



Universidade de Aveiro

2022

**SUSANA MARIA
VASCONCELOS
MESQUITA**

**COCRIAÇÃO DE EXPERIÊNCIAS EM MUSEUS
POR PARTE DAS PESSOAS COM DEFICIÊNCIAS
SENSORIAIS**

**CO-CREATION OF EXPERIENCES IN MUSEUMS
BY PEOPLE WITH SENSORY IMPAIRMENTS**



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Tese apresentada à Universidade de Aveiro para cumprimento dos requisitos necessários à obtenção do grau de Doutor em Turismo, realizada sob a orientação científica da Doutora Maria João Aibéo Carneiro, Professora Auxiliar do Departamento de Economia, Gestão, Engenharia Industrial e Turismo da Universidade de Aveiro, e coorientação científica da Doutora Ana Maria Caldeira, Professora Auxiliar da Faculdade de Letras da Universidade de Coimbra.

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I dedicated this thesis to my close family.
Dad, wherever you are, you are my guiding light.
Mum, for always being on my side, you are my light.
Mariana and Andreia my utmost love.

o júri

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This thesis is about co-creation of experiences in museums for people with sensory impairments. Throughout the course of this work, life taught me some of the hardest lessons and showed me new paths of knowledge. With a significant personal loss, and difficulties related to COVID-19, the achievement of this thesis required a network of support and would be hardly possible without the support of a solid number of people, especially my close family and friends.

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palavras-chave

museus, pessoas com deficiência sensorial, cocriação, experiências, visitantes, antecedentes, resultados.

resumo

Apesar da crescente preocupação com a inclusão social, as pessoas com incapacidades sensoriais (PcIS), como as relativas à visão ou audição, são dos grupos mais marginalizados. Os museus, como importantes espaços culturais com funções sociais, procuram adotar práticas mais inclusivas e participativas para estimular a cocriação de experiências para pessoas com deficiências. No entanto, ainda existem restrições que impedem as pessoas com deficiências de desfrutarem plenamente dos museus. Apesar do elevado número de PcIS, existe uma falta de pesquisa acerca de como estas cocriam experiências em museus, dos fatores que podem estimular ou restringir esta cocriação, bem como sobre os seus benefícios.

Esta tese tem como objetivo analisar a influência dos antecedentes na cocriação das experiências de visita a museus, de PcIS, tanto no que concerne a antecedentes relacionados com os visitantes como com os museus, bem como examinar a forma como as PcIS cocriam em museus, e os benefícios obtidos dessa cocriação, nomeadamente, o valor percebido, a satisfação e a lealdade. Uma extensa revisão da literatura foi realizada permitindo propor um modelo conceptual para colmatar várias lacunas de investigação identificadas. O modelo engloba antecedentes, cocriação e resultados obtidos pelas PcIS nessa cocriação em museus, sugerindo que os antecedentes, quando identificados e trabalhados, podem potenciar a cocriação de experiências em museus por parte destes visitantes, e que esta cocriação pode ter resultados positivos relevantes. O estudo empírico foi realizado com base numa abordagem mista. Primeiro, realizaram-se *focus groups* para compreender, mais profundamente, a forma como pessoas com incapacidade visual cocriam experiências em museus e o papel de diferentes antecedentes nessa cocriação, bem como para obter indicações sobre como avaliar os construtos em análise. Seguidamente, para testar o modelo proposto, foi feito um estudo quantitativo com base num inquérito por questionário. Foram obtidos 675 questionários válidos, 254 de PcIS e 421 de pessoas sem incapacidades sensoriais. Os dados foram analisados utilizando os *softwares Statistical Package for the Social Sciences* e *SmartPLS*. Regressões lineares múltiplas e modelação de equações estruturais de mínimos quadrados parciais (PLS-SEM) permitiram testar as hipóteses e comparar percepções das pessoas com e sem incapacidades sensoriais.

Os resultados revelam que os antecedentes relacionados com visitantes e com museus têm um impacto significativo em várias dimensões da cocriação das PwSI em museus. Além disso, as dimensões específicas da cocriação influenciam as dimensões do valor percebido, e foram encontrados efeitos indiretos significativos na satisfação e lealdade. A condição de ter uma deficiência sensorial tem impactos positivos significativos em várias dimensões da cocriação e no valor emocional, de aprendizagem e social percebido, destacando-se a relevância de experiências cocriativas significativas para esses visitantes. Contribuições teóricas e de gestão para a gestão de museus são apresentadas para promover experiências de valor acrescentado mais inclusivas para as PcIS.

keywords

museums, people with sensory impairments, co-creation, experiences, visitors, antecedents, outcomes.

abstract

Despite the growing concern with social inclusion, people with sensory impairments (PwSI), such as those regarding vision or hearing, are one of the most marginalized groups. Museums, as important cultural spaces with social functions, are trying to adopt more inclusive and participatory practices to encourage the co-creation of experiences for people with disabilities (PwD). Yet, there are still constraints, which restrict PwD from fully enjoying museums. In spite of the high number of PwSI, there is a lack of research regarding how they co-create their museum experiences, on factors that may stimulate or constrain that co-creation, as well as on the corresponding outcomes.

This thesis aims to analyse the influence of antecedents that interfere in the co-creation of PwSI' museum visit experiences, regarding both antecedents related to the visitors and the museums, as well as examine the way PwSI co-create in museums, and the benefits they obtain from that co-creation, namely perceived value, satisfaction and loyalty.

An extensive literature review was carried out allowing to propose a conceptual model to address several research gaps identified. The model encompasses antecedents, co-creation and outcomes obtained by PwSI in this co-creation in museums, suggesting that the antecedents, when identified and worked on, can boost these visitors' co-creation of experiences in museums, and that this co-creation can have relevant positive outcomes.

Empirical research was undertaken adopting a mixed methods approach. First, focus groups were carried out to more deeply understand how PwSI co-create their experiences in museums and the role of several antecedents in that co-creation, as well as to obtain insights on measures for assessing the constructs under analysis. After, to test the model proposed, a quantitative study was carried out based on a questionnaire survey. A total of 675 valid questionnaires were obtained, 254 from PwSI and 421 from people without sensory impairments. Data were analysed using the software Statistical Package for the Social Sciences and the SmartPLS. Multiple linear regressions and partial least squares structural equation modelling (PLS-SEM) were undertaken to test the hypotheses and compare perceptions of PwSI and people without disabilities.

Results reveal that antecedents, both related to visitors and to museums, have a significant impact on various dimensions of PwSI' co-creation in museums. Also, specific dimensions of co-creation influence perceived value dimensions, and significant indirect effects on satisfaction and loyalty were found. The condition of having a sensory impairment was found to have positive significant impacts on several dimensions of co-creation and on perceived emotional, learning and social value, highlighting the relevance of highly and meaningful co-creative experiences for these specific visitors. Theoretical and managerial contributions for museum management are drawn to foster more inclusive value-added experiences for PwSI.

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ACRONYMS

AAM – American Alliance of Museums

CRPD – Convention on the Rights of Persons with Disabilities

DCMS – Department for Digital, Culture, Media & Sport

EGA – Extraordinary General Assembly

EU – European Union

ICF / ICFDH – International Classification of Functioning, Disability and Health

ICOM – International Council of Museums

IQ – Intelligence Quotient

IYDP – International Year of Disabled Person

LV – Latent Variable

MA – Museum Association

MDS – Model Disability Survey

MLA – Modern Language Association

PCA – Principal component analysis

PwD – People with Disabilities

PwHI – People with Hearing Impairments

PwSI – People with Sensory Impairments

PwVI – People with Visual Impairments

SDGs – Sustainable Development Goals

SD Logic – Service Dominant Logic

SL – Sign Language

SPSS – Statistical Package for the Social Sciences

TEAV – Thought-Emotion- Activity-Value

UNESCO – United Nations Educational, Scientific, and Cultural Organization

WHO – World Health Organization

WTTC – World Travel and Tourism Council

AR – Augmented Reality

AT – Assistive Technologies

VR – Virtual Reality

PART I – Introduction

1. Introduction

“I can’t change the direction of the wind, but I can
adjust my sails to always reach my direction”
Jimmy Dean

The present doctoral thesis addresses existent research gaps concerning the co-creation of experiences in museums by the general public, but especially by people with sensory impairments (PwSI), namely by providing both theoretical and practical insights on the topic. Through this thesis, it is hoped that the area of co-creation in museums, especially concerning PwSI, will gain new directions that can benefit everyone involved in managing these cultural institutions as well as visitors of these spaces.

This chapter intends to offer an overview of the contents of the thesis, guiding the readers throughout the study, and highlighting the relevance and scope of this research. Concerning its structure, this introductory chapter will start by explaining the relevance of the thesis (Section 1.1), which is mainly related to the gaps found in previous literature reviews regarding the co-creation of experiences in museums for PwSI. Following this stage, the objectives of the study will be defined (Section 1.2). The third part of the introduction includes a brief reference to the methodology adopted across the thesis (section 1.3), which is followed by a presentation of the structure of the thesis (Section 1.4).

1.1. Relevance of the thesis

The selection of the research topic may arise from different sources, including a popular or media issue; a published research agenda, a policy or management problem, an issue of social concern, reading a research literature, the researcher’s personal interests and/or a brainstorming (Veal, 2018). According to Veal (2018), reviewing previous research and the knowledge of existing literature is an essential step in the research process. Most of the literature on the topics under analysis has emerged from the service management field (Kambil et al., 1996), although innovation management studies, marketing, and consumer research have also brought important contributions to these work (Azevedo, 2009; Bertella, 2014; Binkhorst & Den Dekker, 2009; Ek et al., 2008; Ihamäki, 2012; Kreziak & Frochot, 2011; Mathisen, 2013; Prebensen & Foss, 2011; G. Richards, 2011; N. Scott et al., 2009; Tan et al., 2014).

