designed in order to influence positive behavioural intent. In support of this, the focus group interviews indicated that when different layers and elements of the experience connect, visitors become actors within the experience, which in turn increases the perceived immersion, and in turn the memory formation which influences the future behavioural intentions. Further, the survey data support the indirect link between mixed-reality atmospherics and behavioural intent. Therefore, the design of, and the management of the different layers and elements of the experience have to be aligned and form a uniform experience.

The focus group interviews also highlighted the dynamics of engagement, hence the immersion into the story through multisensory mixed-reality stimuli. Prior research has indicated that it is important to understand how multisensory stimuli, and mixed-reality technology facilitate the sensory immersion, and the formation of hedonic value (Santoso et al., 2021). Despite being limited in scope, the current research available, such as the studies conducted by Lee et al. (2020) and Bac et al. (2020), indicates that wearable mixed-reality technology has the ability to enhance the sense of immersion and enjoyment. As a result, it can have a positive impact on brand awareness, association, and purchase behaviour. This study contributes to the existing body of knowledge on multisensory mixed-reality experiences, affirming that when effectively employed, the hedonic value generated can create a sustained competitive advantage. Furthermore, marketing strategies, including loyalty programs, can further strengthen this advantage. In turn, this could positively motivate visitors to revisit, and inspire referral behaviour by WOM and social media recommendations. Indeed, the majority of focus group interview participants stated they would like to experience something similar and would likely recommend others to experience multisensory mixed-reality attractions. The intent to revisit attractions with multisensory mixed-reality technologies was also supported by the survey findings, suggesting that using multisensory mixed-reality technologies in tourism attractions positively influences visitors' revisit intentions. Further, participants' willingness to visit other such sites that utilise multisensory mixed-reality technology was also highlighted in the visitor interviews. This builds on previous VR and AR research, which revealed that for example augmented reality experiences improve memorability, and revisit intentions in heritage tourism (Jiang et al., 2022). Also, Bec et al. (2019) and Prebensen and Xie. (2017) have emphasized that tourists' aroused interest and use of resources influence positively value perceptions and willingness to revisit. The focus group interviews emphasized the same point and the survey data provided additional support, indicating that multisensory and immersive technologies have the potential to be employed in tourism attractions. Their use can enhance immersion, create memorable experiences, and subsequently increase the desire to revisit such attractions.

The intent to recommend was highlighted by the survey data supporting earlier literature. Lunardo and Posignon (2019) proposed that immersing oneself in an interactive environment and gaining new knowledge can have a profound impact on shaping meaningful experiences. These experiences, in turn, play a significant role in shaping individuals' inclinations to engage in behaviours such as sharing positive word-of-mouth

recommendations. Facilitating referral behaviour holds significant importance for operators, particularly considering that social media has been established as a valuable tool for tourism operators facing resource constraints (Hays et al., 2013). Additionally, Zeng et al. (2022) demonstrate that experiencing hedonic value in virtual reality (VR) can stimulate tourists' inclination to engage in cultural dissemination behaviours, such as their willingness to recommend. Similarly, Richards (2014) emphasized the influence of mediated contact with local culture and their narratives on future behavioural intentions and the development of place attachment.

The focus group interviews revealed that the storified elements of the multisensory mixed-reality experience, and the resulting hedonic value increase the visitors' perceived memory of the story and increase their willingness to share the story through positive WOM. Indeed, prior research suggests that digital solutions and emerging technologies present creative possibilities for inspiring and involving tourists, thereby revolutionizing the manners in which tourists can engage with destinations, attractions, and services (Cheng et al., 2020).

The existing body of literature, along with the findings derived from this study, collectively indicate a strong association between multisensory mixed-reality atmospherics and the intention to revisit the attraction or similar attractions. As a result, it becomes evident that the necessity of interaction and the ability for users to actively engage with and immerse themselves in the multisensory atmospherics, while also having the opportunity to become part of the narrative through immersive technology, significantly influence positive behavioural intentions. The quantitative findings further supported this by indicating an indirect association between mixed-reality experience and positive behavioural intentions via sensory immersion and hedonic value. These findings reinforce the hypothesis postulated in MR research, that high level of immersion leads to more realistic behaviour as argued by Slater (2009).

The results of this investigation, along with the insights provided by Santoso et al. (2021), shed light on the impact of multisensory mixed-reality experiences on the formation of hedonic value and subsequent influence on behavioural intentions. Additionally, Santoso et al. emphasized the need for further research in the XR domain to explore how XR can enhance visitors' retention of visual information and its effects on revisit intention. Furthermore, they proposed the importance of investigating multisensory XR to uncover its

potential in promoting positive post-travel behaviours and shaping the destination image. These collective findings contribute to our understanding of the role played by multisensory mixed-reality in shaping visitor experiences and their intentions. The survey data support the proposed (H9) suggesting that behavioural intention is positively influenced by perceived hedonic value. However, for the reasons discussed earlier, the H10 was not supported by the SEM. Furthermore, supporting the overall S-I-V-A value creation model, the indirect impacts of mixed-reality atmospherics, and experience on behavioural intentions through immersion and hedonic value were supported by the focus group interviews and the survey data. Overall, the study findings supported the positive anticipated relationship between hedonic value and three behavioural intentions. More precisely, the survey results offered validation for the inclination to recommend, the desire to revisit, and the willingness to explore another attraction employing multisensory mixed-reality technologies once more.

8.3.   Summary

The objective of this chapter was to conduct a comprehensive analysis, integration, and synthesis of the findings obtained from focus group interviews and the visitor survey, thereby achieving the primary goal of the study. Throughout this process, recurring themes consistently emerged within the collected data, aligning with previous studies. While certain results presented contradictions and led to the rejection of hypotheses, other findings supported and expanded upon the existing knowledge, confirming the integration of the five overarching constructs within the developed S-I-V-A model for Technology Enhanced Multisensory Mixed-Reality Value Creation.

The role of sensory immersion in directly influencing perceived hedonic value and subsequently impacting positive behavioural intentions was emphasized, highlighting the importance of tailoring both the mixed-reality atmospherics and mixed-reality experience to induce sensory immersion. This section extensively discussed the relationship between the primary and secondary data and the existing literature, while also highlighting the new insights derived from the primary data collection within the constructed S-I-V-A model. It further solidified the understanding of how the two mixed-reality constructs influence immersion, value, and behavioural intents, while supporting the indirect relationships between these constructs and the indirect association between sensory immersion and behavioural intentions. The findings underscored the critical role of stimuli (S), immersion

(I), value (V), and action (A) within the revised S-I-V-A model, elucidating their interconnectedness and impact on the overall experience.

Based on the analysis, it can be concluded that the two Stimuli (S) constructs, namely mixed-reality atmospherics and mixed-reality experience, strongly contribute to sensory immersion and, indirectly, to hedonic value and behavioural intent. The findings also indicate the significant role of immersion (I) within the model. Furthermore, the results support the pathway from value (V) to action (A) in the model, although functional value may have only a limited impact on the studied multisensory mixed-reality tourism experience. Nonetheless, the other constructs directly and indirectly influence the formation of value and behavioural intent, thereby confirming the relationship between mixed-reality atmospherics, mixed-reality experience (S), and behavioural intentions (A) through immersion (I).

This discussion and synthesis of data have led to several noteworthy conclusions and identified avenues for future research. Recognizing that the experience itself can be considered the desired outcome, attractions can prioritize the design of immersive environments that foster genuine engagement, emotional connections, and personal fulfilment. Therefore, following the earlier attempts of e.g., Chen and VG (2022), future studies should consider experiences as both the stimulus and the ultimate outcome. This shift from a transactional mindset, where value is primarily associated with a product or service, to an experiential mindset, where value is co-created through the interaction between visitors and the environment, opens up new possibilities. These aspects will be further explored in detail in the final chapter, which serves to conclude the study, contribute to the existing body of knowledge, provide implications for the industry, and suggest potential directions for future research.

Chapter 9 - Conclusions

9.1.   Introduction

The final chapter commences with an assessment of the attainment of the study's objectives. It proceeds to delve into the contributions made to knowledge and the implications for tourism attraction operators, as well as MR developers and designers. Subsequently, the limitations of the study are examined, in conjunction with recommendations for future research and the formulation of tourism attraction development strategies.

The research aimed to establish a value creation model for a multisensory, mixed reality environment in the context of Finnish tourism. To fulfil this aim, the research was guided by four specific objectives.

1.   To critically review the literature on value creation theory, multisensory experience, and mixed reality within the tourism context.
2.   To investigate the influence of multiple senses in value creation in tourism.
3.   To explore antecedents of tourism value creation in the mixed reality environment; and
4.   To develop a value creation model for a multisensory, mixed reality environment within the tourism context.

9.2.　Conclusions

In this section, the research objectives are presented individually to showcase the comprehensive achievement of each objective. The final objective encompasses the primary contribution of the overall research, which is the development of a theoretical model for value creation in a multisensory mixed reality environment within the tourism context. Subsequently, the following section (9.3.) will provide a more detailed description of the theoretical contributions and practical implications of this study.

9.2.1. Objective 1

The primary research objective entailed a comprehensive examination of three pivotal research areas within the tourism context: 1) value creation, 2) multisensory experience, and 3) mixed-reality technology. The study commenced by conducting a thorough review of extensively referenced frameworks and typologies associated with customer value, perceived value, and value creation. This investigation revealed the existence of diverse definitions, conceptualizations, frameworks, and typologies. Notably, Smith and Colgate's (2007) framework emerged as particularly relevant as it accounts for the disparities between tangible goods and intangible tourism and hospitality services. This framework has garnered support from subsequent studies, including the work of Yang and Mattila (2017). Furthermore, their framework explains the hedonic/experiential value by describing the sensory, emotional, epistemic, and social antecedent of value creation. This led to the discussion that this existing customer value creation framework can be utilised in tourism concept development, and in identifying value creation opportunities, and empirically test the proposed value creation model for a multisensory, mixed reality environment within the tourism context. Ultimately, the growing presence of smart machines in service interactions necessitates the integration of technologies and cognitive interfaces into future value frameworks. In this dynamic context, value propositions play a pivotal role in attracting, shaping, and potentially transforming the interaction and participation of individuals in service experiences.

Considering the specific focus of this study on the multisensory mixed-reality tourism context, an examination was conducted to compare the existing literature on value with the available research on immersive technology and experiences. This analysis revealed a

notable gap in the literature, indicating a lack of in-depth research in this particular area. Although it is widely acknowledged that servicescape elements greatly influence consumers' cognitive and emotional reactions to a service, the perception and overall satisfaction of visitors can be anticipated based on their assessment of the physical environment and ambiance provided by the servicescape. As emerging technologies, multimedia, and multisensory experiences gain increasing popularity, there is a growing need to further explore the realm of multisensory mixed-reality environments (MREs) that allow for the manipulation of diverse sensory elements, encompassing aromas, temperature, humidity, auditory cues, and visual stimuli. While some scholars (e.g., Dad et al., 2018) have begun to investigate this topic in recent years, the present study stands as the first to apply this research to nonwearable multisensory mixed-reality experiences in the context of tourism sites. As a result, the final literature chapter synthesises AR, VR, and MR research from the attraction and tourist development domains in order to educate the MR and tourism attraction context and concludes the holistic and multiphase customer journey of the tourism experience that encompasses a broad range of interconnected and emotional processes. The emergence of extended reality (XR) has brought about a paradigm shift in the way customers engage with their journey, offering more captivating and immersive experiences (Hoyer et al., 2020; McColl-Kennedy et al., 2019). However, previous studies focusing on XR have predominantly centred on portable and head-mounted devices, whereas this research explores the use of non-wearable multisensory mixed-reality technologies within the domain of tourism attractions. Existing literature indicates that the utilization of augmented reality (AR), virtual reality (VR), mixed reality (MR), and XR can enrich recreational encounters, encompassing visits to amusement parks, cultural establishments, and tourist destinations. These technologies hold the potential to elevate user immersion, satisfaction, and active involvement within the tourism context.

9.2.2. Objective 2

The second aim of this research was to explore the impact of multiple sensory experiences on the creation of value within the context of multisensory mixed-reality tourism. This was accomplished during the data collection's Research Phase 1 by conducting 10 focus group interviews at Finnish tourist sites that may be classified as technology-enhanced multisensory attractions. The objective of the interviews was to acquire a deeper understanding of the opportunities and barriers related to the utilization of multisensory

immersive technologies with the objective of enhancing the value perception of the experience. The data highlighted additional sub-themes unique to the multisensory MR setting, which helped guide the visitor survey's focus. Upon synthesizing the interview data with prior research, it became evident that the integration of multisensory mixed-reality has the potential to significantly impact the future evolution of tourism attractions order to assess the influence of multisensory mixed-reality cues on visitors' inclinations to act, specifically within the context of tourism attractions, the visitor interviews sought to explore participants' internal responses to the multisensory mixed-reality environments and uncover emerging themes specific to this immersive experience. Finally, concerning objective 2, six major sub-themes relevant to the multisensory mixed-reality tourist context were discovered, each capable of impacting visitors' behavioural intentions. These findings were utilized as the basis for constructing the conceptual S-I-V-A Model of value creation.

9.2.3. Objective 3

In pursuit of the third aim of this research, the focus was on investigating the antecedents of tourism value creation in a multisensory mixed-reality environment, with the purpose of advancing the conceptual framework for such an immersive setting within the tourism context. Consequently, the outcomes derived from the thematic analysis of the focus group interviews were utilized to refine and construct a survey instrument. Subsequently, the survey tool was pre-tested with international travellers. The results of the quantitative analysis partially confirm the proposed model, which demonstrates the impact of multisensory mixed-reality cues on visitor behaviour in the tourism context. This validation was achieved by conducting a quantitative data analysis on 317 survey responses collected during the visitors' multisensory mixed-reality Santa Claus Office visits as part of Research Phase 2. The analysis utilized Partial Least Squares Structural Equation Modelling (PLS-SEM) methodology.

The findings supported four of the 10 hypotheses, and the final model had seven components in total. More specifically, the survey found that mixed-reality atmospherics and mixed-reality experience, two technology-enhanced tourism cues, positively influence sensory immersion. Further, the survey suggest that sensory immersion positively

influences hedonic value, and hedonic value positively influences behavioural intentions. Furthermore, through sensory immersion and hedonic value, these two multisensory mixed-reality tourism cues indirectly influence behavioural intentions.

Based on a comprehensive review of existing research on augmented reality (AR), virtual reality (VR), mixed reality (MR), and extended reality (XR) (e.g., Santoso, 2021; Deng et al., 2019; Waynsdorf and Reijndeers, 2018), the current study further supports the significant impact of multisensory MR atmospherics and multisensory MR experience on positive behavioural intentions. This study specifically confirms the relationship between spatial augmented reality-based multisensory mixed-reality stimuli and both value perception and behavioural intentions. Consequently, these findings contribute to the existing literature by empirically verifying the effects of technology-enhanced multisensory cues in tourism attractions on sensory immersion and hedonic value within the multisensory MR tourism environment.

9.2.4. Objective 4

The ultimate aim of this study was to formulate a comprehensive model that encompasses the creation of value in a multisensory mixed reality environment specifically tailored for the tourism context. This model intends to outline the effects of various multisensory mixed-reality cues on visitors' behavioural intentions, while also offering valuable guidance for both tourism attraction managers and mixed reality developers. This proposed model was the research project's main contribution to knowledge and the primary goal. The final multisensory mixed-reality value creation S-I-V-A model had seven components and was regarded one of the first value creation models to be established in the context of multisensory mixed-reality and tourism environments. Specifically, the model and included constructs extend the knowledge of non-wearable MR experiences and development. The results of this research carry significant ramifications for both researchers and industry professionals, providing valuable insights that are thoroughly discussed in this chapter.

9.3. Contributions and Implications

Before addressing the management implications for tourism destination operators and MR developers and designers, this part summarises the contributions to knowledge. This research adds to our understanding by applying S-I-V-A model to the multisensory mixed-reality context and adding to four areas of literature: 1) value creation 2) immersive technologies, especially relevant to MR and XR, 3) experience design in tourism attraction environment, and 4) multisensory technology-enhanced tourism attraction research. This study offers important managerial insights for the effective utilization of multisensory immersive technologies in attraction design. These implications are particularly relevant to MR/XR developers and designers, as well as attraction and destination developers, and operators of visitor centres.

9.3.1. Philosophical influences

This work bears philosophical influence, particularly evident in its consideration of the role of the senses in human knowledge. Philosophers such as Aristotle and Plato have extensively explored this topic, emphasizing the significance of sensory experiences for understanding the external world. Building upon their insights, this study goes beyond surface-level observations and delves into the hidden meanings that shape people's experiences and behaviours. By elucidating and presenting a multi-sensory mixed reality attraction, the study acknowledges the profound impact of visitors' hidden value perceptions.

In line with the philosophical perspective of Aristotle, who argued that knowledge stems from sensory perception, the study recognizes the importance of sensory experiences in shaping visitors' perceptions and value assessments. Touch, in particular, holds a prominent position as a sense through which we can obtain an accurate understanding of an object's essential nature (Aristotle, 1984). By aligning with this perspective, the study emphasizes the role of sensory perception in influencing human cognition.

By incorporating philosophical ideas from Aristotle and Plato, this research acknowledges the significance of the senses and their role in human knowledge and understanding. It draws upon these philosophical underpinnings to explore the multi-sensory aspects of the studied attraction, shedding light on visitors' hidden value perceptions. In doing so, the study

deepens our understanding of the intricate relationship between sensory experiences and human cognition.

Moreover, the study makes contributions that further highlight its philosophical influence. It introduces the incorporation of sensory immersion and hedonic value as essential elements in mixed reality (MR) research, addressing a gap in previous studies that primarily focused on cognitive factors. By exploring the relationships between multi-sensory cues, sensory immersion, and behavioural responses, the study aligns with the philosophical perspective that mixed-reality experiences allow individuals to engage with imagined or virtual events, expressing emotions and enjoyment.

Additionally, the study emphasizes the significance of sensory elements in tourism encounters, particularly within multi-sensory mixed-reality environments. It highlights the importance of various sensory dimensions, such as visual perception, auditory sensations, olfactory cues, gustatory experiences, and tactile interactions, in improving visitor experiences. By integrating immersive technologies and stimuli, the study enhances our understanding of the effects of sensory immersion on value judgments, emotional involvement, and behavioural intentions in the context of tourism experiences.

In summary, this study's philosophical influence is evident in its exploration of the role of the senses in human knowledge, drawing upon the insights of Aristotle and Plato. By delving into the hidden meanings that shape people's experiences and behaviours, and by emphasizing the multi-sensory aspects of the studied attraction, the study enriches our understanding of the complex relationship between sensory experiences and human cognition.

9.3.2. Theoretical contributions

The development of the MR value creation S-I-V-A Model (see Figure 10.1) depicting the influence of technology-enhanced multisensory tourism attraction cues on visitors' behavioural intentions in the context of technology-enhanced multisensory tourism attraction was the main contribution of the study. The final MR value creation S-I-V-A model incorporates two crucial cues particular to MR attraction contexts, mixed-reality

atmospherics, and mixed-reality experience, which is the most significant conceptual discovery in this work.

This study's statistical validation revealed several direct and indirect connections among the constructs incorporated into the final model. These findings offer valuable insights to researchers for theory development and verification within the stimuli-organism-response (S-O-R) paradigm, as demonstrated by the creation of the S-I-V-A model in a novel context. Specifically, in the context of a multisensory mixed-reality tourism attraction, the S-I-V-A model was successfully validated, encompassing specific stimuli (mixed-reality atmospherics and mixed-reality experience), immersion (sensory immersion), value (hedonic value), and action (behavioural intent). These discoveries support immersive technology study in general and MR research in particular in terms of theory. Furthermore, extending the knowledge of extended reality, this study postulates that wearable and handheld devices can be replaced with spatial augmented reality (SAR) and still deliver the same experience, and the level of sensory immersion, and hedonic value as in fully immersive VR or advanced multiuser XR solutions. Furthermore, this study highlights the potential of enhancing the in-situ tourism experience through the use of MR or SAR, which opens up new possibilities for interaction between visitors, the built environment, and service personnel.
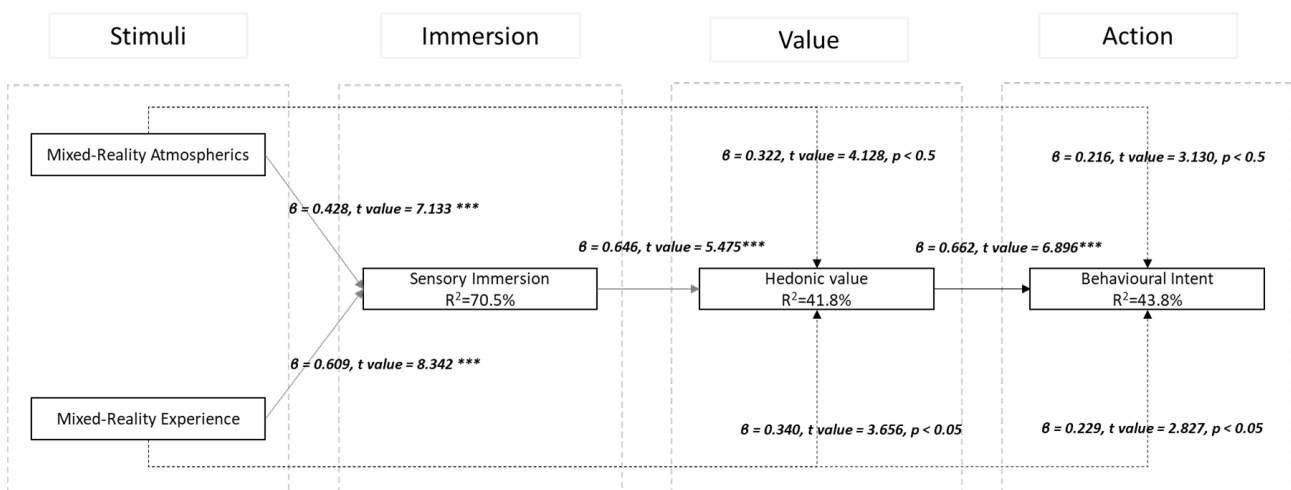
Figure 9.1 Final MR value creation S-I-V-A Model (Source: Authors' own)

Furthermore, this study introduces a unique contribution by proposing the incorporation of sensory immersion and hedonic value as essential elements within the context of MR research. By including hedonic value and emphasizing the significance of social value in tourism experiences, this study addresses a partial gap identified by (Duman and Mattila 2005:110), who stated that previous research has primarily focused on cognitive factors as predictors of perceived value, neglecting the importance of hedonic factors. The findings derived from this investigation demonstrate that the extent to which multisensory MR technologies can engender sensory immersion through captivating virtual aesthetics, interactive components, and social presence significantly impacts potential visitors' perception of hedonic value within the multisensory mixed-reality environment. Additionally, this study revealed that two cues in multisensory mixed-reality tourism attractions have a positive impact on three behavioural responses: the intention to revisit similar attractions, the intention to recommend the visited attraction, and the intention to promote the attraction within their social circle. In other words, when these cues effectively enhance sensory immersion, leading to heightened perceptions of hedonic value, emotional arousal, and positive attitudes, there is a greater likelihood of positively influencing potential visitors' behavioural intentions.

9.3.3. Contribution to immersive technology research

This research brought forth three notable advancements in the field of immersive technology by incorporating mixed-reality atmospherics, mixed-reality experience, and sensory immersion into the adapted S-I-V-A model.

The first contribution relates to the unstudied mixed-reality tourism environments that integrate real and virtual environments and various forms of AR and VR into a single experience without handheld or wearable devices. This study confirms that a spatial augmented reality-based multisensory mixed-reality environment holds similar qualities to MR with head-mounted devices and that in tourism context, visitors can enjoy immersive experiences and interactions similar to AR, VR and MR. Therefore, this study extends the present literature of traditional AR, VR, MR and XR (e.g. Park et al., 2018, Santosa, 2021)

The second contribution relates to the direct relationships within the model between two multisensory mixed-reality tourism cues and sensory immersion. The conclusive impact of

MR atmospherics and MR experience on sensory immersion significantly contributes to the existing body of research, expanding upon previous studies on video game immersion, virtual reality immersion, amusement park immersion, and nature holiday immersion. These findings emphasize the strong correlation between multisensory mixed-reality experience and the degree of sensory immersion, providing valuable insights into this area of investigation. Further, extending the earlier findings of Güzel (2014), Schmitt (1999) and Holbrook and Hirschman (1982) this significant effect postulates that multisensory mixed-reality experiences allow consumers to experience the actual, imagined, or virtual event and express consuming processes through fantasy, emotion, and enjoyment. As a result, mixed-reality environments have a big impact on consumers' cognitive and emotional reactions to service situations and therefore visitors' evaluations of the experience should be based on their pleasure with the meaningful staging and interaction possibilities of the mixed-reality atmospherics.

The third contribution to the Immersive Technology Research relates to the significant effect of mixed-reality atmospherics on sensory immersion. Prior studies (e.g. Knobloch, 2017; Deng et al., 2019) have identified sensory elements in tourism encounters as critical to assisting decision-makers in improving visitor experiences. The results of this study enhance the notion that customer experiences in tourism, specifically in multisensory mixed-reality environments, should be regarded as engagements involving various sensory dimensions such as visual perception, auditory sensations, olfactory cues, gustatory experiences, and tactile interactions. By integrating these diverse sensory elements, along with active participation and social connections, a multisensory experiential landscape can be created within this setting. Further, this study postulates that positive multisensory mixed reality elements (scents, sounds, sights), increase the visitors' emotional involvement. Therefore, mixed-reality atmospherics provide a stage and physical dimensions for the experiences, and where consumers are exposed to multisensory mixed-reality stimuli and social interactions.

The final contribution of this study lies in its exploration of both significant and insignificant relationships, which expands the realms of research on mixed reality (MR) and value creation and sets the stage for future investigations in this domain. While six hypotheses were not supported by the data, these findings hold crucial theoretical implications for understanding how potential visitors respond behaviourally to specific MR cues within the

framework of the S-I-V-A model. Even the hypotheses that did not find support offer valuable insights and contributions to the field. For example, while mental immersion has frequently been considered important in prior immersive technology, and especially in virtual reality studies, the relevance in the multisensory mixed-reality tourism attraction context was not supported, which could infer that mental immersion is inferior to other studied constructs in the MR tourism attraction context. Additionally, while functional factors have been considered important in technology adoption research, the inclusion of this construct within the adapted S-I-V-A model was not supported. However, this could have been due to usability being less meaningful compared with the other measured constructs and in the study context. Overall, these findings provide a new starting point for XR research extending S-I-V-A model and will considerably broaden or extend previous studies. Moreover, the findings of this research make a valuable contribution to the existing research on tourism experience and the literature on tourism value creation. These contributions will be further elaborated upon in the subsequent sections.

9.3.4. Contribution to tourism experience research

The findings of this study make two significant contributions to the field of tourist experience research. Firstly, they expand upon the existing literature by incorporating the potential of mixed-reality atmospherics and mixed-reality experience into the study of tourist experiences. Previous research on augmented reality (AR), virtual reality (VR), and mixed reality (MR) in tourism has not fully explored the possibilities offered by a spatial augmented reality-based multisensory mixed-reality tourism environment. Second, the sensory stimuli and immersion were shown to have a favourable effect on hedonic value judgments. This study confirms the previously theorised link between sensory stimuli, sensory immersion, and behavioural intent (e.g., Frochot et al., 2017In the realm of multisensory mixed-reality tourism, this perspective underscores the significance of complete absorption in the tourism experience. As visitors explore destinations and attractions, they seek transient mental states where they transcend temporal constraints and self-awareness. Various factors, including past recollections, social dynamics, and physical or cognitive challenges, can evoke internal responses in visitors, fostering deeper engagement during the interaction phase. Moreover, visitors' attention becomes focused on the immediate experience or their individual storyline, intensifying their sense of immersion.

Specifically, within the realm of multisensory mixed-reality environments, digital technologies blur the boundaries between the tangible and virtual realms, presenting opportunities to enhance the depth of immersion within tourism experiences. Consequently, the integration of immersive visualizations with other sensory stimuli offers diverse, complementary, and captivating visitor experiences.