There has been growing research and managerial attention to the co-creation of experiences in tourism activities. The search for unique and new experiences is rising as new tourists want to be engaged on an emotional, physical, spiritual, and intellectual level during their service encounters (Cutler & Carmichael, 2010; Pine & Gilmore, 1999; Zhang et al., 2018). The visit experience is dynamic, and the active participation and interaction of the consumer may occur in different stages where co-creation can happen (López Sintas et al., 2014; Sheng & Chen, 2012). Despite all the research on co-creation, there is no universally accepted definition of this concept, nor a consensus regarding its facets. Apart from behavioural engagement, co-creation may involve customers emotionally and cognitively, leading visitors to experience a deep understanding and a feeling of personal relevance and connection to the experience (Kempiak et al., 2017; Minkiewicz et al., 2014), as will be more deeply analysed in this thesis. Museums perform a very important role in attracting tourists due to the functions they hold (Hsieh et al., 2015). Thus, in contemporary societies these institutions have acquired a public role to benefit a wider public, promoting feelings of relevance and encouraging consumer participation (Sweet, 2007). The growth of the cultural, social, and educational value of museums makes these institutions some of the most important tourist attractions worldwide. One of the actual concerns of those managing these organisations must be the equal accessibility of these important cultural places for all, which leads us to people with disabilities (PwD), among who we find PwSI. This last aspect, partially justifies the importance of this thesis, since even though disabilities are considered a minor issue for most people, PwD represent more than 1 billion people in the world (Shakespeare, 2018; WHO, 2020) and the rights of PwD have also been recognised and advocated by many people and by some organisations (Balakrishnan et al., 2019; WHO, 2020; WHO & The World Bank, 2011).

The relevance of this thesis mainly arises from the gaps existing in the literature regarding co-creation of experiences in museums for the general public, including PwSI. According to the research, there is no work that focuses on the antecedents that leads to the co-creation of experiences in museums by PwSI neither on the outcomes arising from co-creation. No previous study compared the co-creation of experiences in museums by PwSI, including people with visual and hearing impairments. The study of these features has a significant relevance, due to the outcomes that it may have on understanding the co-creation experience in museums especially for those with sensory impairments.

As a result of increasing market competition, the process of co-creation as a way of engaging customers in value creation has recently been a topic of interest among tourism

and hospitality service providers (Lei et al., 2020; Mohammadi et al., 2021; Zizka et al., 2018). Co-creation studies go back to 2004, being introduced by Prahalad and Ramaswamy (2004). In tourism, the concept of co-creation experiences was first referred by Binkhorst (2006), being nowadays a mark in the experience economy (Fu & Lehto, 2018). The concept of co-creation is used in several areas, which causes a lack of consensus among researchers. Even though, the literature review made it possible to identify several facets of co-creative experiences, such as active participation, co-production, interaction, personalization, customization, and emotional and cognitive engagement. Apart from behaviour engagement, co-creation may involve customers emotionally and cognitively, leading visitors to experience a deep understanding and a feeling of personal relevance and connection to the experience. Thus, the first gap identified is related to the absence of clear consensus regarding the concept of co-creation, as well as its facets.

The previously referred gap is highlighted by the fact that even though all experiences are co-creative (Antón et al., 2018; Campos et al., 2016; Mirghadr et al., 2018), the level of co-creation can vary depending on the nature of the service (Bitner et al., 1997) and on the characteristics of the consumer. Moreover, this concept emerged in different academic areas of disciplines and areas of knowledge where various perspectives of co-creation emerged, not always being compared with each other.

Another gap in the literature is the scarce existence of research examining the co-creation of experiences in museums. Only a small number of researchers has deeply analysed the co-creation in museums, with some of them not even referring directly to the expression “co-creation” (Falk & Dierking, 2016a, 2016b; Farsani, 2019; Goulding, 2000; Mirghadr et al., 2018; Moscardo, 1996; Taheri, 2011). Despite the relevance of these studies, they only consider people without impairments and don’t consider all the stages of the visit (pre-visit, on-site experience and post-visit).

To date, few studies examined the co-creation of experiences for PwD in museums (Mesquita & Carneiro, 2016; Poria et al., 2009; Vaz, 2020). However, within the literature, a small number of researchers have considered co-creation of experiences in museums for PwSI, or people with visual impairment or hearing impairment (Grandi & Gomes, 2017; Hetherington, 2015; Mesquita & Carneiro, 2016; Poria et al., 2009; V. Richards et al., 2010). However, they did not provide a broad overview on the several dimensions of co-creation of museums by PwSI or on the antecedents and outcomes of that co-creation.

Moreover, they also did not offer a deep perspective on how co-creation by PwSI occurs in museums.

Concerning co-creation in museums, some studies highlight the importance of factors such as cultural capital, prior knowledge, and motivations (Taheri, 2011) while others study co-creation in a physical, social and digital context (Falk & Dierking, 2016b; Minkiewicz et al., 2014, 2016; Mirghadr et al., 2018). Although the studies approach different factors that influence co-creation, most of the studies refer to the constraints experienced by these groups. Nevertheless, there is a notorious gap in the literature that provides a broad overview on the factors that affect both positively and negatively co-creation in museum visits.

In addition to the aforementioned aspects, for the choice of the theme, other essential factors, both personal and professional, were also considered, namely:

- The work previously developed by the author, namely in her master's thesis;
- Some of the articles and chapters published by the author;
- The author being an official guide and conducting guided visits to the public with visual impairments;
- The author's willingness to contribute with a work that improves the daily lives of PwD.

The results achieved with this study are thought to help different stakeholders such as museum managers, providers of other tourism services, who are responsible for defining strategies to increase value in the co-creation of experiences and tourists, mainly PwSI. Social relevance is also aimed, since the study is expected to contribute to the following:

- A more inclusive attitude that takes into account the constraints of PwSI;
- The reinforcement of the perspective that museums must be for all;
- Acknowledging the outcomes that public and private institutions (museums managers) and other service providers can extract from the implementation of different strategies.
- Adopting this inclusive approach to gain competitiveness, increasing the satisfaction and loyalty of visitors in general.

This thesis considers the co-creation of experiences in museums and highlights the importance of co-creation to PwD among which we have PwSI. Hence the overall objective

of this thesis is to contribute to a cumulative body of knowledge about the co-creation of experiences, the antecedents and outcomes that arise from the museum visit, for the public, including PwSI. This research aims to build both theoretical and empirical knowledge concerning the co-creation of experiences, in museums, by the general public and by people with sensory impairments. The approach adopted is both from the management and marketing perspective and from the psychological perspective areas (C.-F. Chen & Chen, 2010; Havlena & Holbrook, 1986; Hosany & Witham, 2009; Hung et al., 2016; H. M. Lee & Smith, 2015; MacInnis & Folkes, 2010; Minkiewicz et al., 2016; Oh et al., 2007; Pine & Gilmore, 1998; Quan & Wang, 2004; Schmitt, 1999; H. J. Song et al., 2015; J. Song & Qu, 2017), considered relevant to the research being conducted.

The research questions guiding this thesis were developed through a deductive approach. According to Veal (2018), a deductive process starts and moves via observation until analysis which will confirm or reject the research questions. The deductive approach moves towards hypothesis testing which presents an assertion about two or more concepts that attempts to explain their relationship (Gray, 2004).

In the present thesis three **research questions** were the focus of the study:

1. Do antecedents in museums have an influence in co-creation of experiences by PwSI?
2. Does co-creation of experiences in museums lead to emotional, learning, and social value, specifically among PwSI?
3. Do emotional, learning, and social value influence the satisfaction and loyalty, specifically among PwSI?

1.2. Objectives

The main purpose of this thesis is to overtake the gaps found in literature by deeply understanding the way co-creation by PwSI occurs in museums. To answer all research questions, a set of main objectives were established. Then, to achieve the three general objectives, a series of specific objectives were designed. The three general objectives of the thesis are:

- To provide a deep understanding of co-creation of experiences in museums, in the case of PwSI;

- To provide a deep understanding of the way antecedents related to visitors and museums stimulate or prevent co-creation in museums;
- To analyse the outcomes of co-creation in museums by PwSI.

Based on these general aims, a set of specific objectives were defined focusing on PwSI:

- To conduct a literature review about experiences and co-creation of tourism experiences to explore the evolution of the concept, the state of the art and possible gaps;
- To conduct a literature review about co-creation of experiences of visitors with disabilities, specifically PwSI, in museums;
- To analyse the influence of visitor's antecedents (e.g., individual antecedents or visit context group) on co-creation of experiences in museums;
- To examine the museums' antecedents of co-creation in museums, such as physical, communicational or attitudinal factors;
- To identify the outcomes of co-creation of experiences in museums, including emotional, learning or social value;
- To propose and test a model of co-creation of experiences in museums by PwSI, that explicitly incorporates the antecedents, co-creation and outcomes;
- To provide guidelines to museum managers for promoting successful co-creation of museum experiences for PwSI ;
- To suggest co-creation initiatives to be adopted by museum managers.

1.3. Methodology

The general aim of this thesis is to analyse the co-creation of experiences in museums by PwSI, the factors that stimulate visitors' participation in co-creation and the outcomes achieved from co-creation.

The literature review started with an analysis of literature on the conceptualization of experience, co-creation, museums, and people with disabilities, antecedents, and outcomes of co-creation. Once the topic is identified the literature review is essential for the researcher to gain existing knowledge in the field (Veal, 2018). The aim of the literature was to identify the state of art. Then, in order to reach the aims proposed and to test the defined hypotheses, the option was to carry out two different empirical studies that complement

each other. The first study was directed to people with visual impairments (PwVI) and was essentially exploratory and qualitative, willing to more deeply understand the way PwSI co-create experiences in museums and more fully understanding factors facilitating or constraining that co-creation. This study was conducted using focus groups. This approach was adopted mainly as qualitative approaches are recommended for minor groups such as PwVI, due to the scarce research regarding the topic. This and the will to stimulate the exchange of experiences between participants, justifies the exploratory nature of the approach. The focus groups provided data that were analysed and coded using content analysis, which allowed to identify the themes and sub-themes most identified.

The results of the qualitative research allowed, together with the previous literature review, to design the second empirical study, using a quantitative approach. The objective of this study was not only to analyse the co-creation more deeply in museums by PwSI, but also its antecedents and outcomes. A questionnaire survey was conducted among the general public who had visited museums in the last three years. Questionnaires were administered face-to-face and online in Portugal and other countries, from September 2020 to June 2021. Several institutions for the blind or people with low vision and for people with hearing impairments (PwHI), national and foreign, were contacted. Data were entered, coded and analysed using Statistical Package for the Social Sciences (SPSS) version 27 and later imported into SmartPLS software to test the hypotheses. Furthermore, multiple linear regressions were undertaken to analyse the impact of antecedents related to visitors and to museums on the co-creation undertaken by PwSI and people without sensory impairments. The methodology in the empirical research will be discussed in detail in chapter 5.