The findings of Frochot et al., (2017) were further supported by the results indicating a direct effect of mixed-reality atmospherics on perceived sensory immersion thus contributing to the tourism experience research. Furthermore, extending the findings of Agrawal et al. (2020), this study highlighted the necessity to develop appealing, stimulating tourist attractions with features and involvement opportunities capable of creating emotional tourism experiences. Therefore, the findings contribute to the existing body of literature on tourism experiences from multiple perspectives. After all, the majority of tourist attractions are built via meaningful interactions with their surroundings (e.g. Deng et al., 2019). This study confirms that the process of being immersed in a multisensory extended reality tourist setting occurs in a specific context where technology-enhanced sensory stimuli expand the feeling of reality and the existing staged environment. Further, this study supports the previous literature on how immersive experiences can be enhanced in virtual environments (Agrawal et al., 2020). Therefore, by integrating the findings of this research with existing knowledge, it becomes evident that the multisensory mixed-reality tourism experience is grounded in sensory immersion. Sensory immersion is a psychological state wherein individuals perceive themselves to be fully immersed and actively engaged in a technology-enhanced tourism environment. This can be aided by staging and interactive mixed-reality technology. In conclusion, this technology-enhanced, multisensory mixed-reality tourism experiencescape provides a constant stream of interactive stimuli and results in sensory immersion. As a consequence, the immersive sensory experience influences the perceived hedonic value and subsequently shapes behavioural intentions. As a consequence, based on a theoretical framework of stimuli (S), immersion (I), value (V), and action (A) in the context of tourist attractions, this research provided a deeper understanding of potential visitors' responses to technology-enhanced multisensory tourism attraction stimuli.

9.3.5. Contribution to tourism value creation literature

This study makes a substantial contribution to the existing literature on generating tourist value. The formulated S-I-V-A model, built upon the insights gathered from visitors of tourism destinations, offers valuable perspectives to researchers in the field, emphasizing the influential role of emerging multisensory mixed-reality technologies in shaping visitors' attitudes, emotions, and behaviours towards destinations. For developers and marketers, creating value for consumers is crucial, especially when developing new products and services. According to the study, tourist value is embedded in consumers' personal actions, and businesses must create positive interventions and chances for interaction to boost this embedded value. Therefore, this study adds to the Zeithaml's, (1988) findings perceived value will be evaluated based on the overall experience rather than by individual transactions during the journey.

Tourists, by nature, are driven by the desire for pleasure, amusement, entertainment, or relaxation. To ensure a satisfying visitor experience, managers should prioritize the control and enhancement of the hedonic value associated with their offerings. By examining the concept of hedonic value, researchers can delve into the assessments made by tourists and identify the key factors that influence their perception of value in relation to specific events (Agapito et al., 2021). Considering the level of the appropriateness of the experience, and the feelings, and emotions it creates for the visitor, the hedonic value provides multiple implications for the development, and the management of attractions. Enjoyable and pleasant moments convoyed by educational and entertaining experiences may serve as a catalyst to sharing their memorable experiences with others as well as to revisit.

This study makes a valuable contribution to the existing literature on tourism value creation by examining how individuals perceive and evaluate the value of products, services, and experiences. It builds upon the research conducted by Prayag et al. (2015), Pine and Gilmore (1998; 1999), and Duman and Mattila (2005), highlighting the significant role of social value as a driver of perceived value. The insights gathered from focus groups conducted during the study underscore the importance of sensory experiences and the stimuli constructs within the framework. To enhance the overall perceived value, destinations and attractions should adopt visitor experience approaches that are multimodal, creative, and emotionally engaging, with a particular emphasis on sensory engagement. By

incorporating sensory elements and creating captivating experiences, these destinations provide visitors with experiences that are not only meaningful but also socially valuable. When visitors, along with their travel group, have enjoyable, enchanting, and educational experiences, as indicated by the MR technology and MR experience constructs in the developed framework, and receive hedonic (and social) value, they are more inclined to share their memories and consider revisiting. These experiences go beyond mere consumption, allowing individuals to connect with their social groups, engage with cultural heritage, and derive personal meaning from the overall experience.

Tourist experiences, as highlighted by Larsen (2007), can be described as individual journeys that leave a lasting imprint in one's memories. Notably, significant attention has been dedicated to travel incidents that evoke profound emotional impacts, often referred to as serendipitous moments (Cary, 2004). Scholarly investigations emphasize the revitalization of consumption by infusing experiences with thematic significance within their contextual framework (Firat et al., 1995b). This study further supports the notion that consumption experiences within themed environments hold appeal for visitors, precisely because they offer an escape from the routines of everyday life. The deliberate design of a thematized setting aims to captivate consumers' senses, facilitate a sense of escapism, and foster meaningful social interactions among visitors. According to this study, tourists consume with the help of tourism employees in thematized contexts. When the employees perform, the theme is reflected, for example, in stories, songs, dresses, equipment, printed material and other paraphernalia. According to this study, these reflections can be amplified, or even replaced with multisensory mixed-reality environments.

Hedonic well-being refers to the experience of pleasant sensations or joy derived from engaging in enjoyable activities or acquiring new knowledge (Trinanda et al., 2021). This study highlights that the use of multisensory mixed-reality technology can also enhance this sense of pleasure. The focus group interviews provide valuable information into visitors' perspectives on incorporating multisensory mixed-reality into their experience. Despite the small sample size, these findings provide a starting point for additional study by indicating prospective opportunities and problems, as well as visitor desire to use these technologies.

Although engagement with the storyline or portrayal of the narrative, and engagement when confronted with strategic or operational challenges are acknowledged as distinct perspectives on immersion, they are all viewed as factors that may contribute to psychological immersion.

Lastly, building upon prior literature (e.g., Prebensen et al., 2014; Huta, 2016; Chalmers, 2017), this study validates the notion that consumers strongly prioritize the utilitarian aspects of obligatory and routine consumption, while placing great value on the hedonic aspects of carefree, impulsive, and pleasurable consumption. Hedonic value, as a subjective and individualistic element encompassing notions of enjoyment and playfulness, is highly regarded. Furthermore, this study demonstrates the positive impact of sensory immersion on hedonic value. Additionally, as confirmed by the positive and significant indirect effect of both mixed-reality atmospherics, and mixed-reality experience on hedonic value, the perceived hedonic value can be increased through multisensory mixed-reality technologies and well-curated experience in this environment through sensory immersion. In summary, these findings broaden the scope of the value creation framework initially proposed by Smith and Colgate (2007) and offer a foundational model for future investigations into value generation within the realm of multisensory mixed-reality tourism environments.

9.3.6. Practical Implications

This study provides valuable insights for tourism developers, marketers, and MR developers, confirming that integrating multisensory spatial augmented reality and mixed reality (MR) enhances the tourist experience. XR technology, including virtual reality (VR), augmented reality (AR), and MR, offers unique capabilities and complements existing tourism practices. MR technology engages multiple senses, making interactions with the technology more immersive. By leveraging these new technologies, tourist engagement and satisfaction can be significantly enhanced.

In this study, the term "mixed reality" is used to describe the amalgamation of real and virtual elements in a tourism environment. Technically, the more appropriate term is "spatial augmented reality" (SAR), a version of AR technology that combines virtual and real elements using 3D projection mapping to project virtual graphics onto real objects and surfaces. SAR augments real-world objects and scenarios without the need for specific displays like monitors, head-mounted displays, or handheld devices. Instead, digital projectors are used to project graphical content onto real objects. One key distinction of SAR is that the display is separate from the users, allowing for organic growth and collocated cooperation among groups of users.

By incorporating multisensory spatial augmented reality and MR technologies, tourism experiences can be enriched, providing tourists with unique and immersive interactions. This integration of XR technology enhances the overall tourist experience, leading to increased engagement and satisfaction. Additionally, the use of SAR in tourism environments allows for the seamless blending of virtual and real elements, offering a novel and captivating experience for visitors. Tourism developers, marketers, and MR developers can leverage these insights to create compelling and memorable experiences that align with evolving consumer expectations.

The inclusion of sensory information in tourist experiences enhances their enjoyment and engagement, while also enabling individuals to retain these experiences in their memories for the post-travel phase. Additionally, sensory stimuli have a significant impact on the formation of destination images throughout the entire tourist experience journey. For instance, studies on the effects of sensory cues in themed attractions demonstrate their

ability to yield positive outcomes, such as generating word-of-mouth recommendations and boosting sales. This study may be useful to tourism developers who want to offer new experiences to their visitors through multisensory mixed-reality because it identifies relations between mixed-reality atmospherics and mixed-reality experience on sensory immersion and how to contribute to creating a memorable, enjoyable experience while also positively influencing potential visitors' perceptions and behaviour.

Specifically, the findings revealed that consumers had specific expectations of multisensory technology in terms of functionality, content, and usability. First, regardless of the technology chosen, the experience has to be easy to understand and explore. Second, the mixed reality technology has to promote a perception of quality and that the technology, and the analogue elements of the environment have to be aligned and create a uniform experience. Third, the stories conveyed through multisensory mixed-reality optimally extend the visitor's knowledge of the theme and the characters. In conclusion, this study provides confirmation that both the pleasant ambiance and atmosphere of the attraction, as well as the inclusion of multisensory mixed reality elements such as scents, sounds, and visuals, contribute to heightened emotional involvement among visitors. As a result, respondents recognized interactivity, social engagement, and overall aesthetics as crucial factors for the design of content and functionality in multisensory mixed-reality environments and experiences. These findings underscore the significance of creating immersive and engaging experiences that encompass various sensory modalities and promote social interaction for optimal visitor satisfaction. These variables were the strongest predictors of sensory immersion, resulting in positive hedonic value assessments and favourable behavioural intentions. Because of their potential to enhance sensory immersion, these factors should be carefully considered when designing multisensory MR environments. Also, the importance of high-quality content (e.g. videos, images, scents, and sound effects), as well as more advanced technical aspects (e.g. surround audio, low latency of haptic feedback systems), was also revealed in the visitor interviews when developing multisensory mixed-reality environments and experiences, implying that designers and marketing managers must keep their products up to date. While the studied MR experience at the Santa Claus Office was a prototype, with limited functionalities and limited audio-visual quality, these can be improved easily with future software advances and proper audio-visual content creation. Despite the limitations in budget, the overall experience was highly rated by the participants. Consistent with prior research on wearable mixed-reality (Santosa, 2021), this study presents evidence of the

potential of spatial augmented reality applications within the tourism domain. Respondents expressed a preference for various aspects of MR technology, including its stimulating features, interactive opportunities with the environment, the narrative, engagement with other visitors, the utilization of multiple senses, and the ability of MR haptics (touch- and movement-activated sounds and visuals) to enhance immersion and environmental involvement. These findings highlight the promising possibilities of incorporating MR technologies in tourism experiences, even with limited resources.

Participants also stated that they like shared and uninterrupted experiences and interactions with the environment, as well as different input modes (gesture, voice, touch). According to the findings of the focus group interviews, a greater emphasis should be placed on the diversity of content displayed in MR settings, which is important since customers like to visit new places rather than learn about places they already know. This study emphasised the need of generating MR content that can transport participants to certain tales or locations, heighten feelings of being in the virtual environment, and suspend sensory inputs from the actual physical environment. These findings accentuate the earlier findings of like Tussyadiah et al. (2018). Also, these findings provide valuable insights for technology and content developers who need to think about the aspects that impact visitors' preferences for multisensory mixed-reality environments and how to generate interest in potential visitors.

Given that tourist environment developers want to reach out to a diverse clientele, one obstacle to consumer acceptability is critical. It is recommended that the usability of the MR environment remain basic and easy to understand, with design interfaces focusing on simplicity and intuitiveness, to make MR more useable for a larger variety of visitors (Manis and Choi, 2016). When building MR environments, achieving a balance between functionality and user friendliness is crucial to maximising usability (Natarjan et al., 2018). Interviews with visitors also revealed the possible benefits and disadvantages of using multisensory MR, as well as their desire to use the technology. As a result, developers and designers must consider organisational competence as well as resource availability (e.g. time and money) when creating environments and experiences for tourism destinations. In order to facilitate adoption, it is crucial for such technologies to be compatible with the existing infrastructure and capabilities of the organization.

Several participants voiced concern about rising competition and a plethora of options among tourism locations throughout the world (Ichikawa et al., 2017), and proposed that applying immersive technology may help these places remain competitive and attract visitors. Indeed, one apparent benefit of adopting these technologies is the ability to attract substantial global. The necessity of adopting immersive technology to attract major markets is shown by these findings. Multisensory and interactive techniques of sharing and transferring tales and knowledge enable visitors to engage in both fun and lengthy information processes that go practically undetected, according to interviews and survey data. Experiencing and learning something new or accessing new fields of information becomes pure pleasure thanks to fascinating and multisensory storytelling, and immersive learning experiences help people remember not just the facts, but also the experience itself. These experiences increase the perceived sensory immersion and result in positive behaviour through perceived hedonic value.

9.4.   Limitations

The research design employed in this study exhibits several limitations. Firstly, semi-structured focus group interviews (Research Phase 1) with visitors of two selected tourism attractions in Finland provided valuable insights into their perspectives of value formation and familiarity with technologies such as AR, VR and MR. Notwithstanding the fact that participants were presented with a definition of multisensory mixed-reality experience elements and illustrations of relevant application scenarios during the interviews, their familiarity and exposure to these devices exhibited diversity and, in certain cases, were restricted. Furthermore, focus group participants were unfamiliar with the typology of value constructs, resulting in overlapping and unstructured ideas and opinions. The purpose of the semi-structured focus group interviews with visitors of multisensory mixed-reality tourism attractions was to elicit participants' subjective feelings toward the technology-enhanced multisensory tourism attraction cues; however, this may be limited because participants may be too reserved to express their true feelings to a researcher they have just met. The data was collected from 73 persons, in ten discussions, who visited the two sites and were split into two sessions, one before and one after the encounter. This limits the scope of the investigation and may make establishing a trend and a significant correlation difficult. Similarly, because just two visitor attractions in Finland were employed as a multi-case study, the conclusions are restricted in their generalizability.

Furthermore, during the collection of survey data (Research Phase 2), the Covid-19 pandemic had already attained a worldwide scale. Consequently, visitors were required to rely on their recollection of the experience rather than providing immediate responses after engaging with the multisensory technology-enhanced attraction. Hence, the visitors were contacted via personal e-mails, and the survey was completed online. These subjective assessments (self-reported perceptions) may contain biases (Diemer et al., 2015). Using sensors that record physiological data, such as HVR, which is based on quantitative measures, instead of traditional self-reporting, would have helped to minimise bias by providing more accurate estimations of participants' attitudes and true behaviour rather than stated aims.

Furthermore, the multisensory mixed-reality technology (projectors, smart displays, immersive sound sources) and multimedia material (videos, photos, 3D graphics, and audio) were restricted in terms of variety and quality, which may have altered the participants' MR experience. Previously, Schnack et al., (2018), for instance, suggested in VR study that the unpleasant visual experience may have impacted product visual realism and therefore results in lower immersion and enjoyment. Furthermore, previous studies in VR research have shown that because devices are such a crucial component of the experience, they must be user-friendly in order for VR to be effective (Bonetti et al., 2018). According to Manis and Choi (2019), practitioners should analyse all aspects of design with the user in mind since consumers will find VR technology more useful if it is easier to use. This was also proven in this research. As a result, more research is needed in unison with MR advancements to enable a more productive analysis of tourists' experiences in a multisensory MR environment. Finally, there is a scarcity of research on technology-enhanced tourist attractions, which restricts the generalizability of the findings. Because of the nonexciting literature, this study had to merge aspects of AR, VR, MR, and XR-related literature and postulate that comparability existed in a spatial augmented reality-based multisensory mixed-reality environment.

9.4.1. Limitations of the Developed MR value creation Model

The proposed model, grounded in existing theory, employs the two organism variables to offer a deeper understanding of the direct and indirect connections between cues in multisensory mixed-reality tourist attractions and the behavioural responses of potential visitors. However, there are several faults in the model that might be addressed with more research. First, the proposed model was developed using components that were deemed to be most relevant to the study's environment; however, subsequent conceptual models may contain more stimuli, creatures, and reactions. In this study, only four MR atmospherics cues were identified as potentially significant factors in the design of MR atmospherics.

Although the literature and focus groups justified the research of these specific stimuli, past tourist studies have looked at a variety of other specific atmospheric cues such as music (Dad et al., 2018), digital signs (Dad et al., 2018), and others (Dennis et al., 2012). Similarly, the model features a small number of dependent variables (behavioural intents), although this has not been proven to be an issue in prior studies. Future research should, however, employ other independent and dependent factors than those used in this study in order to expand understanding in this subject and compare results.

Additionally, while the model proposed relationships between multisensory mixed-reality tourism attraction cues and behavioural intentions via two organism components of sensory immersion and hedonic value, this is the first study to look into these relationships specifically in relation to spatial augmented reality-based multisensory mixed-reality tourism context. While there is evidence that the quality of the graphics (Schnack, 2018); the level of interactivity (Vonkeman et al., 2017); and social dimensions (Ogonowski et al., 2014) all influence immersion in virtual environments, the relationship between these cues and potential visitors' internal response (sensory immersion and hedonic value) in the VR context has not been studied widely. Concerning spatial augmented reality-based multisensory mixed-reality tourism context, the literature is non-existent. Although sensory immersion and hedonic value are suggested as crucial fundamental components in the model, more empirical data from a larger, more diverse sample would strengthen these conclusions. This might be done by expanding or replicating the research and then synthesising and comparing the results.

Moreover, this research holds theoretical significance despite not employing the stimulus-organism-response paradigm to analyse the responses of potential tourists to multisensory mixed-reality tourism. When contrasted to earlier work on tourist value formation (e.g. Smith and Colgate, 2007), the study's inconsistent findings urge for greater investigation. Furthermore, certain findings from VR-related studies contradict the conclusions of this study. As a result, more study in vivid, multisensory MR tourist environments is needed to give more data on the model's (in)applicability in multisensory mixed-reality tourism environment. However, via the interactions between the components, the model allows for additional in-depth research to strengthen the indication of these and other links.

In addition, primary data on tourist's' reactions to the multisensory mixed-reality tourist environment was acquired without changing the sensory stimuli. Manipulation of sensory stimuli in the environment, on the other hand, might improve the suggested model by allowing for better results in terms of understanding consumer behaviour to certain stimuli. Despite the fact that the model was built for a multisensory mixed-reality tourism experience, the model might be used in a variety of destinations, museums, attractions, or entertainment venues. To address these limits, the model must be tested in a range of scenarios, variety of technological combinations and curated content.

9.5.   Recommendations

Drawing on the study's findings, the subsequent section provides suggestions for tourism developers and operators, along with potential avenues for future research concerning multi-sensory mixed reality, extended reality, and tourism destinations.

9.5.1. Recommendations for Future Research

Future research should aim to overcome the limitations of this study by building upon its foundations. To achieve this, it is essential to conduct studies in diverse national and international contexts, gathering and synthesizing data from these studies. Additionally, it is crucial to test the proposed S-I-V-A model in various multisensory mixed-reality attractions with different themes and features to ensure its generalizability and explore potential cultural differences. Further testing of the MR value creation S-I-V-A model in diverse scenarios is expected to yield more insights and validate the findings. The model can also be applied to

analyse visitors' responses to other immersive technologies, such as Augmented Reality (AR) and Virtual Reality (VR). This not only maximizes the utilization of these technologies in tourism but also lays the foundation for an immersive technology visitor model.

Moreover, while behavioural intention is a promising construct for accurately tracking consumer behaviour in Virtual Reality (VR) settings, as it allows for capturing not only transactional data but also eye movement and other biometric responses, further investigation is needed. The immersive nature of VR elicits strong reactions, potentially making intentions within VR environments more predictive of future actions. Examining the link between intention and behaviour in VR can provide valuable insights into decision-making processes and contribute to the development of precise predictive models. However, caution is required, taking into account factors such as the level of immersion and prior VR experience.

Participants' feedback suggests that advanced MR technology is likely to gain widespread consumer adoption in the near future, presenting opportunities for tourism developers and operators. However, research must provide evidence to overcome operators' doubts about investing in and deploying new technologies to maintain a competitive edge. Limited finances and organizational preparedness pose challenges, making private investment crucial for success. Additionally, cost can be a barrier to technology adoption, as seen in previous research.

In the realm of research methodologies and tools, the incorporation of biometric measurement techniques has the potential to yield objective insights into the emotional experiences of tourists, thereby enriching the landscape of tourism research. Recent progresses have been made in applying biometric measurement techniques to studies focused on experiences (e.g. Bastiaansen et al., 2019) and within virtual environments (Zou and Ergan, 2021). Through heart rate variability, galvanic skin response and facial expression analysis, intricate physiological data pertaining to emotional responses can be garnered. When integrated with other research approaches, this amalgamation facilitates a holistic comprehension of tourists' emotions and the discernment of emotional trends.

Such knowledge bears the capability to steer personalized marketing strategies and bolster decision-making processes within the tourism industry. Ultimately, this paves the way for the

crafting of tourism offerings that are not only intellectually appealing but also resonate with individuals on an emotional level. Despite the potential for real-world applications, especially in domains that delve into human arousal (perceived experience), Teo, Johnstone, and Thomas (2023) also underscore the challenges associated with field tests and the maintenance of the quality of the intricate biometric behavioural data.

Such knowledge bears the capability to steer personalized marketing strategies and bolster decision-making processes within the tourism industry. Ultimately, this paves the way for the crafting of tourism offerings that are not only intellectually appealing but also resonate with individuals on an emotional level. Despite the potential for real-world applications, especially in domains that delve into human arousal (perceived experience), Teo, Johnstone, and Thomas (2023) also underscore the challenges associated with field tests and the maintenance of the quality of the intricate biometric behavioural data.Finally, further research is needed to explore the typologies and adaptability of immersion in MR and XR research. Bridging the divide among disciplines is crucial to establish a unified explanation of immersion. While this study acknowledged various factors contributing to sensory immersion, additional investigation is required to determine their categorization. The immersive potential of a system relies on its ability to evoke immersion rather than just its technological specifications. Factors such as individuals' inclination towards immersion, their current state, and the system and content being experienced collectively influence the overall immersive experience. Surveys can be used to assess individuals' immersive tendencies and their potential for immersion.

9.5.2. Recommendations for tourism attraction operators

Although there are certain obstacles to large-scale multisensory mixed-reality adoption (e.g., resources and organisational capabilities), there are also potential benefits to destinations and tourism attraction operators from embracing such technology, as shown in primary research. Using multisensory mixed reality to complement the traditional interior design or to highlight the themed interior and story, for example, might be a useful strategy for assisting tourism attractions and destinations in generating memorable experiences, favourable recommendations, and intent to revisit. While research into extended reality for tourism is increasing, industry adoption of MR and XR has been slow to date due to a lack of knowledge, research-based proof, and use cases that highlight its benefits. Although

widespread use of virtual reality headsets is still a way off, there is widespread interest in extended reality. This allows tourism destinations and attractions to invest sooner rather than later in order to gain a competitive edge through technology. As a result, tourism operators should invest in the development of context-specific and themed MR environments and applications that provide value for current and potential future visitors through meaningful, engaging, and interactive experiences, as well as provide tourism destinations with the opportunity to benefit from increased customer satisfaction and WOM recommendations, which could lead to increase in visitor numbers.

Furthermore, millennials make up a major share of individuals interested in virtual reality. Given that different groups have different interests and expectations, tourism providers must deliver tailored experiences for them. Consequently, additional research is required to investigate the diverse multimodal MR requirements for different target markets within this context. This will facilitate the optimal design and development of customized MR environments and applications, enhancing their effectiveness and appeal. Furthermore, one of the significant conclusions from the industry insights is that determining the return on investment in immersive technology is a major worry for most tourism operators. However, for tourism attractions to stay competitive and attract new visitors, novel technologies such as MR must be implemented. As a result, tourism developers should think about incorporating MR into the consumer journey and tailoring particular multisensory experiences to various audiences to boost positive behavioural intents like WOM referrals and greater sales. Consequently, additional research is required to investigate the diverse multimodal MR requirements for different target markets within this context. This will facilitate the optimal design and development of customized MR environments and applications, enhancing their effectiveness and appeal.

Chapter 10 - References

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Chapter 11 - APPENDICES

11.1. Appendix A: List of technologies used in multisensory MREs

MRE	Episode	Storyline	Visual (Stimuli)	Audio (Stimuli)	Olfactory (Stimuli)	Haptic (Stimuli)
Virtual Zoo	Panda Forest	Ambiance of a Giant Panda forests in Sichuan (PRC) province.	4 HD projectors (Epson EH-TW7000 - 3LCD). Projection mapped and 3D controlled with Watchout video mapping software.	2.1. sound system with a composed nature (forest) soundscape. Focusrite Scarlett 18i20 3rd Gen Sound Card, 5 Yamaha Nx-N500 - Musiccast speakers, and Yamaha Ns-Sw300 subwoofer.	Bamboo (Green leaves) scent created with Aero Diffusion scent Technology.	Artificial rock and bamboo forest structures.
	Panda Info	Educational information of the Giant Panda.	3 HD projectors (Epson EH-TW7000 - 3LCD). Projection mapped and 3D corrected with Watchout video mapping software.	Ambient forest/naure sounds. 2 Yamaha Nx-N500 - Musiccast speakers, and Yamaha Ns-Sw300 subwoofer	Cotton (neutral) scent created with Aero Diffusion scent Technology.	No haptic stimuli.
	Panda Game	Educational quizz with 2 difficulty levels and additional Panda info.	45" HD touschscreen (Jidoka ltd.) with HTML5 based graphics and images.	Game sounds from Touchscreen built-in speakers.	Cotton (neutral) scent created with Aero Diffusion scent Technology.	Touchscreen user interface.
	360 Panda	Narrated story of Giant Panda preservation.	4 Samsung Gear VR (S7 Edge). 2 HD projectors (Epson EH-TW7000 - 3LCD).	2.1. sound system relating to 360 video. 2 Yamaha Nx-N500 - Musiccast speakers, and Yamaha Ns-Sw300 subwoofer.	Bamboo (Green leaves) scent created with Aero Diffusion scent Technology.	No haptic stimuli.

Christmas Box	Aurora Borealis	Story of Aurora Borealis in Lapland (Santa's home).	6 HD projectors (Epson EH-TW7000 - 3LCD). 16 Showtec Power Spot 3 Q5 3x 10 w rgbwa led. Laserworld CS-8000RGB FX laser. Pixera two media server. 3D projection mapped and controlled with Pixera video mapping software.	7.1. sound system with composed starry night cosmic 3D soundscape. Focusrite Scarlett 18i20 3rd Gen Sound Card, 7 Yamaha Nx-N500 - Musiccast speakers, and Yamaha Ns-Sw300 subwoofer.	Gingerbread scent created with Aero Diffusion scent Technology.	Mooring rope alongside the walking path. Artificially sticky and noisy walking path.
	Time Bending Machine	The magic behind the global gift delivery in 24hrs.	DREAMOC HD3.2 holographic "see-through" display with animated CGI.	Ambient Christmas sounds. 2 Yamaha Nx-N500 - Musiccast speakers, and Yamaha Ns-Sw300 subwoofer	Cotton (neutral) scent created with Aero Diffusion scent Technology.	iPad3 user interface (controlling computer-generated images on holographic screen).
	Elfology	Fable of Santa's elves.	2 HD projectors (Epson EH-TW7000 - 3LCD). 4 Showtec Power Spot 3 Q5 3x 10 w rgbwa led.	Ambient Christmas sounds. 2 Yamaha Nx-N500 - Musiccast speakers, and Yamaha Ns-Sw300 subwoofer	Cotton (neutral) scent created with Aero Diffusion scent Technology.	No haptic stimuli.
	Snowball	Snow and silence experience.	4 Showtec Power Spot 3 Q5 3x 10 w rgbwa led	White Noise/Silence (Castillo, 2011). 2 Yamaha Nx-N500 - Musiccast speakers, and Yamaha Ns-Sw300 subwoofer	Cotton (neutral) scent created with Aero Diffusion scent Technology.	Water-based snow fluid (Entour ADJ).
	Santa	One-on-one discussion with Santa Claus.	16 Showtec Power Spot 3 Q5 3x 10 w rgbwa led.	White Noise/Silence (Castillo, 2011). 2 Yamaha Nx-N500 - Musiccast speakers.	Burnt wood scent created with Aero Diffusion scent Technology.	Reindeer fur on benches.
	Shop	Share the Christmas sprit and remember your loved ones.	16 Showtec Power Spot 3 Q5 3x 10 w rgbwa led	5.1. sound system with a composed Christmas 3D soundscape. Focusrite Scarlett 18i20 3rd Gen Sound Card, 5 Yamaha Nx-N500 - Musiccast speakers, and Yamaha Ns-Sw300 subwoofer.	Ginger bread scent created with Aero Diffusion scent Technology.	All shop items have haptic potential.