1.4. Structure of the thesis

This thesis is organised into four parts, structured in a total of 8 chapters (Figure 1.1). The first part (Part I), introduction, corresponds to the first chapter, which covers the relevance of the thesis, its main objectives, a brief reference to the adopted methodology in the thesis, as well as the structure of the thesis.

In the second part (Part II) a literature review was carried out, presenting the theoretical reflections carried out to build the conceptual framework that underlies the model proposed in the scope of this thesis. This review allows, among other aspects, to better understand

and identify the main concepts and variables relevant to the study of co-creation of experiences in museums by PwSI, the factors influencing that co-creation, as well as the outcomes arising from that co-creation. With the purpose of clarifying the concepts of the various themes of the thesis, the literature review includes three chapters and focuses on the following main themes: (i) co-creation of tourism experiences (Chapter 2) where the concept of experiences and co-creation will be analysed; (ii) co-creation of experiences of visitors with disabilities in museums (Chapter 3), where museums' definitions and functions will be discussed, as well as the relationship between PwD and museums, and the different types of co-creation for general public and PwD, specifically PwSI; (iii) and, finally, the antecedents and outcomes of co-creation of experiences of visitors with disabilities, specifically PwSI in museums (Chapter 4). At last, but not least, the relationships between antecedents of co-creation, co-creation and the outcomes of co-creation, are explained by presenting the conceptual model proposed in the scope of this thesis (Chapter 4).

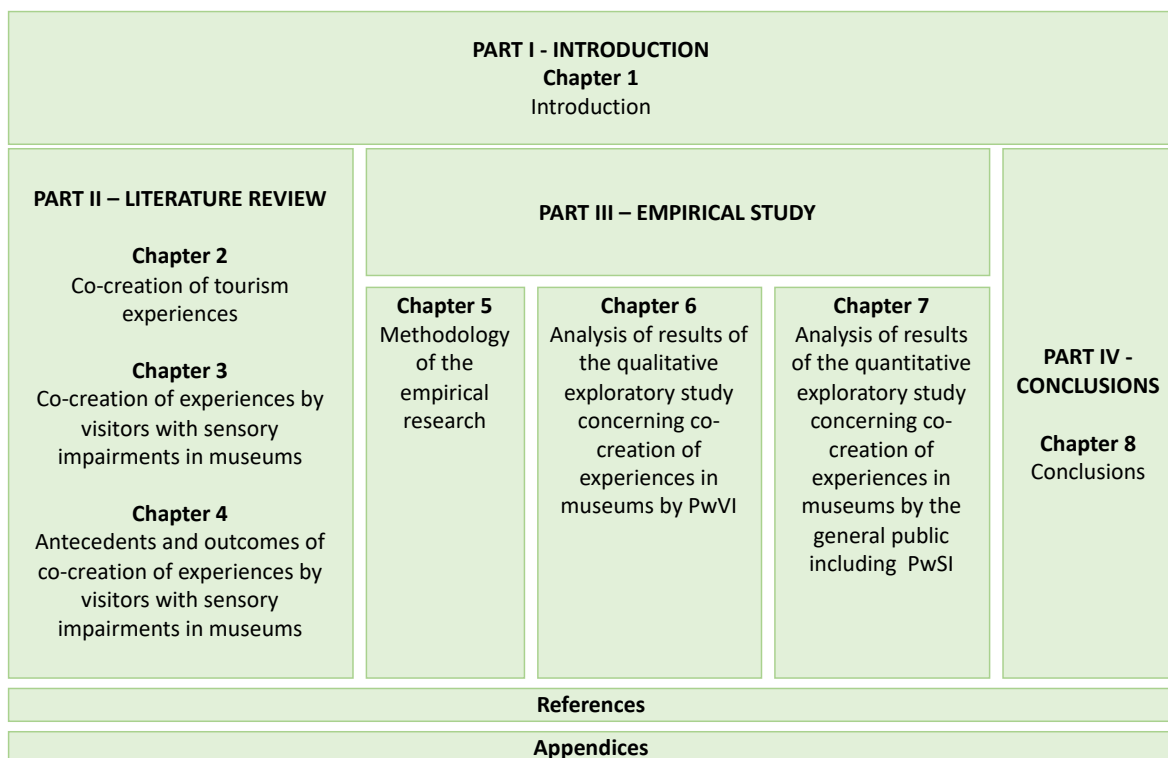


Figure 1.1. Thesis structure

Source: Own elaboration.

The third part (Part III) is entirely dedicated to the empirical research. The methodology adopted in the empirical research of the thesis is presented (Chapter 5). It starts by establishing some considerations about the epistemology of the scientific method, aiming to frame this thesis within the post-positivism paradigm and thus justifying the choice. The

used methods and techniques are also discussed in detail by presenting aspects related to the qualitative and quantitative study (data collection process and data analysis procedures). Then, the two empirical studies conducted in order to achieve the research aims are presented. The empirical results will be discussed in detail. The qualitative empirical study corresponds to only one chapter (Chapter 6) dedicated to the exploratory study based on focus groups carried out with PwVI, presenting the analysis of the results of this study (Chapter 6). Next, the quantitative empirical study (Chapter 7), which involves conducting a questionnaire survey designed to test the proposed model, is presented. The sample is characterised, and the results concerning hypotheses' testing, concerning antecedents of co-creation, co-creation by PwSI in museums and the respective outcomes, will be presented and discussed.

Finally, the fourth part (Part IV) presents the main findings and conclusions of the study and advances the thesis contributions, both at theoretical and management levels. It ends by discussing the thesis' limitations and providing some suggestions for future research on this topic.

The purpose of this framework is to achieve the objectives previously identified in section 1.2, and thus contribute to the study of co-creation of experiences for the general public, including PwSI.

PART II – Literature review

2. Co-creation of tourism experiences

2.1. Introduction

“Be thankful for everything that happens in your life. It’s all an experience.”

Roy T. Bennett

On the research agenda for more than 40 years, the **experience concept** emerged in tourism research in the 1970^s and is now one of the most popular academic topics (Björk, 2014; Cohen, 1979; Csikszentmihalyi, 1975; Dann & Jacobsen, 2002; Hennig-Thurau et al., 2002; McCabe, 2002; Quan & Wang, 2004; Tung & Ritchie, 2011; Voss, 2004).

The tourism industry is one of the leading industries in the experience economy and, in this field, supply is becoming inherently experiential (Quan & Wang, 2004; Tsaor et al., 2007; Zhang et al., 2018). According to several authors, the demand for more participatory and interactive experiences is becoming increasingly common in tourism, which gradually is becoming an industry that sells experiences (Buhalis & O’Connor, 2005; Campos et al., 2018; Ihamäki, 2012; J.-H. Kim, 2010; Mathisen, 2013; Morgan et al., 2009; Ooi, 2005; Quan & Wang, 2004; Volo, 2009). Nevertheless, there is still no consensus on the definition of tourism experience neither on the dimensions that compose tourism experiences.

Concerning co-creation, despite the already large amount of research on the subject, there is no consensual definition about the concept nor a complete consensus regarding its facets. Despite the variety of theoretical approaches and perspectives, there is consensus on the prerequisite forms for co-creation, the combination of “participation”, “involvement” and “engagement. Therefore, this chapter discusses the relevance of experiential consumption, outlines the definition of tourism experiences, and attempts to identify the dimensions of these experiences together with the discussion about co-creation of experiences. The literature review about co-creation provides a critical analysis of the relevant literature on the co-creation concept. It begins with a brief review of the concept, including its emergence and its direct link to the service-dominant logic (S-D logic). Next, different approaches for analysing the concepts are identified and, finally, different facets of co-creation on-site are described.

2.2. Experiences

2.2.1. Experiential consumption

Nowadays, tourists are increasingly searching for unique and new experiences (Azevedo, 2009; Darmer & Sundbo, 2008). While travelling, the new tourist looks for physical and psychological benefits as inspiration, knowledge, pleasure or happiness, meaningfulness, authenticity, memories, values, sense of belonging and hedonic benefits (Binkhorst & Den Dekker, 2009; Björk, 2014; Holbrook & Hirschman, 1982; Prebensen, Woo, et al., 2013; Ramkissoon & Uysal, 2008, 2011). The **new approach** oriented for generating value in consumption, in opposition to the traditional view, where the focus was put in the products, aims to create a sentimental value (Grönroos & Voima, 2012) between the consumer and the consumed item (Vargo et al., 2010; Vargo & Lusch, 2004). The new tourists are searching for unique experiences that engage them in a personal way (Azevedo, 2009; Pine & Gilmore, 1999). The tourism experience can be viewed as a psychological process that engages and motivates people on an emotional, physical, spiritual, and intellectual level (Cutler & Carmichael, 2010; Pine & Gilmore, 1999).

Some researchers suggest that the subjective mental state of tourists during a service encounter is known as tourism experience and depends on a huge number of different factors (Cohen, 1979; Otto, & Ritchie, 1996; Ryan, 2002; Uriely, 2005; Zhang et al., 2018) such as tourists' motivations, needs and interpretations (E. E. Kim et al., 2011; Ooi, 2005). Consumption of experiences is one of the most emerging phenomena of the global economy (Pine & Gilmore, 1999; G. Richards, 2002). Pine and Gilmore adopted the expression "experience economy" in 1998 to emphasize the importance of the experiential value in creating economic value. In the **experience economy**, all the actors devote a big attention to the supply of memorable and meaningful experiences (Gibbs & Ritchie, 2010; Pine & Gilmore, 1999; Sternberg, 1997; Voss, 2004).