11.2. Appendix B: List of most frequently used word in focus group interviews

Word	Length	Count	Weighted Percentage (%)	Similar Words
experiences	11	348	4.42	experience, experiences
value	5	135	1.71	value, values
create	6	82	1.04	create, create', created, creates, creating
like	4	69	0.88	like, liked, likely, likes
technology	10	62	0.79	technological, technologies, technology
new	3	60	0.76	new
santa	5	57	0.72	santa, santas
people	6	54	0.69	people
customer	8	53	0.67	customer, customers, customers', customizing
differs	7	46	0.58	differ, difference, differences, different, differs
one	3	43	0.55	one, ones
personal	8	43	0.55	person, personal, personalization, personalize, personalized, personali
also	4	42	0.53	also
service	7	42	0.53	service, services
story	5	42	0.53	stories, story
times	5	42	0.53	time, times
using	5	42	0.53	use, used, uses, using
guest	5	42	0.53	guest, guests, guests'
visit	5	40	0.51	visit, visited, visiting, visits
way	3	40	0.51	way, ways
feel	4	39	0.50	feel, feeling, feelings, feels
memorable	9	39	0.50	memorable
place	5	39	0.50	place, places
want	4	38	0.48	want, wanted, wants
something	9	37	0.47	something
think	5	37	0.47	think, thinking, thinks
need	4	36	0.46	need, needed, needs
interactive	11	36	0.46	interact, interaction, interactive, interactivity, interacts
make	4	35	0.44	make, makes, making
important	9	34	0.43	importance, important
visitor	7	34	0.43	visitor, visitors, visitors'
room	4	33	0.42	room, rooms
learn	5	33	0.42	learn, learned, learning
look	4	32	0.41	look, looked, looking, looks
things	6	32	0.41	thing, things
office	6	30	0.38	office
just	4	29	0.37	just
hotel	5	28	0.36	hotel, hotels
tourist	7	27	0.34	tourist, touristic, tourists
parts	5	27	0.34	part, parts
example	7	26	0.33	example, examples

senses	6	26		0.33	sense, senses
travel	6	26		0.33	travel, traveling, travelled, travellers, travelling, travels
well	4	26		0.33	well
believe	7	25		0.32	believe, believed, believes
product	7	25		0.32	product, production, products
sees	4	25		0.32	see, seeing, sees
consumers	9	24		0.30	consumed, consumer, consumers
information	11	24		0.30	inform, informal, information, informative, informed
memory	6	24		0.30	memories, memory

11.3. Ethics and participant consent forms

11.3.1. Appendix C: Ethical letter of approval from Manchester Metropolitan University

08/06/2018

Manchester Metropolitan University

Project Title: Measuring the effects of multi-sensory stimuli in the mixed reality environment for tourism value creation.

EthOS Reference Number: 0645

Ethical Opinion

Dear Pasi Tuominen,

The above application was reviewed by the Business and Law Research Ethics and Governance Committee and on the 08/06/2018, was given a favourable ethical opinion. The approval is in place until 01/02/2020 and is based on the documentation submitted with your application.

Conditions of favourable ethical opinion

The Business and Law Research Ethics and Governance Committee favourable ethical opinion is based on the following conditions

Adherence to Manchester Metropolitan University's Policies and procedures

This ethical approval is conditional on adherence to Manchester Metropolitan University's Policies, Procedures, guidance and Standard Operating procedures. These can be found on the Manchester Metropolitan University Research Ethics and Governance webpages.

Amendments

If you wish to make a change to this approved application, you will be required to submit an amendment. Please visit the Manchester Metropolitan University Research Ethics and Governance webpages or contact your Faculty research officer for advice around how to do this.

We wish you every success with your project.

Business and Law Research Ethics and Governance Committee

11.3.2. Appendix D: Focus Group Information Sheet

<u>**Sample participant information sheet:**</u>

Dear Participant,

The purpose of this study is to investigate how tourists' value and delight can be increased by influencing multiple senses in the context of mixed reality environments. The research is conducted by Pasi Petteri Tuominen with full authorization of Manchester Metropolitan University in collaboration with the Creative Augmented Realities Hub.

Part of the research aims to understand tourists' emotions, reactions and perceptions of a multi-sensory, mixed reality experience in two 'multi-sensory boxes' situated in Ähtäri Zoo and Santa Park. These two boxes were chosen as they are the only mixed reality environments existing in the tourism context in Finland. These multi-sensory boxes allow the control of multiple sensory stimuli, hence the scents, temperature, moisture level, sounds and the sights of the environment. The methods used in this research address both subjective experience (self-report), and psychophysiological reactions.

Focus group interviews

> The focus group sessions will be held both prior to experience, and immediately following the experience. Each participant will join one focus groups being run before the experience, and one after the experience. The focus group will take place at the attraction and will last no more than one hour. The focus group discussion will investigate how tourists' value and delight can be increased by influencing multiple senses in the context of mixed reality environments.

Self-reported experience

> Participants will be asked to map their emotional state multiple times during the experience in 'the multi-sensory attraction' by selecting a spot from the tablet screen, by terms of valence and arousal in a two-dimensional chart. The participants will carry a tablet with them during the experience.

Your participation in the research will be highly valuable and beneficial to the study. Thank you in advance for you participation in this exciting project.

The moving images and the bright lights within the Box may influence some individuals and has the possibility of causing discomfort to some. Persons under the age of 18, severe stress/ anxiety or influence of drugs or alcohol cannot participate to the research. Also, people with diagnosed epileptic disorder are not allowed to participate. Please be aware that the data will be kept strictly anonymous. Personal confidential information is not required at any stage of the study. Once collected and analysed all data will be disposed of. Full participant confidentiality will be maintained throughout. If you have any queries or concerns please do hesitate to contact me.

Thank you,

Pasi Tuominen

pasi.tuominen@haaga-helia.fi +358 40 488 7536

Sample consent form:

Dear Participant,

The purpose of this study is to investigate how tourists' value can be increased by influencing multiple senses in the context of mixed reality environments.

The moving images and the bright lights within the Box may influence some individuals and has the possibility of causing discomfort similar to watching an action movie with 3D classes. Persons under the age of 18, severe stress/ anxiety or influence of drugs or alcohol cannot participate to the research. Also, people with diagnosed epileptic disorder are not allowed to participate.

The research is conducted by Pasi Petteri Tuominen with full authorization of Manchester Metropolitan University. For more information, please see the information sheet or contact the researcher pasi.tuominen@haaga-helia.fi.

Please read and sign your initial in the box to show you understand and consent to the following;

1	I confirm that I have read and understood the information sheet for the study, I understand the purpose of the research and have had an opportunity to ask questions.	
2	I understand that my participation is fully voluntary and I am free to withdraw at any time without giving reason	
3	I understand that all data will be kept anonymous and disposed of after analysis	
4	I agree to the experience being recorded with Emotiv Epoc headset	
5	I agree to the use of anonymised samples of emotions (reactions to the experience) in publications	
6	I agree to take part in the study	

Participant signature: _____

Date: _____

Thank you for agreeing to participate in the study. Please be aware that the data will be kept strictly anonymous. Personal confidential information is not required at any stage of the study. Once collected and analysed all data will be disposed of. Full participant confidentiality will be maintained throughout. If you have any queries or concerns please do hesitate to contact me on email.

Thank you,

Pasi Tuominen

11.3.3. Appendix F: Visitor Survey Introduction (e-mail invitation attachment)

Survey Introduction (e-mail invitation attachment)

Project title: Measuring the effects of multi-sensory stimuli in the mixed reality environment for tourism value creation.

The Official Santa Claus Office would like to invite you to take part in a research study based on using immersive technologies and technology-enhanced sensory stimuli for tourism value creation. Please take the time to read the following information carefully and decide whether you would like to proceed with your involvement in the study. Do not hesitate to ask any questions if you require further information.

Purpose of the study:
The purpose of this study is to investigate how tourists' value can be increased by influencing multiple senses in the context of mixed reality tourism environments. The findings will contribute to the researchers PhD study. You have been invited to take part in this study as you are a suitable candidate to provide insights into the usefulness of immersive technologies for attractions. You are not obliged to take part; however, your contribution is highly valued by the researcher.
Any information collected from you is strictly confidential and will go no further than this study, and you will remain anonymous throughout the entire process.
The survey will last approximately 15 minutes.

Addressing any concerns you may have
If you have any concerns about any aspects of this study, you should speak to the researcher directly during the interview or contact the researcher on the email provided below.

Should you wish to take the enquiry further, you are advised to contact the researcher's supervisor in the first instance on the following email:

Dr. Timothy Jung
T.jung@mmu.ac.uk

Alternatively, you may wish to take your concern direct to the university, and are advised to follow the University Complaints Procedure that can be found at the following address:
http://www.mmu.ac.uk/academic/casqe/regulations/complaints.php

Further information and contact details:
The research is funded by the Manchester Metropolitan University, All Saints Campus, Oxford Road, M15 4BH.
If you require any further information, please do not hesitate to contact the researcher directly on the email below:
pasi.tuominen@haaga-helia.fi

11.4. Data Collection Process

11.4.1. Appendix G: Focus Group process

Discussion topics for focus groups

Introduction of the research and consent format.

The aim of the focus groups is to reveal the antecedents of value formation within a tourist attraction.

1. Gender
2. Age group
3. Nationality

Stage 1 (Prior to experience)

Based on your previous experiences in amusement parks, touristic attractions, museums, leisure locations or similar:

1. **How is value formed in an experience?**
2. **What is needed in a memorable experience?**

Potential subtopics for the discussion:

the role of the *learning* in customer experience

> *If there is an element/source of, does it play a role, and if, how does it influence.*
> *You may use free expressions, anecdotes, importance meters/comparison.*

the role of the *inspiration* in customer experience

the role of *the functionality of the built environment* in customer experience.

the role of *the aesthetics of the built environment* in customer experience.

the role of the *harmony of the built environment* in customer experience.

the role of *the Soundscape (the quality, style, source etc. of the audible sounds).*

the role of the *Tastescape (e.g. the style, feeling, quality or the narrative of the edible elements)* in customer experience.

the role of the *Immersion (i.e. the level, intensity or feeling of being a part of the surrounding environment, experience)* in customer experience.

the role of the *Social bonding (e.g. being able to deepen/build new relations, indulge in deep conversation, partnering etc.)* in customer experience.

the role of the *Memory formation* in customer experience.

Stage 2 (After the experience within the multisensory mixed reality attraction)

Based on your visit to the MR Zoo/Santa Claus Office

1. **How is value formed in an mixed reality experience?**
2. **How technology might enhance in the formation of a memorable experience?**

Potential subtopics for the discussion:

the role of the *learning* in customer experience

the role of the *inspiration* in customer experience

the role of *the functionality of the built environment* in customer experience.

the role of *the aesthetics of the built environment* in customer experience.

the role of the *harmony of the built environment* in customer experience.

the role of *the Soundscape (the quality, style, source etc. of the audible sounds).*

the role of the *Tastescape (e.g. the style, feeling, quality or the narrative of the edible elements)* in customer experience.

the role of the *Immersion (i.e. the level, intensity or feeling of being a part of the surrounding environment, experience)* in customer experience.

the role of the *Social bonding (e.g. being able to deepen/build new relations, indulge in deep conversation, partnering etc.)* in customer experience.

the role of the *Memory formation* in customer experience.

11.4.2. Appendix H: Focus Group Introduction and Tips for the Participants

Focus Group Introduction and Tips for the Participants

In this focus group interview, we will examine your perspectives and try to understand about how value is seen, as well as what value is in the context of tourism. The interviews for this PhD project will take place at the Ähtäri Zoo and the Santa Claus Office. Both of these places have recently been renovated with multisensory technology that may aid service providers in providing more value to guests.

There are two stages to the focus group interviews. First, we talk about your general thoughts and views based on prior travel experiences. Following that, you will have the opportunity to visit and see the chosen tourism attraction, and we will continue the conversation based on your experience.

We will begin with introduction round and at the beginning, everyone can share a tourism-related memory. Something that has truly touched your feelings, appealed with its beauty or been memorable in some other way.

After the inspiration we get from your memories, I have prepared 10 themes to discuss, which might further explain the elements that create memorable and valuable tourism experiences.

First, we will discuss the role of Learning and Inspiration in customer experience. Then we will dive into the role of Functionality of the built environment and the role of aesthetics of the built environment in customer experience. The remaining discussion topics include:

- Harmony of the built environment in customer experience.
- Soundscape (the quality, style, source, etc. of the audible sounds).
- Tastescape (e.g. the style, feeling, quality or the narrative of the edible elements) in customer experience.
- Immersion (i.e. the level, intensity or feeling of being a part of the surrounding environment, experience) in customer experience.
- Social bonding (e.g. being able to deepen/build new relations, indulge in deep conversation, partnering etc.) in customer experience.
- Memory formation in customer experience.

All topics can be analysed and described in free format but it might be helpful if the following aspects are considered:

- Is there an element/source of?
- What kind of role does it play?
- How does it influence your perceptions, feelings?

Remember! You may use free expressions, anecdotes, importance meters/comparison.

Date: December 18th 2019
Time: 1.30pm
Place: Santa Claus Office – Meeting Room 2
Total Participant time required: 55minutes – 1 hour + 15minutes
Total focus group time: 55minutes – 1 hour + 15minutes
Moderator: Pasi Tuominen
Participants:
S1P1: Gi, France (S1P1)
S1P2: Jonathan, Sweden (S1P2)
S1P3: Kadri, Estonia (S1P3)
S1P4: Jaoa, Spain (S1P4)
S1P5: Maarit, Finland (S1P5)
S1P6: Esteban, Spain (S1P6)
S1P7: Natalia, Russia (S1P7)

PART 1 (BEFORE EXPERIENCE)

Introduction / Moderator:

Welcome to this focus group discussion. We encourage you to openly and elaborately share your opinions and perspectives, one person at a time. There are no right or wrong answers here; we are here to engage in a meaningful exchange of ideas. Please be aware that this session is being recorded by a video camera (direct group to where the camera is). We kindly request that all mobile devices are either put on silent or switched off during the discussion.

The purpose of this focus group is to gather insights and information regarding the formation of value within a touristic attraction. We assure you that all information shared in this discussion will be treated as confidential. The data collected from this discussion will be analysed as a whole, and individual names will not be used in the analysis process.

M: Can you first start with just telling me something about yourself, like where you from, how old you are… or a memorable experience.

S1P2:   My name is Jonathan and I come from the neighbouring country Sweden. I'm 26. Nice to meet you all. I have travelled a lot and it is hard to pick only one memory or a memorable trip. If I had to pick an example, I would say that most amazing trip has been a hiking trip in Alaska

wilderness. I like nature and natural things so being in the middle of nowhere and being surrounded by wilderness is an absolute highlight for me.