Addis and Holbrook (2001, p. 50) identify the roots of the **experiential consumption** recognizing the importance of aspects such as "the roles of emotions in behaviour; consumers are feelers as well as thinkers and doers". The significance of symbolism in consumption, the consumer's need of fun and pleasure, as well as the roles of consumers in the different stages of consumption experience are important features that have been considerably neglected before (Addis & Holbrook, 2001; Carù & Cova, 2003). According to

Holbrook and Hirschman (1982, p. 132), in experiential consumption “consumption has begun to be seen as involving a steady flow of fantasies, feelings and fun encompassed by what we call the ‘experiential view’”. In this consumption, the consumer is attached to the service/product in an emotional and interactive way (Taheri, 2011). The consumption of the experiences includes a series of activities that influence consumers’ decisions and future actions (Carù & Cova, 2007). According to Miller (1998), the experiences are a central part of the life of today’s consumers. Life has an emotional and a rational side and the different experiences in which the customer immerses lead to life’s construction (Firat & Dholakia, 2005). Providing satisfactory experiences is very important to consolidate an advantageous position regarding competitiveness and sustainability (Ritchie & Crouch, 2003; Tung & Ritchie, 2011). According to some authors such as Pine and Gilmore (1999) and Morgan (2006), experiences, rather than products, are the way to create sustainable competitive advantages. In order to be competitive, it is of utmost importance to deliver rewarding, authentic, unique, peak and **memorable experiences** (Gnoth & Knoblock, 2012). Despite its relevance, in general, and particularly in the field of tourism, there is not a consensual definition of experience. In the next section the concept of experience will be discussed. Although several fields of research will be taken into account, special attention will be assigned to tourism, which is the main context of research in this thesis, given that museums are very relevant tourism attractions.

2.2.2. Definition of experience

In order to understand how experiences can contribute to the development of tourism, some **definitions of experience** are analysed. The experience concept has been studied in the scope of different sciences such as philosophy, sociology, psychology, anthropology and ethnology, management, marketing, economy, and tourism studies (Havlena & Holbrook, 1986; Hosany & Witham, 2009; H. M. Lee & Smith, 2015; MacInnis & Folkes, 2010; Minkiewicz et al., 2016; Oh et al., 2007; Pine & Gilmore, 1998; Quan & Wang, 2004; Schmitt, 1999; J. Song & Qu, 2017). Definitions of experience mentioned in Table 2.1, even emerging from different fields, have been accepted in tourism.

According to the Oxford English dictionary, “experience” is defined as the knowledge or skills acquired by a period of practical experience of something, something felt or learned

by personal contact with the observation of facts or events (Beeho & Prentice, 1997). Merriam-Webster (2021b) evidences the cognitive dimension of experience, stating that an experience can be a fact or state of having been affected by or gained knowledge through a direct observation or participation.

Table 2.1. Definitions of experience emerging in different fields and accepted in tourism

Author (year)	Definition
Cohen (1979)	The tourism experience is searching for self-identity as a tourist.
Holbrook and Hirschman (1982)	An experience is a personal occurrence, normally with an emotional state loaded with symbolic meaning, founded on the interaction with the product or service consumed.
Otto and Ritchie (1996)	A subjective mental state felt by participants.
Carlson (1997)	An experience can be defined as a constant flow of thoughts and feelings that occur during moments of consciousness.
O'Sullivan and Spangler (1998)	Involves the participation and involvement of in the consumption and the state of being physically, mentally, emotionally, socially, or spiritually engaged in the experience.
Schmitt (1999)	Experiences are private events that are not self-generated but rather occur in response to some staged situation and involve the entire being as a result of observing or participating in an event. In order to stimulate desired consumer experience, marketers must provide the right setting and environment.
Pine and Gilmore (1999, p. 12)	"Experiences are events that engage individuals in a personal way".
Gupta and Vajic (2000)	An experience occurs when a customer has any sensation or knowledge acquisition resulting from some level of interaction with different elements of a context created by a service provider.
Li (2000)	A contrived and created act of consumption, a response to problems with "ordinary" life, a search for authenticity, and a multifaceted leisure activity.
Lewis and Chambers (2000)	The total outcome to the customer from the combination of environment, goods, and services purchased.
B. Lee and Shafer (2002)	Experience can be described as a subjective mental state of mind felt by participants.
Berry et al. (2002)	The means of orchestrating all the clues that people detect in the buying process.
Hoch (2002, p. 448)	"Experience is defined as the act of living through and observation of events and also refers to training and the subsequent knowledge and skill acquired".
Quan and Wang (2004)	The tourism experience is thus understood as the "pure", "net" or "peak" experience, usually derived from the attractions.
Oh et al. (2007, p. 120)	From a consumers' perspective experiences are "enjoyable, engaging, memorable encounters for those consuming these events".
Mossberg (2007)	A blend of many elements coming together and involving the consumer emotionally, physically, intellectually, and spiritually.
Larsen (2007)	A past travel-related event, which was significant enough to be stored in long-term memory.
Gentile et al. (2007, p. 397)	"The customer experience originates from a set of interactions between a customer and a product, a company, or part of its organisation, which provoke a reaction. This experience is strictly personal and implies the customer's involvement at different levels: rational, emotional, sensorial, physical, and spiritual".
Bjork and Sfandla (2009)	The tourism experience is an individual perception generated in the context of interactions and integration of resources.
Schmitt (2010)	Knowledge, skill, or practice derived from direct observation of or participation in events: practical, wisdom resulting from what one has encountered, undergone, or lived.

Source: Own elaboration.

Several definitions of experiences adopted in the **tourism field** have a management or, more specifically, a marketing perspective. Marketing scholars have examined the experience in several different contexts and perspectives such as consumption experiences (Holbrook & Hirschman, 1982), product experience (Hoch, 2002), memorable experience (Pine & Gilmore, 1999), extraordinary experience (LaSalle & Britton, 2003), aesthetic experience (Joy & Sherry, 2003), service experience (Hui & Bateson, 1991), shopping experience (Kerin et al., 1992), and customer experience (Ryder, 2007), among others. In all the contexts before mentioned, emotions, often cited as the heart of the consumption experience, and transformations in the individuals, are produced. From the **marketing perspective**, the consumer experience may be defined as “the total outcome to the consumer from the combination of environment, goods, and services purchased” (Lewis & Chambers, 2000, p. 46). It is accepted that experiences are individual and private events created in the context of interactions and resources integrations (Björk & Sfantla, 2009; Cohen, 1979; Gentile et al., 2007; Holbrook & Hirschman, 1982; Pine & Gilmore, 1999; Schmitt, 1999). From the **management perspective**, in consumer behaviour research, an experience has also been considered a personal occurrence in the context of consumption, most of the time with emotional significance, based on different interactions (Holbrook & Hirschman, 1982). Thus, experiences involve feelings and thoughts (Carlson, 1997) that occur during moments of consciousness.

Examining the different approaches and definitions presented in table 2.1, two main **common aspects** can be identified: experiences are personal and involve customers at different levels (Björk & Sfantla, 2009; Gentile et al., 2007; Gupta & Vajic, 2000; Holbrook & Hirschman, 1982; B. Lee & Shafer, 2002; Mossberg, 2007; O’Sullivan & Spangler, 1998; Pine & Gilmore, 1999; Schmitt, 2010). Additionally, despite the subjective and personal dimension of this concept, several researchers’ definitions also imply that experiences are a mixture of elements coming together – e.g. products/services, environment and people (Brakus, 2001; Carlson, 1997; Fiske & Taylor, 2017; Gentile et al., 2007; Goleman, 2009; Lofman, 1991; Mossberg, 2007; O’Sullivan & Spangler, 1998; Pine & Gilmore, 1999; Schmitt & Simonson, 1997; Tavassoli, 1998).

Analysing more in depth the character of experiences and the specific features that characterize them, based on the definitions before presented, it is possible to conclude that **emotions and hedonic features** are in the center of experiences, which are not simply rational consumption. Moreover, experiences are different from products or services due to their **subjective nature** (J.-S. Chen & Liu, 2007). Jackson and Marsh (1996) corroborate

this idea stating that experiences may be rather subjective and change from person to person. This subjective nature of consumption experiences has been reinforced by Holbrook and Hirschman (1982, p. 132), who define it as a “primarily subjective state of consciousness with a variety of symbolic meaning, hedonic responses, and aesthetic criteria”. In the context of tourism, experiences have also been described as a subjective mental state of mind felt by participants (B. Lee & Shafer, 2002; Otto, & Ritchie, 1996).

During the consumer experience, a person can satisfy some particular needs, feelings of desire and joy (Holbrook & Hirschman, 1982). The involvement of a person in different levels can produce a good experience. Despite this, it is also important to recognize that some experiences may be negative and may produce **negative emotions** (Carbone & Haeckel, 1994).

Social interactions are fundamental in almost every sector as no joint value creation can exist and no co-creation can happen without the interaction between the supplier and the customer (Grönroos, 2011b). Thus, the interaction concept is a key construct in relationship marketing, in service marketing and in tourism as tourism experiences have a **social dimension and meaning** (Cutler & Carmichael, 2010; De Rojas & Camarero, 2008; Grönroos, 1982; Gummesson, 2008; Kreziak & Frochot, 2011; Morgan, 2006). Many consumers want to interact, actively learn, and use knowledge more than observe (Campos et al., 2016; Tan et al., 2013, 2014).

Usually experiences also involve the stimulation of **senses** (Agapito et al., 2013) like seeing, hearing, feeling, smelling, and tasting. The appeal to the several senses helps to create “unique and memorable” experiences that, to be effective, should take the visitor to a “transformation” through the acquisition of new skills, knowledge, self-confidence and self-image (Morgan, 2006).

As mentioned before, an experience may be described as a result of a set of **emotional, physical, spiritual and/or intellectual involvement** perceived by the tourists throughout its different stages (Brakus, 2001; Carlson, 1997; Fiske & Taylor, 2017; Gentile et al., 2007; Goleman, 2009; Lofman, 1991; Mossberg, 2007; O’Sullivan & Spangler, 1998; Pine & Gilmore, 1999; Schmitt & Simonson, 1997; Tavassoli, 1998). Consequently, in tourism, the experience concept is many times related to long term memories, authenticity and engagement (Larsen, 2007; Oh et al., 2007), which lead the experience to be understood as the “pure”, “net” or “peak” experience, usually derived from the attractions.

In this thesis, the definition adopted will be that proposed by Holbrook and Hirschman (1982), that states that an experience is above all a personal occurrence, often with important emotional significance, founded on the interaction with stimuli which are the products or services consumed.

Besides, according to Frambach et al. (2007), the **consumption experience** can be divided into three major **stages**. First, there is the pre-purchase stage – which involves searching information on the attributes of the product considered to be purchased. Secondly, the purchase stage derives from the importance of the attributes of the product and from the comparison of its alternatives offered. Thirdly, there is the post-purchase stage, when the customer may maintain the relation with the provider or may repeat the purchase. In the field of tourism, which will be a main context of analysis in this thesis, many researchers (D. Anderson & Lucas, 1997; Calver & Page, 2013; Campos et al., 2016; Guisasola et al., 2009; Kempniak et al., 2017; Leighton, 2007; López Sintas et al., 2014; Taheri, 2011) are likely to identify three main stages at the consumption experience: (i) the pre-visit (information, planning and anticipation) to tourism destinations or tourism attractions (e.g. museums, theme parks); (ii) on-site engagement (resulting from management techniques such as the provision of information, communication and engagement with tourists); and (iii) post-visit memories (related to visit duration, acquisition of knowledge and level of satisfaction) (Kempniak et al., 2017; Larsen, 2007; Waligo, 2013). This suggests that, in the context of tourism, and in the context of this thesis related to museums, it makes sense to consider three main stages of the experience represented in Figure 2.1. The focus of this thesis will be the **on-site experience**.

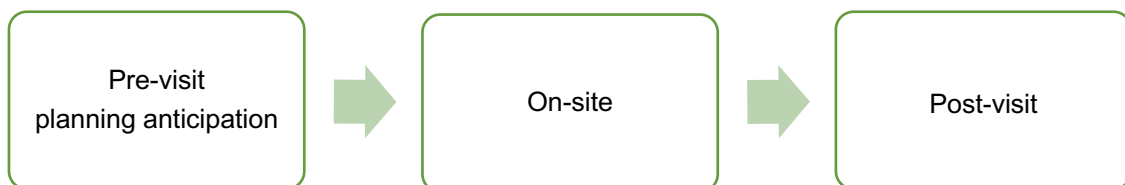


Figure 2.1. Stages in the consumption of the tourism experiences

Source: Elaborated based on D. Anderson and Lucas (1997), Calver and Page (2013), Campos et al. (2016), Guisasola et al. (2009), Kempniak et al. (2017), Leighton (2007), Sintas et al. (2014) and Taheri (2011).

Considering the variety of elements that compose experiences, various studies pay particular attention to the identification of their different dimensions. The approaches developed to categorize these dimensions will be analysed in the next section.

2.2.3. Dimensions of the experience

Several researchers tried to identify the dimensions of the experience. To Lofman (1991), the consumer purchase intention involves two types of consumption: one “logical and rational” and another “experiential and irrational”. He identifies six **components on experiential consumption**: setting, sensation, thought, feeling, activity and evaluation. The “setting” is an experiential input and refers to physical environment, as well as atmospheric and other environment intangibles that can help to describe the place and the time of the experience. The “sensation” component refers to sensory processes like hearing, seeing, tasting, smelling, and touching. The “thought” refers to attributes, benefits or disadvantages and associations in consumption. “Feelings” refer to affective responses in consumption, emotions, or mood state. The “activity” refers to the behavioural events that occur during consumption. Finally, “evaluation” refers to the appreciation made by the market. Sensation, thought, feelings and activity may be considered experience dimensions. As far as evaluation is concerned, it is a more transversal feature, which overlaps with some of the before mentioned dimensions. Hence, evaluation involves thinking and may, for example, be an emotional evaluation, involving the emergence of emotions.

For Pine and Gilmore (1998), there are two **dimensions** to consider in experiences: the first is the customer **participation** (passive or active) and the second is the **connection** with the event or performance (immersion or absorption). According to the authors, experiences are then sorted in four categories – entertainment, educational, escapist and aesthetic – depending on the level of the customer involvement and on the immersion in the environment. A more passive participation corresponds to the entertainment and aesthetic experiences whereas the escapist and educational experiences refer to a more active participation. In addition, depending on the level of connection that people have with the event that is occurring and with the environment where this event takes place, their experience may be characterised by absorption, if this level of connection is low, or by immersion, if they have a strong connection with the event and the environment. Absorption is likely to occur in entertainment and educational experiences. Immersion takes place when the customer gets deep in the experience through aesthetic and escapist experiences (Mehmetoglu & Engen, 2011; Pine & Gilmore, 1998).

Schmitt (1999) states that the differences between the traditional marketing and this new approach to marketing – called experiential marketing – are mainly four. The differences are that, in the experiential marketing: (i) a greater importance is conferred to the customer

as experiences occur due to an encounter; (ii) the consumption is considered a holistic experience; (iii) customers are considered rational and emotional; (iv) and the methods and tools of experiential marketers have an eclectic nature – they may take the traditional format, being verbal, or they may be visual, applying to creative thinking. According to Schmitt (1999), experiential marketing is everywhere, and he introduces **five strategic experiential components** which correspond to dimensions of experience: sensory experiences (sense); affective experiences (feel); creative cognitive experiences (think); physical experiences, behaviours, and lifestyle (act); and social identity experiences that result from relating to a reference group or culture (relate).

Similarities can be found between the dimensions proposed by Schmitt (1999) and other approaches, such as the Thought-Emotion-Activity-Value (TEAV) model from Hirschman and Holbrook (1986). "Thought" refers to the imaginary process present in associations made during consumption and the cognitive process. "Emotion" represents the feelings present in the experiences. "Activity" refers to the act, physical experiences, behaviours, and lifestyle. Therefore, the cognitive, behavioural and affective or emotional dimensions proposed by Schmitt (1999) are common to the TEAV model but are also encompassed by other approaches such as that suggested by Lofman (1991). "Sensory" also greatly corresponds to what Lofman (1991) designs by "sensation". Only small differences can be noticed between the Schmitt (1999) approach and the TEAV. For example, Schmitt (1999) hasn't mentioned value (that reflects self-oriented economic, hedonic value in Hirschman and Holbrook, 1986), but refers to a "relate" component that represents the outcomes of the social experiences of a certain group or culture. Hirschman and Holbrook (1986) proclaim the importance of consumer experience by focusing on the symbols and icons, the hedonism and aesthetic of the consumption process leading to different typologies of experiences, going from basic experiences, successful experiences, quality experiences, to extraordinary and memorable experiences.

Fornerino et al. (2006) identify **five distinct dimensions**: the "cognitive", which refers to the thoughts produced in the experiences; the "affective", which refers to the feelings produced by the experiences – excitement, joy, pleasure and sadness, among other; the "sensorial", which reflects the senses stimulation; the "physical behavioural" refers to the physical manifestations resulting from the experiences; the "social" component, related to the interaction and communication with friends or others. These dimensions greatly correspond to those suggested by Schmitt (1999).

Han Chen and Liu (2007) identify **five components of experiential marketing** in their study of online consumer's attitude and behaviours in the context of what they called "virtual experiential marketing": sense, interaction, pleasure, flow, and community relationship. Some of these dimensions identified – sensory, emotional, and behavioural aspects, namely interactions -, are common to many of the previously referred approaches to identify dimensions of experience. In contrast, flow, for example, is more specific of this classification of Han Chen and Liu (2007).

Some of the previous approaches emerging in fields of study other than tourism (e.g., the approach of Pine and Gilmore, 1998), have also been **adopted to analyse the tourism experience**. For example, Hoffer M. Lee and Smith (2015) adopted this approach to develop a multiple-item scale to measure tourists' experiences of visiting historic sites and museums, while Oh et al. (2007) used it to develop a measurement scale to assess experiences in bed-and-breakfast accommodation. However, some **specific approaches** have also been explicitly developed to measure tourism experiences, incorporating several dimensions of these experiences.

Otto and Ritchie (1996) measure the nature of satisfaction with the service experience across the leisure and tourism industries. In this context, these authors proposed a scale for a construct they termed as the service experience, but that is applied to tourism. The aim of the research is to measure the nature of satisfaction with the service experience across tourism industries. As the authors mention, tourism is a business comprising many services sectors. In their study (Otto and Ritchie, 1996), **six dimensions of the experience in services** – hedonism (excitement, enjoyment, memorability), novelty (escape, doing something new), stimulation (educational and informative, challenging), safety (personal safety, security of belongings), comfort (physical comfort, relaxation) and interactive benefits (meeting people, being part of the process, having choice) – were confirmed to exist.

In turn, Jong-Hyeong Kim et al. (2012) developed a valid scale to apply in destinations in order to measure the **memorable tourism experience**. Hedonism, refreshment, local culture, meaningfulness, knowledge, involvement, and novelty are the domains identified by these authors.

Although many other approaches have been specifically developed to analyse the tourism experience, that incorporate several dimensions of this experience, these are some of the most often used.

Most of the approaches mentioned for identifying dimensions of the experiences, show several **similarities** even if they have some differences among them. The dimensions of experiences most frequently identified by the researchers considered in this section are: (i) the emotional dimension (generating moods, feelings and emotions such as pleasure and excitement); (ii) the cognitive dimension (acquisition of knowledge and mental skills); (iii) the sensory dimension (good sensory experiences which can address hearing, touching, tasting and smelling so as to incite sight and aesthetical evaluations, including a sense of beauty); (iv) the behavioural dimension (corresponding to the behaviour of the consumers, including the activities they do); and (v) the relate dimension (social dimension) (Figure 2.2). Other dimensions were only mentioned by very few authors like Jan Packer (2006) – who refers the transcendent dimension of the experience – or Cutler and Carmichael (2010) – who mention the personal dimension that encompasses all the elements of a tourism experience which are within the individual such as motivation, expectations, memory, perception, and self-identity, among other.

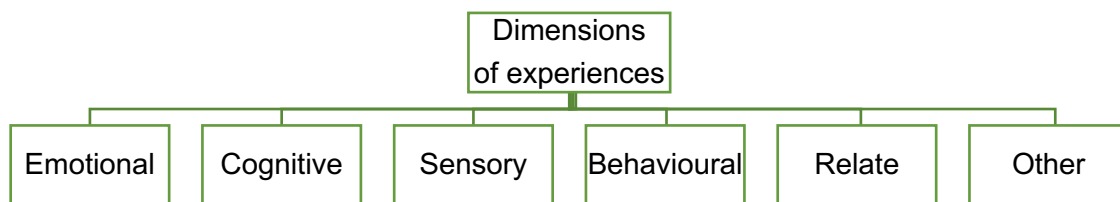


Figure 2.2. Dimensions of experiences

Source: Elaborated based on H. Chen and Liu (2007), Hirschman and Holbrook (1986), J.-H. Kim et al. (2012), Lofman (1991), Mehmetoglu and Engen (2011), Pine and Gilmore (1998) and Schmitt (1999).