S1P1:   Hi, my name is Gi. I'm 31 and I come from France. My best personal experience… in travel… well this is difficult. There are many moments that were important to me during my internship in Malaysia, however one of my life changing moments was during a weekend in Kuala Lumpur in March 2018. Some experiences in life will change your perspective and they make you stronger. I received such a level of service without paying that much. Actually, it was one of the cheapest hotels in the area and the service, and the interior was five star. That is by far the most memorable trip I have made. But fort this trip I think it's the Aurora the reason why I'm here, I mean is the most, the part I look forward the most.

S1P3:   I am Kadri from Estonia and I'm 49 years old… To be honest, what drives me to travel is the longing to immerse myself in different cultures, create unforgettable memories, and broaden my horizons beyond the usual routines and surroundings of my everyday life. I can't pinpoint a single event that stands out as the most memorable because every time I encounter excellent service, discover new places, and connect with new people during my journeys, those experiences stick with me.

S1P4:   Hi I'm Jaoa from Spain. I'm 48 years old and recently started to travel alone. Last time, when I decided to go to Malaysia, I already knew that I was going to learn a lot about being independent. I wanted to take it a step further, by travelling on my own at the end of my relationship. My plan was to backpack in Vietnam for four weeks. However, I did not want to do this completely unprepared and that was also the reason why I chose to go first just by myself. I already wanted to practice on how it would be on my own so I did not cummunicate with anyone. After a while The solo travel is increasing… I see on my trips. You can see it also in the marketing. I have many educated female friends who travel by themselves more than other people. Since I am a people person, I like to have people around me and that was also the reason why this weekend here could be challenging and at the same time exciting for me.

S1P1:   I have also heard that for younger travellers, travel means novelty: the possibility to escape the normal boring life and to try a different lifestyle, to live new experiences, to visit new places and learn new things. Now I remember.... my life changing experience was the first time that I went away for a whole weekend on my own. Another reason that I wanted this, is that my parents also have travelled a lot on their own. I grew up with the fact that I had to try to travel on my own, since my parents concluded that it is good for my personal development. I wanted to know how it feels like to arrange everything by yourself and how I should handle different situations. Some situations already came up in my mind, for example arranging hostels, public transport, tours. There also could be some difficulties like the language barrier for example.

S1P5:   My name is Maarit, I'm 42 years and it seems that I'm the only Finn in this group. The experience that I remember very well. I could also say that it is a life changing experience started at the Kuala Lumpur International Airport, where my flight was at 7 PM. I still remember the time... for some reason. I was really nervous to start this small journey, since I had never travelled on my own before. It was a big step for me to leave to another country with no plans. I did not have pre-booked hotels or anything. I just went with my feelings and ended up enjoying diverse and amazing places during my short trip. I think it was the unexpected things that made it memorable.

S1P7:   My name is Natalia and I come Sotshi, Russia. I'm 52 and I prefer traveling with my family or friends, cause like Christmas, for me is a very, uhm, happy festival and then it should be very warm and then we should be sharing our love and then unite each other within the family and my friends. We don't celebrate christmas as most of you do... We do it week later and have several

preceding things happening during december.. and alwasy with a group of peole you love. So yeh, so I would actually prefer to go with my friends and most of my memories are attached to my family and my friends.

S1P6:   Ola. Hello. I am Esteban and I came from Spain. I'm 47 years and I have travelled a lot and most of my memories are based on some kind of trip or an experience. I dont have a big family so I have always been keen on travelling alone and experiencing people and places all over the world. Usually I like places where the authenticity is visible.

M: Thank you. Nice memories and like you all mentiones, it is sometimes difficult to tell exactly the moment or an element that makes an experience memoralble. However, based on your previous experiences in amusement parks, touristic attractions, museums, leisure locations or similar, how do you think that value is formed in an experience? What do you value, and what is needed in a memorable experience?

S1P2: I think, first of all, is very important to have like clear signatures that I can really get there, like clear signs and then, you talk about tourist attractions, like all kinds of them? Even including the national parks?

S1P4: I think, it should have at least something that can give you a wow factor, like for example if you are talking about the nature, its, at least one point that should be stunning,

S1P1: I expect this experience [Santa Claus Office] will be really happy, cause like Santa Claus is the.. like, its is kinda like a childhood hero but not exactly a hero but a childhood fantasy, so I really expect that it is very happy and it should be very, it should bring you a lot of delightful mood, yeh..

S1P2: Although I knew that Finland is a really organised and mostly safe country, I was still nervous. The only thing that I booked for the upcoming two days, was the hostel. One minor change in the travel industry since the past 20 years, is the usage of internet. People do not have to go to travel agencies anymore, because it is much easier to directly book online. Technology has changed a lot, if we talk about their role in the tourism business and it will continue in the future. Today's customers want to be involved in producing the services they want for their time and money. They want apps that can not only inform but also educate them of their trips – see information that they were not expecting to see.

S1P5: During my trip to Singapore I was very excited, since I had never slept in a hostel before. The flight was really short and easy. The first challenge that I faced, was arranging internet on the airport. After I found out on how to arrange my internet, I went to the metro station. Finding this out all by myself was very exciting and I was already looking forward to arranging more things on my own.

The hostel was located in China Town. I had to adjust on to the fact that I almost did not have any privacy in a hostel. One challenge that I faced was having dinner by myself, because that feels really unnatural. For me it was very easy to adjust to the situation, because I am a sociable person however, I do not mind to be alone as well. Another aspect that could change my behaviour is the culture. I live in the Netherlands and I had lived in Kuala Lumpur for only one month then. There is a big difference between Malaysia and Singapore, because Singapore is a way better organised and a really strict country. I adjusted really quickly to the new environment.

S1P2: I think, I probably see fancy decorations, like the Christmas trees or like, maybe there will be a post office things, because his office and I also expect some, maybe there will be some places for me to write a letter or.. to write a postcard and of course I will see Santa Claus and some backgrounds like beautiful pictures

S1P1: I think so, because postcards is a, is a memory for me, like every places I travel I buy one post cards, maybe to write down my own thoughts or to mail to others, so its kinda important to me.

S1P3: I do not expect too much for the activities, because I know there will, like maybe, the office is not very large but I do expect that we will have the chance to maybe take photos with Santa Claus or to have a chat or to have place for us to write down our memories or to write down some postcards and then mail them.

S1P3: Living in Singapore I have some inside knowledge that migt help us to understand… I mean the travellerser behavious and experiences in Singapore. Some tourists from other south east Asian countries have more difficulties with adjusting to Singapore, because it is so well arranged in contrast with Indonesia, Thailand and other south east Asian countries. The extent of tourist stereotyping, culture shock, interaction difficulties and attitude change will be key topics to explore in accounting for tourists' social interaction. A lot of factors can influence an opinion of a tourist. It is important that they understand the culture, before they travel to a country. The overall hospitality experience can differ per country and culture and therefore it is crucial that tourists are guided properly. An example for me was, that the man from the hostel directly gave me a map with all of the interesting places that Singapore had to offer. He explained the dishes that where typical from Singapore and the told me that I had to try the famous coffee that is a typical drink in Singapore. It was really nice of him that he gave me a small briefing about Singapore. Eventually I had a great time! I have walked through the city, had some drinks with people from the hostel, read a book in a park and had lunch by myself. It was an interesting experience for me, which eventually was very exciting.

S1P5:   Anyway… In the end, I am very glad that I chose to go away for this weekend by myself. I became more confident overall, because I knew I could handle different and difficult situations on my own. I learned to trust myself and to be more independent. I love to travel by myself right now and I know that I am going to do it way more often after this experience.

S1P1:   I often think about the learning aspect. Someone has mentioned that all travel experiences should be somehow intellectual. I wouldn't say that all my past trips… like the ones with university friends have been so intellectual… but anywya the *intellectual components* of many of my experience have been mostly learning to travel alone, which gave me a whole new perspective of discovering places. Normally, I was used to experience an activity together with someone and therefore I could also discuss that experience with someone. I learned to explore on my own and therefore to trust myself.

S1P2:   For me, it is very importatnt that I maintain the connection even when I'm travelling alone. The so called *social challenge* that crossed my experience were challenges as eating alone or asking someone the way. Another social component was socializing with the other women in my dorm. Sleeping in a dorm for the first time definitely felt as an achievement, since it felt that I had less privacy than that I was used to.

S1P4:   For me… sometimes it's the achievement. Or being able to do something that I thought I couldn't. In my memories, the best achievemnt was flying on my own and finding my way from the airport to the dorm in the evening on Sunday last.

S1P5:   Also, in my opinion… being passive is fine. Or trying to avoid any *stimulus. It makes a contradiction instead of what I was* doing whatever I wanted to do, since I did not have to discuss that with anyone else. On the final day of the weekend, I just sat in a park for 2 hours, since I wanted to seek some rest in this busy city.

S1P1:   Uhm, it depends, we have, we are like a combination, but we do not have one religion that we all believe in, not like the Philippines, but like in Hong Kong, we can feel free to believe in all kinds of religion...and that's different to when you compare it to the rest of China you think?

S1P3:   Actually yes, because, as I know like, although China (?) a lot of religions, it is kind of like their religions are controlled by the government, like, if you believe in uh, if you are a catholic, you must go to one or two specific catholic communities or catholic society.

S1P1:   Yeh yeh, so it is kind of different, China and Hong Kong

S1P7:   Because I am in catholic school, when I am young, in high school, I don't really know about the history of Santa Claus, but all I know about Santa Claus is there will be a fat man, with a beard wearing the costume, and he will jump through the chimney and he will get to your home during mid night and puts presents in your socks and things like that, but I did hear about, I don't know if its history or not, like before Santa Claus is actually a father, like, the catholic father, and for Christmas he wants to send some gifts to help the people in need or to help the poor so he actually goes to, I don't know where he goes through but he sends gifts to the poor so that's how he became Santa Claus

S1P1:   And then the reindeers, who take Santa Claus on the sleigh and then take him everywhere yeh.. Isn't that magic?

S1P4:   I do like the Reindeers because they are really cute! And then like, on the Christmas cards there are sometimes cartoons with Santa and the Reindeers and I think they are really cute and then the song like Rudolf, is also very popular.

S1P3:   Well we have actually someone who sings Christmas Carols on the street and yeh, mostly its Christmas Carols but if you are talking about childhood things, when we were very little as a child, we also sing like Christmas song, like Rudolf, wish you a merry Christmas and things like that.

M: But if you think about those stories or the meaning of Santa, is there anything that pops up like, friendship or giving and receiving or anything… or is it about learning new things?

S1P7:   I think it's mostly about giving and receiving, it's about love and yeh yeh then, its about, for like giving and receiving from very young age maybe your parents will tell you about that, like Santa is going to give you a presents, so you have to behave during the Christmas time and also its about, when we get older, like, we also know, we like, exchange gifts with each other just to send our love for Christmas.

S1P5:   Every Christmas there will be a Christmas Special Programs. Or in the very young age we have Christmas parties, we also have Christmas parties now (#) but during the Christmas parties, there will always be a Santa coming out and sending you sweets and gifts or things like that. Like for example the two dinner experiences that I had during this weekend in Singapore

fitted my needs and wants. It was nice to be in a more luxurious and Western country for a weekend however, I was happy to go back to my own lovely city Kuala Lumpur. In general, this was one the most lifechanging experiences in my life and definitely worth my time.

S1P2: The one experience I really remenber weel is an extended or extraordinary experience, since it took place over a longer period of time. Extraordinary experiences are different and better than normal overall experiences that poeple have. Extended and extraordinary experiences differ from peak experiences and memorable encounters with respect to their duration. An important effect is a memory that lasts longer, which is linked to specific emotions within the experience.

S1P3: I have also lived in HongKong and Christmas is really special there. Because Hong Kong is different than in China, so what we actually did, because Hong Kong was once a British colony, so we actually had a lot of Western Festivals and we actually celebrated most of the Western festivals. So in Christmas we normally did like, we dined outside, with turkeys, things like that and we also gave each other presents, like exchange of presents, we also had Santa Claus in those huge shopping malls and they would take pictures or like give sweets to the children.

I don't know compared to China or countries like India, but I know China and Russia does not really have Christmas, that they do not celebrate Christmas because they do not believe in Jesus. And in Hong Kong we had a very famous attraction, during Christmas, every building, in those crowded areas like Chim Sa Choi or Causeway Bay we'll have, every building will have their own light decorations, like outside their building, there will be lights decorations. I think for me that's what Christmas is and spending it with friends and family is for me a really nice Christmas. It's a bit similar than I have seen in USA.

S1P4: I think its about, first of all, it's the variety of the products, like lets say, what kinds of products are there? And then, second for me, is about the memory, like can the product really bring me the memory? so I can keep it , I can keep it at home so whenever I see that thing, I can think about, ohh I have been to Lapland, or I have been to Finland and yeh, its about the money, sometimes, things are too expensive and I can not get it.. yeh..

S1P4: In Asian countries, like when you come back from a travel, like every time we come back, go travelling, go on a trip, they will bring something for their friends, maybe food or a little key chain, to show them that oh I remembered you during my trip. We have something similar in Spain. So we build the memories through memorable items and sometimes with pictures.

S1P5: I think first of all, they should be very caring, or very friendly, and then they will care about you, for example, in Lapland, such cold places, maybe we, maybe someone did not bring enough clothes and then they should show that they care and maybe ask them how are you and do you need any help? And then secondly, its about, I hope that they will be kind of talkative, that they can share a lot for us, like talk about many stories so we can learn a lot, and I hope they have the enough knowledge to introduce the place.

S1P4: Ah yes I think it's the other people, for example, I have actually visited the holocaust museum in the US, like if you know about the holocaust, you wont be, very noisy, cause its like a very quite museum.. it should be, you should be a respectful mind and a respectful heart, so its not a place for you to play around or to run around, so if people or other kids are out of control, are disrespecting the place, then I will be very angry. Like I don't things like that. So I think its mostly about other people.

S1P2:	Yeh yeh, you are actually the second person who says this and I think it's a good one, cause I think many people forget about the history that happened or the things that happened at a certain place and it is so disrespectful sometimes

S1P4:	Yes and I actally saw it from Facebook, in another holocaust museam, but not the US one, they actually take all kinds of photos, but actually… is, the plae is like a graveyard. Oh first of all, I met couples of Hong Kong friends here and we go like, like to go there cause it's a must go places in Finland and because like ESN planned this trip, its already being planned so we don't need to think a lot of things to do, because it is already good and we don't even need to think so, its very convienent for us like we lazy people so.

S1P4:	Uhm actually, because I, in uh, like 3 activities, the first one is the Arctic Ocean and the second one is the Husky and the third one is the Deer and the most I will like to go is the Arctic ocean. Cause I live in Spain, it's an mediterranean place and as a child I never think I could go to such a place as Finland, it's a dream place for us, like we have never follow we can come here and today we did it, so its pretty cool, like it snows, cause like you know Macau, it never snows, like uhm and here its like a white dream world so it is such a fantasy for us so yeh I am quite excited to the Acrtic ocean tour and Husky's as well because I love dogs!

S1P6:	Well... in that aspect, for me, I think cleanliness is very important to me, cause yeh, I am kind of, I like be clean and also I think the price is also important to me as well, like because, so if the price too high, I might not interested in, although I would like to go but I cant afford it. And then like to me I think the partnership is very important, to see who is with you to go to that..

S1P7:	Yeh they can keep the postcard till like Christmas and then send it out and it would be just a like surprise to my friend, like this Christmas, this year Christmas and also what I am looking forward to is… uhm… to see the Santa Claus of course, I never met a Santa Claus, of course I know he is not real (#) but it is like a fantasy, you would like to meet him.

S1P5:	Maybe a tour, people show us around the village and just like attraction introductions and maybe some kind of lunch, gathering, uhm ((>))

S1P4:	Santa.. is a fantasy to child because like some parents who tell their kids that Santa Claus, Santa gives to you while you are sleeping and they will put it in a sock and the kids will think it is true and its just like a fantasy to child but like, in China, Santa Claus is not very common cause you know it is not a western country so, but for people the impression is like a fantasy

S1P3:	In our culture, things are bit different. We have gatherings, but not as important as like you guys do, like the Finnish people do. Christmas to us is a holiday, like the school holiday, you go to trip, you go on trip, you travel, but we won't like really celebrate, like we won't, maybe some will but my family wont

S1P5:	Experience that I remember, Uhm, actually… when uhm, a teenager, when I am a child my parents aren't home often, so me with my sister we also play together but we never approached that kind of western things… so… hmm.. yeh when I was a teenager I get online and search some movies to see and that's when I found..

S1P4:	Uhmmm… honestly, I never really remember details of experiences those because it doesn't make me impressed, like it is just a movie but.. like for me, as a teenager, still have a like a fantasy, dream.. so maybe the boy in home alone, the character, he is quite like funny.. Its like

cartoon in Finland, based in Finland. And I have been to Moomin world in Turku and for me, reminds me of my, like, when I am a kid… and..It's the story describing about, uhm, it looks, uhm Moomin looks like a hippo, but its an elve and they live together with, Moomin lives together with his parents and there is a small little girl called Little mine, yeh… and they.. something happens between them and the story is talking about that.. because the scene was like, describing about the snow world and it is quite like, suitable for Finland, so yeh, it reminds me of the Christmas for sure.

M: Can you think of how these experiences and examples are valuable. What could be the reason or an element that creates value for you?

S1P6: Value… is a quite deep, like thought. Uhm, cause while you were a kid, you wouldn't think too much, like you just think it's the movie, cartoon.. but if you ask me now, I think the value is have to celebrate with your family or friends that you value. It is very important cause its like, its just like the Chinese new year in our country, we celebrate every year, like we got the (?) and also celebrte some, we have fest, and have dinner together and it is just like you are western people, you celebrate Christmas together, yeh it is equal, but yes for me, the value is to value your friends.

S1P4: Well do you know mid autumm festival in China? We celebrated it when the moon is in a whole circle and it comes that, uhm in September every year but not the same date, exact day every year, it might change and there is a character called Chang ur, it is a lady, there is a, it is, the rumor has it is like this lady will fly to the moon, like every year to chase the rabbit and we will have the moon pie to celebrate this festival. Its kind of like character that the whole event is based on. I learned a lot of this charcter, the lady, and thats is the reason I remenber the whole event so well.

S1P5: For me aesthetics is an universal feature, its everywhere... and it might have great impact to energy levels and to the overall experience. I believe I remember the most beautifull experiences best so I think beauty gives me value.

S1P4: I think I remember the experience because we went to watch the fireworks and we had a really great time with friends.. so maybe it was because of the friends... and the fireworks.

M: Can you think of how the role of the Social bonding or being able to build new relations, deep conversation, and sharing the experience influences your value perception?

S1P4: Uhm probably my friends, or the possibility to share your ideas and compare your feelings. Like for example, if you go with your wife, she might be around you... like if you want to buy something she might like, it is too expensive, don't buy it, but if you go with friends, they will just like oh cool, like, just like friends fooling around yeh. Get some food, yeh. It is just like laugh.

S1P7: For me too. Of course my friends, I miss them, cause I left already a month ago for this trip. Yeh if you'd give me the chance I might want to travel with them. But yeh, the friends. Like, for me just say, the impression is from the snow world, white

snow world, if there is summer, I rather stay in Helsinki, to go through the malls and museums, something like that.

S1P4: For me… I think, I will always share my feelings despite if I'm traveling with or without my friends. When I'm traveling solo, I'm constantly chattign with friend via social media and messaging. While traveling solo, like I don't like to calculate so much things like food, because you

eat it and you enjoy it so it is life, so enjoy it. But I would compare if I would be travelling with family or friends. Uhm we will discuss first, to see if we have the same directions and thoughts and idea. If we do, we will do it together. If I relay don't want to do it, I just quit, like, I let you guys do it but I will stay, I walk around by myself and catch up with you later yeh. Cause there is one, we have one friend, cause we would like to join the snow mobile, there is one friend, she cant do it, because she doesn't have the licnsence, like do we need to have it? But at last we didn't consume it, cause yeh, everyone just go.

S1P6:   I have a negative thinking of that, because I don't really like to join the tour, because it limit a lot, because, they set everything for you, like the meal, you have to go to this restaurant.. I mean, in China, like in Macau, if you join a tour, maybe to Japan, they will set all of the things to do, you don't even need to think anything.

S1P4:   Yeh...In a organised tour, you just follow and we are just like a crowd of sheep and we just go there and go here and go on the shuttle bus and just drive you to there and just get off and walk there and walk there, its just like, its not travel, its just like, you are joining a tour and the tour guide lead you to there and its not travel and you just taking picture anywhere. The real travel, the main idea is to communicate with others, like the locals and for me, I think it is, but there is also some like positive aspect, you don't need to think too much, you don't need to book the tickets by yourself and, but if you are asking me for travel now, I might not join the tour, but instead of the small tour, is okay to join, yeh.

But it's also about the cost. Like for us, this Lapland trip that we joined because it is like, you think the price is okay, because it includes the transportations, accomoddations and because the accommodation is pretty expensive over there so, its fine, it's a good deal, so we just join. Because, however, we have to join a tour anyway here.. so why don't we join the tour and they give you transportation and accommodation and you can, they will, I don't think there is a tour guide to lead (?) maybe the first day, but later one, we just find it by ourselves.

S1P5:   I would like to add that in my opinion, the need for friendship and esteem is one of the most basic needs of the human being. I think that it was also visible in this attraction in a way the people interact with each other.

S1P1:   Shairng and friends...Uhmmm, it's a good question. Actually, I am quite shy person, I am a shy person, I wont talk to people unless they talk to me first, but I always have the desire to talk to people that I don't know, but sometimes there is a, some people, they look very serious and just like didn't get attached to me and.. Ah yes of course, I have a lot of like foreign friends when I am traveling, some Americans, English yeh and they are quite fun! And like get attached with them and find them interesting and we become friends. I believe that sharing is one of the most valueable things in travel.

M: Okay nice. Just about staff members at a tourist attraction, how can they positively contribute to your experience? The people working there.

S1P1:   Uhm I think, politeness is very important and how they present and how they talk, the way they talk is very important, cause it will effect the people who came here and the impressions and if something, something rude to you, just thinking I am here for a trip, I am customer! I am not here to pay for the arguments something like that. And yeh, this is one. And second one is uhmmm, maybe some communications, like, you will expect that they will talk to you and maybe yeh… communications

S1P6:   I'm not sure how to explain this, but the memory has the opportunity to be more positive and stronger when great social interaction happens in the location.. or in a place where people experience something. Think for example a rock concert and the tradition when we use to light our cigarette lighters... now I think they do with phones.

S1P7:   The concept of Christmas doesn't expand in like my country a lot, I don't have many things to share about, but like for me, Christmas is always a fantasy, uhmm.. I know you guys like separate it, you value it very important right and yeh, but for me its quite, it's a holiday.

M: Thank You fort his part of the interview. You will now get an access to the Santa Claus Office and I will meet you after you have experienced it. I would still like to have your opinions and ideas of the experience afterwards and perhaps some detailed reflections. Enjoy the magic and I will talk to you in a while.

PART 2 (POST-EXPERIENCE)

M: Thank You for joining us again. I hope you enjoyed the tour and had a pleasant discussion with Santa. I would like to hear your comments and observations of the experience and perhaps ask some details.

Who would like to start? How was the tour?

S1P4:   This has to be one of the most magnificent spots I've ever been to in my whole life. Not just because I am obsessed with Christmas in all its forms, but also because the Santa Claus Office gives me the impression that I am actually inside Santa's Cave. I believe most of the visitors were blown away by all that was offered. We were even lucky enough to get an extra moment with Santa Claus himself, as well as several of his elves, who came to take pictures with every one of us. Every nook and cranny of this location exudes the spirit of Christmas, and it is here in this location that I crossed the Arctic Circle, an event that I will never forget. This is a fun one for the young ones as well as the young at heart adults. You won't come to regret it!

S1P6:   Absolutely great. Loved the futuristic theme with some kind of virtual reality light show and videos and the exceptional decor of every single parts of the office… and how they came up with the craziest ideas. The elves... I mean... of how to make the cueing nicer.

S1P2:   At the end, this experience was definitely valuable. I felt stronger and more confident, because now I know that I don't need anyone to guide me.

S1P6:   The entryway is gorgeous and beautifully decorated, and it serves as an excellent indicator of the attention to detail that can be seen in the craftsmanship of MANY of the other displays and attractions. The employees, on the whole, are kind and welcoming, and they are committed to the roles that they have been given to play.

M: How about others? How was your experience? Is there any moments or things or details that really surprised you in a positive, or negative way?

S1P7:   Well... where would I start. The atmosphere was absolutely magical, and it seemed like I was in a real-life fairy tale. The hardworking and adorable elves that assist Santa Claus were the ones that welcomed us to the party. When we went inside, we couldn't believe it when we saw Santa sitting on a wooden chair among a bunch of presents with his chubby tummy propped up on his lap! He has a lengthy beard that looks authentic and is rather tall. He acknowledged our presence and showed us to our seats. And then we had a little conversation on the history of the Lapland and Christmas.

S1P5:   Well for me... or us because I did the tour with my kid, the beginning of the trip provides a wealth of information that would have been interesting. The visitor like [to] create the social components more themselves. Thats what we did with our kids. At least for me. But the areas leading to staircase and the santa's office itself have no visitors. We hurried through this section because we mistakenly believed that we would be able to go right to Santa Claus without having to wait in line. It would be wonderful if they could stagger the walk so that folks could spend some time here rather than waiting in line on the stairs. Next time I go there, I will spend more time in the beginning. Even with confined space, this place (especially the tunnel at the beginning) attracts visitor to entertain and engage with santa claus through activities that are not only magical but brought you into our collection and that you could personalize . After all, we only got about a minute to talk to Santa, and he looks much better than we thought he would. He didn't really ask the kids what they wanted for Christmas, which is probably what they were expecting him to do. Everything looked like it was put together quickly and lacked magic. If you have the money to do so, I would strongly suggest that you look into the woodland experience. Some of my friends have tried this, and they said it was amazing. If there isn't a line, it might be best to call the office at the beginning of the trip to see if there is one, and then go back to the areas when it might be less busy.

S1P6.   I would like to add that the spirit of Christmas continues... We very easily could have spent more than the two hours that we did have here. The experience brings together a dazzling range of his stories and characters. We thought that The Santa was done to perfection. Lots of chatter, extremely affable, and I slept off while attempting to keep track and recall his age. The rest of the park had a wonderfully enchanted air. The elf factory is not to be missed! Amazingly wonderful experience!

S1P5: If I can conctinue, I thought it [the visit] was not interesting enough, but it surprised me, because the story of the Christmas and Santa Claus is good, the story of the elfs is cool >>> also peaking through windows, they make some weird toys and… modern stuff! Although the time-bending interactive part was a fairy-tale, it teached me a lot about the story. The whole experience [become] exciting because there is an exciting story behind.

S1P1:   I believe most of us feels the same and most of the thigs have already been told, but I would like to add that this was truly a mind blowing experience that really fuses all the senses. Interactive all the time and immersive in a way that you sometimes feel you lost yourself somewhere, you just give to the story and let go... suspending all the reasoning and surrender to the story of elves and santa. Beautiful and worth every penny - whoever says it's too expensive has no idea the amount of work that goes into this play and interior.

M: *How about others? Anything that bothered you?*

S1P5:   Ahead of bringing our 7 year old son to Lapland for the trip of a lifetime, I did plenty of research on the best activities to include during our stay to make it as memorable as possible. SantaPark was at the top of the list over and over so I booked us in, expecting something truly magical. My expectations were more along the lines of a "journey" through the attraction, which

would culminate in some kind of unique encounter with the man himself...But it really wasn't. I think there were too many people and the cueing just took too much time.

M: During the visit, did you see or experience moments where something in the building or a device stimulated your senses?

S1P1:   I believe, that visitors liked multiple stimuli and the places where you realised that there is something hidden behind. But I saw many that did not know how to look at the timebending machine properly. You actually miss the whole point if you are not looking at the screen from right angle. There could have been an elf guiding the visitors. Also, I saw that many had difficulties understanding where for exmple the sounds were coming. I didn't mind even if they didn't match my expectations. For me it was easy and I don't know if there was that much things to manoeuvre. But in general, all the things that could be heard, touched or seen were in line with the rest of the experience and supported the overall experience. In my opinion, here the experience was disrupted by using simple and continuous small additions of tech that gave me the confidence to use my other senses.

S1P4:   Like here, visitors go to a museum to experience a mental change. They want to learn but also relax, they want to escape everyday life during their visit. To experience this transformation, everything needs to breathe the same message; the building, entrance, garden, shop, art works. This is how I felt during last hour and half. I believe this was amazing.

S1P7:   I have tried all kinds of technologies and usually I like them. My son has these virtual reality glasses and I have tried those. It was fun. I have also tried pokemon go so I know what these things are. Usually they help me do things. The technology I mean. The way the experience (here was) being in augmented [reality] as opposed to virtual reality as they don't want to replace what is already existing but rather enhance it was great and I enjoyed every bit of it.