As far as the **behavioural dimension** is concerned, not all the researchers explicitly mention it. Actually, this dimension is more explicit in the approaches of authors such as Fornerino et al. (2006), Hirschman and Holbrook (1986), Lofman (1991) and Schmitt (1999), but is also implicit in the approaches of other researchers such as Pine and Gilmore (1998), when these authors refer to active participation. It is also interesting to highlight that, sometimes, social interaction seems to be incorporated in a general behaviour dimension, and sometimes it is considered an autonomous dimension, which highlights the relevance of this interaction in the scope of consumer behaviour.

2.3. Co-creation of tourism experiences

2.3.1. Co-creation

Even if co-creation in tourism studies goes back to 2006 being first addressed by Binkhorst (2006), this important concept to tourism has been used in various areas which result in a complicated field with a variety of theoretical approaches and perspectives (Galvagno & Dalli, 2014; Mohammadi et al., 2021).

The growth of competition between company's led to the increase of the studies exploring the concept of value co-creation as a way to involve customers in this process (Neuhofer, 2016). According to Sthapit and Björk (2019) all the stakeholders engaged in co-creation process, customers, managers, employees and other platers, benefit from their interaction.

Various **perspectives of co-creation** and its foundations, as well as several of their theoretical backgrounds such as marketing, service, design, and innovation management (Etgar, 2008, 2015; Jawiorski & Kohli, 2015; Kambil et al., 1996; Nambisan & Baron, 2009; Payne et al., 2008; Prahalad & Ramaswamy, 2000, 2004) should be considered. These perspectives emerged in research specially regarding:

- Marketing (Ballantyne & Varey, 2006; Cova & Dalli, 2009; Grönroos, 2011a; Gummesson & Mele, 2010; Hatch & Schultz, 2010; Payne et al., 2008; Prahalad & Ramaswamy, 2004; Salloum et al., 2014; Salloum & Azoury, 2012; Witell et al., 2011);
- Service logic and service-dominant logic (Ballantyne & Varey, 2008; Bolton & Saxena-Iyer, 2009; Cova & Salle, 2008; Dong et al., 2007; Edvardsson et al., 2011; Etgar, 2015; Ferguson et al., 2010; Maglio & Spohrer, 2008; Vargo, 2008; Vargo & Lusch, 2004);
- Design logic (Brohman et al., 2009; Kohler et al., 2011; Mukhtar et al., 2012; Nenonen & Storbacka, 2010; Sanders & Stappers, 2008);
- Innovation and new product development (Bowonder et al., 2010; Franke & Schreier, 2010; Michel et al., 2008; Nambisan, 2010; O'Hern & Rindfleisch, 2008; Prahalad & Ramaswamy, 2004; Romero & Molina, 2011; Sawhney et al., 2005; Tanev et al., 2009).

There is a high degree of consensus among the definitions that co-creation involves **multiple stakeholders** to co-create value, with some of the authors specifically stressing that co-creation involves the creation of an experience collaboratively (Binkhorst & Den Dekker, 2009; Björk, 2014; Campos et al., 2016; Minkiewicz et al., 2014; Neuhofer et al., 2013; Prahalad & Ramaswamy, 2004; Prebensen et al., 2018; Prebensen, Vittersø, et al., 2013).

Most of the literature has emerged from the service management field (Kambil et al., 1996), although innovation management studies, marketing, and consumer research have also brought important contributions (Azevedo, 2009; Bertella, 2014; Binkhorst & Den Dekker, 2009; Ek et al., 2008; Haahti, 2006; Ihamäki, 2012; Kreziak & Frochot, 2011; Mathisen, 2013; Prebensen & Foss, 2011; G. Richards, 2011; C. A. Scott, 2009; Tan et al., 2014). The term became more well-known through Prahalad and Ramaswamy (2000, 2004), who referred to **value co-creation** as the co-creation of personalised experiences with the customers. They stated that value is created by the interaction between the customer and the firm in a relevant field of interest.

The co-creation concept is directly related to the core of **service-dominant logic** (S-D logic) that always considers the customer a value co-creator (Vargo & Lusch, 2004). The service-dominant logic was introduced as a “new dominant logic for marketing”, where service is the essential basis of business (Vargo & Lusch, 2004). Based on a broad perspective, co-creation has become evident mainly with this new service approach, in which all the stakeholders – e.g. consumers, firms and other organisations –, act as resources integrators (Arnould et al., 2006; Holbrook, 1996; Prebensen, Vittersø, et al., 2013).

According to some authors, **value** is created with customers, by the users to the users (Grönroos, 2011a; Lusch et al., 2008; Lusch & Vargo, 2006). In this new perspective of business, the producers and consumers are not separated, and value is always co-created during usage by both providers and consumers. Hence, the idea that the customer is the main actor in this process is rather simplistic (Vargo & Lusch, 2011) as both are key players in the process of co-creation. Some authors argue that companies can only be co-creators of value either through their interaction with customers (Grönroos, 2008) or by collaborating in the co-creation of new products and services (Ballantyne et al., 2008).

Despite recognizing the crucial role that both producers and consumers can have in the co-creation process, **co-creation conceptualizations** can be divided broadly into those that are primarily firm focused, with a high business orientation and a high importance assigned

to strategies towards competitiveness (Bharwani & Jauhari, 2013; Chathoth et al., 2013; Ciasullo & Carrubbo, 2011; Shaw et al., 2011), and those that are customer focused and view co-creation as a new relationship between producers and consumers, in which an emphasis is put on consumers, described as co-creators of value or even the only creators of value (Azevedo, 2009; Li & Petrick, 2008; Rihova et al., 2018) (Figure 2.3).

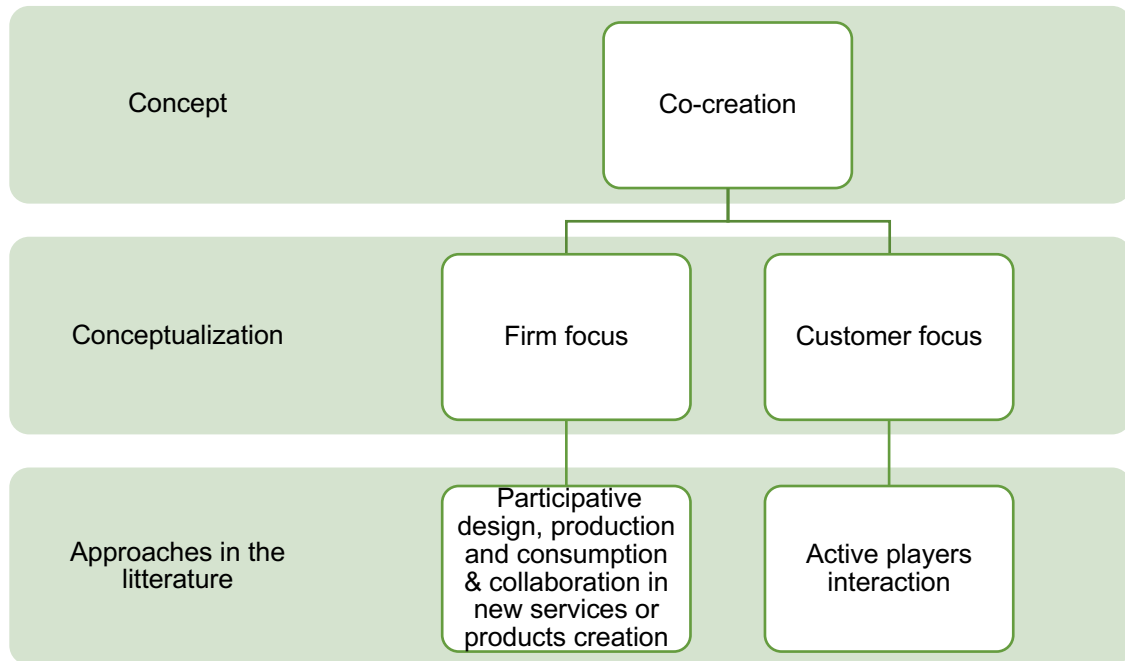


Figure 2.3. Co-creation conceptualizations

Sources: Elaborated based on Azevedo (2009), Bertella (2014), Bharwani and Jauhari (2013), Binkhorst and Den Dekker (2009), Chathoth et al. (2013), Ciasullo and Carrubbo (2011), Ek et al. (2008), Eraqi (2011), Haahti (2006), Ihamaki (2012), Kreziak and Frochot (2011), Li and Petrick, (2008), MacLeod, Hayes and Slater (2009), Mathisen (2013), Mkono (2012); Prebensen and Foss (2011), V. Richards (2010), Rihova et al. (2013), Samuelsen (2010), Tan et al. (2013), Tan, Luh, and Kung (2014) and Volo (2009).

In **firm-focused approaches**, emphasis is put on business orientation and, consequently, on processes to engage consumers in co-creation (Bharwani & Jauhari, 2013; Chathoth et al., 2013; Ciasullo & Carrubbo, 2011; Shaw et al., 2011). This may include a co-creation that involves the participation in the design, production, and consumption of the service and in the creation of new products and services (Eraqi, 2011; Samuelsen, 2010; Santos-Vijande, 2012). This conceptualization obligates firms to mobilize all networks and processes to attract consumers to the generation of value (Ciasullo & Carrubbo, 2011; Eraqi, 2011).

In **customer focused** approaches, the role of the consumer in the co-creation processes is emphasized (Azevedo, 2009; Li & Petrick, 2008; Rihova et al., 2018). It is specially remarked the role of the consumers as active players (Bertella, 2014; Binkhorst & Den Dekker, 2009; Ek et al., 2008; Ihamäki, 2012; Mathisen, 2013; Mkono, 2012; Prebensen & Foss, 2011; Rihova et al., 2018) and the relevance of the providers interacting with consumers (Azevedo, 2009; Bertella, 2014; Haahti, 2006; Kreziak & Frochot, 2011; MacLeod et al., 2009; G. Richards, 2011; Tan et al., 2013, 2014; Volo, 2009).