S1P2:   I believe the hidden tech was a game changer for connecting people with santa office in a new and amazing way. I was still able to walk through the physical surroundings of santa's office in a way we could never do without this technology.... and I didn't have to use eeany devices...The way they have done it is another vehicle, another tool to capture and reveal my personal meaning of Christmas. I liked it and saw that many others also stopped to enjoy the hidden sounds and the aurora borealis lights.

M: Would anyone like to add anything?

M: If there is nothing to add, would anyone have any questions for me regarding the research?

M: If not, I thank you for participating and wish you all a magical Christmas time and please enjoy the rest of the visit to Finland. If you have any questions afterward, you can contact me through e-mail. You can take a photo of my contact details from the wall if you like.

11.6.   Appendix K: Coding Template Generated with NVivo12

Items clustered by coding similarity
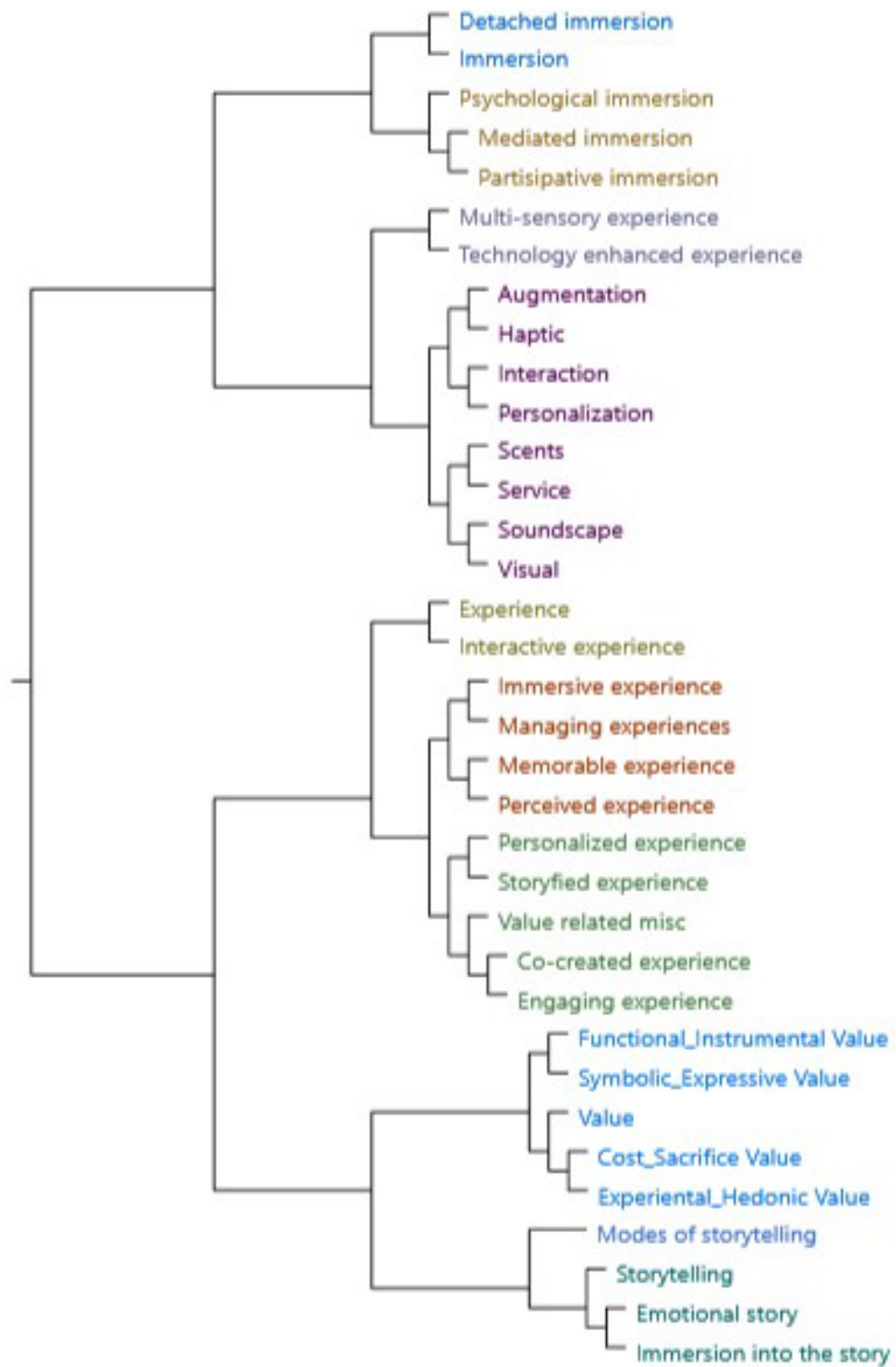
11.7. Pilot Survey

11.7.1. Appendix M: Pilot Survey Check List

Are all e-mail addresses up-to-date? (no. of nondelivered e-mails)	1
Were all participants able to access the questionnaire?	YES
How long does it take to complete the survey?	6-11 minutes
Are the instruction in each section (page) clear and unambigious?	YES
Are all questions necessary for collecting the required information?	YES
Are the questions direct and concise?	NO
Is the used terminology clear and easy to understand?	NO
Are the questions measuring what they are intended to measure?	YES
Are questions unbiased?	YES
Did the participants raise any other concerns regarding the survey?	NO

(Source: Adapted from Ruel et al., 2015)

Multisensory Christmas Experience

Thank you for agreeing to participate in this study, which explores visitors' response to Mixed Reality (MR) environments in destinations and visitor attractions.

During your visit, the Santa Claus office was equipped with multisensory elements, and Mixed Reality technologies. Therefore, the traditional built environment, and the customer journey, included hidden sounds, artificial scents, small, and large scale projected images, videos and computer generated graphics, as well as interactive smartscreens.

Based on the Mixed Reality Christmas experience in the Santa Claus office you experienced, please indicate the extent to which you agree with each statement using the rating scale (1 = strongly disagree and 7 = strongly agree). Please select the number accordingly.

1. Did you visit the Santa Claus Office between October 2019 - March 2020? *

○ Yes I visited

○ No, I did not visit

2. I felt that, the visit in the Santa Claus Office was: *

	1	2	3	4	5	6	7	
Unattractive	○	○	○	○	○	○	○	Attractive
Unlively	○	○	○	○	○	○	○	Lively
Boring	○	○	○	○	○	○	○	Stimulating
Unexciting	○	○	○	○	○	○	○	Exciting
Conventional	○	○	○	○	○	○	○	Creative
Unremarkable	○	○	○	○	○	○	○	Impressive
Difficult to navigate	○	○	○	○	○	○	○	Easy to navigate
Unorganised layout	○	○	○	○	○	○	○	Well organised

3. To what extent do you agree with the following statements (1= strongly disagree; 7= Strongly agree):

Mixed Reality experience /atmospherics refer to the hidden sounds, artificial scents, small, and large scale projected images, videos and computer generated graphics, as well as interactive smartscreens which were added to the traditional built environment. *

	1 ⓘ	2	3	4	5	6	7 ⓘ
The aesthetics, hence the built environment, staging, and the complementary technology promoted a perception of quality.	○	○	○	○	○	○	○
I felt that the technology, and the analog elements of the environment were aligned and created an uniform experience environment.	○	○	○	○	○	○	○
The atmospherics, hence the architecture, interior design, and the design of displays and other mixed reality elements influenced my emotional states and feelings.	○	○	○	○	○	○	○

4. To what extent do you agree with the following statements (1= strongly disagree; 7= Strongly agree).

Mixed Reality experience /atmospherics refer to the hidden sounds, artificial scents, small, and large scale projected images, videos and computer generated graphics, as well as interactive smartscreens which were added to the traditional built environment.

Mixed reality technology in the experience environment: *

	1 ⓘ	2	3	4	5	6	7 ⓘ
Allowed me to use my senses more thoroughly.	○	○	○	○	○	○	○
Facilitated my information retrieval.	○	○	○	○	○	○	○
Assisted me to understand the overall narrative storyline, characters and the theme.	○	○	○	○	○	○	○
Helped me to interact with the environment in order to get more information.	○	○	○	○	○	○	○

5. To what extent do you agree with the following statements (1= strongly disagree; 7= Strongly agree).

Mixed Reality experience /atmospherics/technology refer to the hidden sounds, artificial scents, small, and large scale projected images, videos and computer generated graphics, as well as interactive smartscreens which were added to the traditional built environment. *

	1 ⓘ	2	3	4	5	6	7 ⓘ
The Santa Claus Office experience had a high degree of interactivity.	○	○	○	○	○	○	○
I was able to interact with the Mixed Reality environment in order to get information tailored to my wishes.	○	○	○	○	○	○	○
The environment allowed me to control, and choose my level of engagement with the experience.	○	○	○	○	○	○	○
The attraction enabled me to interact with the environment, the story, and other visitors.	○	○	○	○	○	○	○

6. To what extent do you agree with the following statements (1= strongly disagree; 7= Strongly agree) *

	1 ⓘ	2	3	4	5	6	7 ⓘ
The stories extended my knowledge of the theme and the characters.	○	○	○	○	○	○	○
The story elements satisfied my intellectual needs.	○	○	○	○	○	○	○
The exiting and mysterious elements of the story intrigued my imagination.	○	○	○	○	○	○	○
The stories and characters triggered my emotional states.	○	○	○	○	○	○	○

7. To what extent do you agree with the following statements (1= strongly disagree; 7= Strongly agree).

Mixed Reality experience /atmospherics/technology refer to the hidden sounds, artificial scents, small, and large scale projected images, videos and computer generated graphics, as well as interactive smartscreens which were added to the traditional built environment. *

	1 ⓘ	2	3	4	5	6	7 ⓘ
During the visit, I felt that sights, sounds and smells surrounded me.	○	○	○	○	○	○	○
During the visit, I was totally focused on the story.	○	○	○	○	○	○	○
The multisensory elements of the experience improved my physical engagement.	○	○	○	○	○	○	○
The mixed reality technology increased my emotional involvement.	○	○	○	○	○	○	○
The technology enhanced environment increased my enjoyment of the experience.	○	○	○	○	○	○	○
The interactive possibilities increased my feeling of presence.	○	○	○	○	○	○	○
During the visit, I felt like being part of the story.	○	○	○	○	○	○	○
During the visit, I lost track of time.	○	○	○	○	○	○	○
I ended up spending more time in the attraction than I had planned.	○	○	○	○	○	○	○
I felt that my senses were in high alert during the experience.	○	○	○	○	○	○	○
After experiencing the multisensory Christmas experience, I felt like I came back to the "real world" after a journey.	○	○	○	○	○	○	○
The mixed reality world suddenly disappeared when I exited the attraction.	○	○	○	○	○	○	○

8. Please indicate the level of emotions/ feelings you experienced during your visit.
(1= no emotions/feelings; 7= strong emotions/feelings) *

	1 ⓘ	2	3	4	5	6	7 ⓘ
Amusement	○	○	○	○	○	○	○
Interest	○	○	○	○	○	○	○
Contentment	○	○	○	○	○	○	○
Joy	○	○	○	○	○	○	○
Delight	○	○	○	○	○	○	○
Sad	○	○	○	○	○	○	○
Anxious	○	○	○	○	○	○	○
Fear	○	○	○	○	○	○	○
Anger	○	○	○	○	○	○	○
Distress	○	○	○	○	○	○	○

9. To what extent do you agree with the following statements (1= strongly disagree; 7= Strongly agree). *

	1 ⓘ	2	3	4	5	6	7 ⓘ
This attraction offered a service with right features and attributes.	○	○	○	○	○	○	○
This attraction offered an experience with superior outcome.	○	○	○	○	○	○	○
This attraction offered high quality experience.	○	○	○	○	○	○	○
This attraction offered a usefull experience.	○	○	○	○	○	○	○
A significant role of this attraction is the ambiance and the experienced atmosphere.	○	○	○	○	○	○	○
This attraction was quite attractive.	○	○	○	○	○	○	○
This attraction extended my knowledge of christmas.	○	○	○	○	○	○	○
This experience was fun, interesting and exiting.	○	○	○	○	○	○	○
This attraction has strong symbolism.	○	○	○	○	○	○	○
Visiting Santa Claus Office helps me express my attitudes, interests and opinions.	○	○	○	○	○	○	○
This attraction is considered prestigious.	○	○	○	○	○	○	○
This attraction has a reputation of being socially responsible.	○	○	○	○	○	○	○

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10. To what extent do you agree with the following statements (1= strongly disagree; 7= Strongly agree). *

	1 ⓘ	2	3	4	5	6	7 ⓘ
The visit helped me to think about my skills and potential.	○	○	○	○	○	○	○
The visit helped me to grow as a person.	○	○	○	○	○	○	○
During the visit, I thought about the meaning of life.	○	○	○	○	○	○	○
During the visit, I reflected my own childhood.	○	○	○	○	○	○	○
The services offered are generally positioned as "good deals".	○	○	○	○	○	○	○
A key benefit of the services and product offered at Santa Claus Office is their low cost.	○	○	○	○	○	○	○
The services of Santa Claus Office offered value in use.	○	○	○	○	○	○	○
The experience was easy to understand and explore.	○	○	○	○	○	○	○

11. To what extent do you agree with the following statements (1= strongly disagree; 7= Strongly agree). *

	1 ⓘ	2	3	4	5	6	7 ⓘ
I intend to visit this place again.	○	○	○	○	○	○	○
I am willing to recommend this attraction.	○	○	○	○	○	○	○
I will encourage friends and family to visit this attraction.	○	○	○	○	○	○	○
It is very likely I will visit other attractions that utilize mixed reality technologies.	○	○	○	○	○	○	○

12. Please select your age group *

- ○ 18-21
- ○ 22-34
- ○ 35-44
- ○ 45-54
- ○ 55-64
- ○ 65+
- ○ Prefer not to say

13. Gender you identify as: *

- ○ Male
- ○ Female
- ○ Prefer not to say

14. Occupation *

- ○ Employed
- ○ Self-employed
- ○ Unemployed
- ○ Student
- ○ Retired
- ○ Prefer not to say

15.

<div align="center">

Annual pre-tax income

</div>

*

- ◯ Less than €10,000
- ◯ €10,000 – €29,000
- ◯ €30,000 - €49,000
- ◯ €50,000 - £€69,000
- ◯ More than €70,000
- ◯ Prefer not to say

16. Country of origin *

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| |
| |
| |
| |

11.9. Appendix O: Sample Screenshot of (Desktop) Multisensory MR Christmas Experience Survey Tool