This thesis **adopts the customer focus** on the conceptualization of co-creation, in which the role of the consumer in the co-creation processes is highlighted.

According to different aims, authors distinguish several **types of co-creation**: co-creation of experiences (Battarbee & Koskinen, 2005; Binkhorst & Den Dekker, 2009), co-recovery (Roggeveen et al., 2012; Xu et al., 2014), co-innovation (Shaw et al., 2011) and, finally, co-marketing, which includes co-creating brand (Payne et al., 2009). In this scope, Shulga et al. (2015) proposed a framework of customer-company interaction in value co-creation, where the authors identify different types of co-creation: (i) co-creation of experiences; (ii) co-recovery; (iii) co-innovation and (iv) co-marketing. Figure 2.4 presents a framework adapted from that of Shulga et al. (2015), which includes the contributions of other researchers previously mentioned.

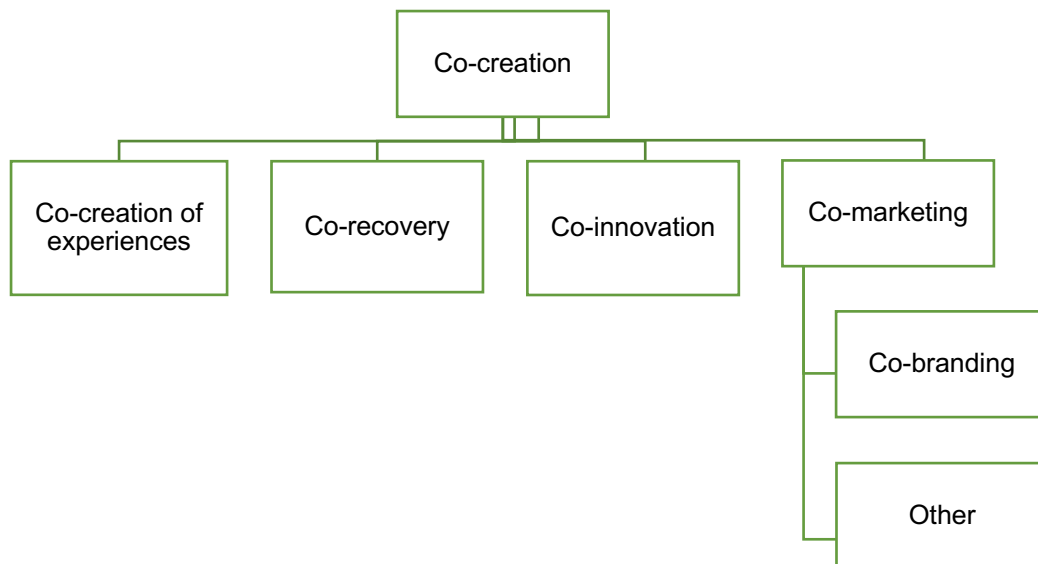


Figure 2.4. Types of co-creation

Source: Adapted from Battarbee and Koskinen (2005), Binkhorst and Dekker (2009), Gentile et al. (2007), Grönroos (2011b), Payne et al. (2009), Roggeveen et al. (2012), Shaw et al. (2011), Shulga et al. (2015) and Xu et al. (2014).

Most authors who discuss co-creation in the scope of management (Cova & Dallı, 2009; Vargo & Lusch, 2008) or even specifically in the field of tourism (Bertella, 2014; Binkhorst & Den Dekker, 2009; Campos et al., 2016; Ek et al., 2008; Ihamäki, 2012; Tan et al., 2014), refer explicitly or implicitly to the **co-creation of experiences** that the consumers live. According to Fu and Lehto (2018) co-creation marks a new era of experience economy where customers value the experience increasing the value both for customers and service providers.

Another type of co-creation identified in the literature is co-recovery (Dong et al., 2007; Mohr & Bitner, 1995; Payne et al., 2008; Roggeveen et al., 2012; Xu et al., 2014). This term has been coined by Dong et al. (2007) and is the process of creating a solution through interactions between customers and their service company during a service recovery, in which the company is responsible for the error (Xu et al., 2014). In co-recovery, customers take part in problem solving, providing their opinions and their recommendations (Xu et al., 2014). Thus, customers can co-recover service failures (Payne et al., 2009), helping firms to improve their products and services. Co-recovery can be viewed as a product or service development (Xu et al., 2014) and some authors argue (Dong et al., 2007) that the more customers participate in the service recovery, the more satisfied they become, and the greater is their intention to co-create value in the future. The idea of firms to involve customers in the recovery process aims to offer customers a certain degree of perceived control and empowerment during a service failure situation (Xu et al., 2014). According to Roggeveen et al. (2012), the co-recovery process is found to be effective only when the customers find it to be positive. On the other hand, it is harmful if customers see their effort as doing a job for the company. Customers must feel that the company is making a larger portion of the joint-recovery effort, to justify their loss and all the inconvenience caused (Dong et al., 2007). In co-recovery, the more the customers perceive effort made by the employees in order to solve the problem, the more positive is the recovery (Mohr & Bitner, 1995; Xu et al., 2014).

Co-innovation is said to be a product or service development (Shulga et al., 2015). In co-innovation a high level of customer participation is required for the purpose of innovation (Kristensson et al., 2008).

Finally, **co-marketing** concerns the co-creation of value in the scope of marketing, usually in brands. This value is co-created with consumers and other stakeholders, and the element of co-creation is, many times, perceived by consumer groups as brand communities and

user communities, that actively create brand identity (Payne et al., 2008). Consumers may identify themselves with company brands, destination brands, among others, and they actively participate in the co-creation of content. The term co-branding, also known as brand alliance, brand extension, marketing partnership and strategic alliance, can be defined as multiple brands collaborating in technology development, marketing, and production, while keeping their independence as separate businesses. It is a strategy to launch new products (S. Lee et al., 2006). Co-branding uses two or more brands in one single product, while in other co-marketing approaches brands work together to promote their products.

This thesis will **focus on the co-creation of experiences**. The concept of co-creation of experiences will be further explored in the next sections. In the next section, the concept of co-creation is examined by specifically analysing its facets.

2.3.2. Co-creation of experiences

In order to clearly delimit the scope of this thesis, it should be noticed that the visitor experience is a dynamic process with different stages and that co-creation may occur in one, in some or in all the stages of the experience. Hence, in section 2.2.2, it was pointed out that many researchers recognised three stages in one consumption experience – the pre-consumption experience, the purchase experience and the post-consumption experience – and that this conclusion was extended to tourism contexts, such as visits to tourism destinations or attractions, where **three stages of the experience** can also be identified: pre-visit experience, visit experience and post-visit experience.

Considering now the experience co-creation, it is also possible to distinguish several stages in experience co-creation. Despite this topic is discussed in many fields of study, it makes sense to analyse approaches adopted in the area of tourism, since tourism is a major context of analysis in the present thesis. When referring to the experience of visits to tourism destinations or tourism attractions, several authors (Arnould et al., 2006; Carù & Cova, 2003; T. Chen et al., 2017; Clawson & Knetsch, 2011; Ek et al., 2008; Kempiak et al., 2017; López Sintas et al., 2014; W. D. Neal, 1999; Prebensen et al., 2016; Sheng & Chen, 2012) identify different **stages of the tourist experience co-creation**. Most of these researchers referred to three stages of the experience co-creation that correspond to co-creation that

takes place in the three stages of the visitors'¹ experience already identified: pre-visit experience, on site experience and post-visit experience (Figure 2.5).



Figure 2.5. Stages of co-creation of tourist experiences

Sources: Elaborated based on T.Chen et al. (2017), Ek et al. (2008), J.D.Neal et al. (1999), Prebensen et al. (2016) and Sheng and M.C. Chen (2012).

What was previously mentioned implies that, regardless of the number of phases identified, at any point of the process, it is possible to co-create value in the experience, ranging from the pre-visit to the post visit stage. **Before the visit**, the active participation can emerge from actively searching for the information one is interested in, as a visitor, using, many times, instructional materials and activities or technologies (D. Anderson & Lucas, 1997; Daengbuppha et al., 2006; Guisasola et al., 2009; Kempiak et al., 2017; McLellan, 2000; Patel et al., 2016; Streitz et al., 2005) such as websites (Marty, 2007) and mobile devices (Udo & Fels, 2010). At this stage, consumers may also be requested to participate in the design of an experience (e.g. to help design an exhibition in a museum), by expressing their needs or preferences (Campos et al., 2016; S. M. Davies, 2010; Kujala, 2003; Lynch, 2011; Nettet & Large, 2004). This co-creation can be especially important to create experiences better suited to the needs and wants of specific segments of consumers, which are likely to result in higher satisfaction. At the **on-site stage**, consumers can actively create the experience during the visit in several ways, as will be observed in further detail in section 3.5 (Erätuuli & Sneider, 1990; Liu, 2008; Mygind et al., 2015; Othman, 2012; Taheri, 2011). At the **post-visit** stage, visitors can co-create the experience, for example, through sharing experiences and memories (Calver & Page, 2013; Campos et al., 2018).

¹ A visitor is a traveler taking a trip to a main destination outside his/her usual environment, for less than a year, for any main purpose (business, leisure or other personal purpose) other than to be employed by a resident entity in the country or place visited. A visitor (domestic, inbound or outbound) is classified as a tourist (or overnight visitor) if his/her trip includes an overnight stay, or as a same-day visitor (or excursionist) otherwise (WTO - World Tourism Organization, 2007).

The present thesis will focus on the **on-site experience co-creation**, where there is not only a plethora of possibilities to co-create experiences, but also where suppliers have more opportunities to encourage co-creation, by providing stimuli to trigger this process. Consequently, the literature review will concentrate on the co-creation of on-site experiences. Opportunities to co-create during visits, both during visits to tourism destinations and to museums, with these last being the focus of this thesis, are going to be further discussed in the next sections. In order to more deeply understand the co-creation of experiences, the facets of this co-creation and different aims of the co-creation of experiences will also be discussed, as well as the contexts where co-creation may occur.

2.3.3. Facets of on-site co-creation of tourist experiences

All experiences are co-creative as they represent the outcome of participation and interaction between a huge number of participants such as organisations, service employees and customers (Antón et al., 2018; Campos et al., 2018; Minkiewicz et al., 2014, 2016; Mirghadr et al., 2018; Payne et al., 2008; Prebensen et al., 2013). However, the level of co-creation can vary depending on the nature of the service (Bitner et al., 1997). Sometimes all that is required is the presence of the customer and the firm assumes the entire service production; otherwise, the consumption experience may be widely co-designed and co-produced by the customer. Despite the already large amount of research on the subject, there is not a consensual definition of co-creation nor a complete consensus regarding its **facets**. In the present study the designation 'facets' will be used, as suggested by Minkiewicz et al. (2014), to refer to expressions of co-creation which may overlap, as discussed later. The literature suggests that co-creative experiences may have several facets, such as: (i) active participation; (ii) co-production; (iii) interaction; (iv) personalization; (v) customization; and (vi) emotional and cognitive engagement.

One facet that characterizes co-creative experiences is **active participation**. Hence, as a theoretical construct, the co-creation of experiences is characterized by customer active participation in consuming and producing value (Arnould & Thompson, 2005; Bendapudi & Leone, 2003; Holbrook & Hirschman, 1982; Jawiorski & Kohli, 2015; Payne et al., 2008; Prahalad & Ramaswamy, 2000; Ramaswamy & Ozcan, 2018). Corroborating the perspectives suggested in other fields of study, in tourism it has been always considered that co-creation involves tourists' active participation (Antón et al., 2018; Bertella, 2014; Binkhorst, 2007; Binkhorst & Den Dekker, 2009; Cabiddu et al., 2013; Ciasullo & Carrubbo,

2011; Ek et al., 2008; Eraqi, 2011; Grissemann & Stokburger-Sauer, 2012; Haahti, 2006; Ihamäki, 2012; Jager, 2009; Lugosi, 2014; Lugosi & Walls, 2013; Mathisen, 2013; Mehmetoglu & Engen, 2011; Minkiewicz et al., 2014; Mkono, 2012; Morgan, 2006; Morgan et al., 2009; Mossberg, 2007; Neuhofer et al., 2012; Prebensen, Woo, et al., 2014; G. Richards, 2007, 2011; N. Scott et al., 2009; Tan et al., 2013, 2014; Thompson, 2008; Volo, 2009; W. Wang et al., 2011; Zouni & Kouremenos, 2008). In fact, the defining aspect mostly attributed to co-creation is active participation. It is highly consensual that co-creation, which emerges as a new paradigm in the literature, involves the transformation of visitors from receivers to co-creators, from a “passive audience” to “active players” (Baron & Harris, 2008; Payne et al., 2008; Prahalad & Ramaswamy, 2004; Xie et al., 2008).

Co-creation is not the firm trying to please the customer, but it is about joint creation of value by the providers and the customers. Customers are allowed to co-construct the service to suit their needs (Prahalad & Ramaswamy, 2004). They play a more important role than the service providers either in the creation or in the provision of the service, increasing the benefit to the customer (Prahalad & Ramaswamy, 2000). The consumer becomes an actor participating in co-creating value by interacting with the firm that co-shapes his/her expectations (Prahalad & Ramaswamy, 2004). The active role of the customer has been emphasized in many contexts by several authors, which refer to the consumer as a central part in the co-creation of value (Chathoth et al., 2013; Payne et al., 2008; Prahalad & Ramaswamy, 2004; Prebensen & Foss, 2011; Vargo & Lusch, 2004; Wind & Rangaswamy, 2001; Xie et al., 2008). Researchers agree that co-creation needs a consumer who is active in the creation of his/her experience (Prahalad & Ramaswamy, 2004).

This active participation may include, among other features, some kind of interaction of the customer with the space, the physical environment (Antón et al., 2018; Campos et al., 2016; Falk & Dierking, 2016b; Mirghadr et al., 2018), through the contact with objects (e.g. touching objects and, therefore, connecting with the objects on display) or with interpretation means, virtual and non-virtual (e.g. using interactive panels) (H. Chen & Rahman, 2018; Falk & Dierking, 2016b; Minkiewicz et al., 2014, 2016).

The active participation may also involve participating in activities during a certain period, for example, engaging in interactive and “hands-on” workshops and participating in performances (Antón et al., 2018; Kempniak et al., 2017), or in some kind of entertainment (Campos et al., 2016) and, thus, feeling to be more an actor than a spectator (Antón et al., 2018).

Sometimes, this active participation also involves a sensory dimension (Agapito et al., 2013; Schmitt, 1999). Several authors point that environments are multisensory, composed by visual impressions, sounds, tastes and touch (Ackerman, 1990; Agapito et al., 2013; Schmitt, 1999), and highlight the importance of the senses in the construction of the tourist experience. In the experience concept diverse definitions refer senses has crucial to both having and staging the experience (Agapito et al., 2013; Carù & Cova, 2003; Dann & Jacobsen, 2003; Ooi, 2003; Walls et al., 2011).

One facet that is often overlapped with active participation is **co-production**, which involves active participation and can't be disfellowshipped from it. It needs to be clarified that, according to Payne et al. (2008), the two constructs – co-production and co-creation – have been frequently used interchangeably. Historically, the service literature has related the term co-production to the involvement of the customer during the exchange process due to the simultaneous production and consumption characteristic of the service (Bitner et al., 1997) and, according to Lusch and Vargo (2006), the term co-production is connoted with the good-dominant logic. In fact, according to Yen et al. (2004), co-production is used to refer to the “interactive nature of services” occurring when the customer actively participates in the creation of the core offer itself (Lengnick-Hall et al., 2000; Lusch & Vargo, 2006; Ordanini & Pasini, 2008). The term “prosumer” first mentioned by Toffler (1980), referred to one who both consumes and produces the service. Vargo and Lusch (2006, p. 8) also tried to clarify the differences between the two concepts and, in the same perspective, considered that “co-production is a component of co-creation of value and captures participation in the development of the core offering itself”. In the same line, for Ordanini and Pasini (2008), co-production will always be an aspect of co-creation. Customer co-production of the “end” product makes the difference between a service based and a good based transaction (Parasuraman et al., 1985). Co-production occurs through the integration and application of resources both by the firm and by the customer (Payne et al., 2008). Under the service-dominant logic, co-production goes beyond inviting the customer to participate in the process of production or design (Vargo et al., 2008). In a controversial way, “it places the customer explicitly at the same level of importance as the company” in the value creation process (Payne et al., 2008, p. 83). Ramsey White et al. (2009) propose that co-creation occurs when consumers contribute to determining the perceived value of an organisation and its offerings while co-production occurs when consumers actively contribute to the production of goods or services. Consumers and organisations are the beneficiaries of both co-production and co-creation.

In sum, as previously mentioned, there is not a consensual definition of co-production. Several researchers (Bendapudi & Leone, 2003; Chathoth et al., 2013, 2016; Shulga et al., 2015) consider co-production and co-creation almost as synonymous, both reflecting the involvement and the active role of the consumer in producing and consuming value. On the other hand, others regard co-production as a component of co-creation related to the creation of the core offering. Despite the difficulty in establishing the boundaries of the core offering, in the present thesis this last approach will be advocated and co-production will be referred, as mentioned by (Lusch & Vargo, 2006), as a “component of co-creation of value” that “captures participation in the development of the core offering itself”.

Active participation often involves the interaction of visitors with other persons. Due to its relevance, **social interaction** has been considered as another facet of co-creation. In fact, the interaction concept is a key construct in co-creation of experiences (Grönroos, 2011a, 2011b). Interaction is a mutual action where the parts involved have a bilateral influence (Prahalad & Ramaswamy, 2004; Ramaswamy & Ozcan, 2018). Interaction has been, traditionally, considered of main importance to tourism (Prebensen et al., 2016). In services, interactions take place in service encounters. Instead of two processes (provision and consumption of the service) occurring in different moments in time, we have one period where both processes take place simultaneously.

In terms of service-dominant logic, value co-creation is conceptualized as **an interactive process** between the customer and the service provider (Vargo & Lusch, 2004, 2008), but the way customers interact with each other is not always considered (Rihova et al., 2013). Some researchers (Vargo & Lusch, 2008) argue that value is generated, mainly, through interactions between the customers and the service providers; thus, interaction between both parties has a crucial role in helping to create value (Azevedo, 2009; Bertella, 2014; Binkhorst & Den Dekker, 2009; Ek et al., 2008; Ihamäki, 2012; Kreziak & Frochot, 2011; MacLeod et al., 2009; Mathisen, 2013; Mossberg, 2007; Rihova et al., 2013; Tan et al., 2013, 2014; Volo, 2009). According to Matthing et al. (2004), the service providers learn from customers who share with them their needs, preferences, habits, and values (Vargo & Lusch, 2004). Grönroos (2011a, p. 244) considers interaction as a “mutual or reciprocal action where two or more parties have an effect upon one another”. Co-creation is considered as a series of interactions and activities performed by the customer and connecting him/ her with other actors to achieve the desired outcomes (McColl-Kennedy et al., 2012; Payne et al., 2008). In some cases, interaction is considered either as formal (written communication) or informal (oral communication) (Gwinner et al., 2005; Shen &

Ball, 2009; Surprenant & Solomon, 1987). Co-creation can be built on constant and intensive dialogue with other customers, operators, service and content providers and a variety of other partners (Chathoth et al., 2013). Customers use their knowledge and skills in social, dynamic, and interactive relationships with service providers and other stakeholders.

Adopting a service-dominant logic allows the firm to get involved with their customers, taking an active part in the value generation process and fulfilment for customers. During direct interactions with customers, the firms get the chance to engage in their customers' value creation and customers become co-creators of value as well (Grönroos, 2008). Hence, customers are in charge of their value creation and are fundamentally the value creators, during direct interactions and, if the firm makes use of the opportunities of such an interactive process, the firm also co-creates value with the customers. Value co-creation can take place only if interactions occur between parties, for example between the firm and the customer. If there are no direct interactions, no value co-creation is possible; the quality of the interactions between the parties is fundamental for value co-creation (Fyrberg & Jürriado, 2009). In conclusion, with direct interactions between firms and customers, firms get opportunities to become co-creators of value with customers.

Several authors mentioned the social component of interaction in the tourism context and its importance in co-creation, referring the social contacts of tourists with relatives and friends, other visitors, locals, staff and other suppliers present in the context of the experiences (Antón et al., 2018; Campos et al., 2016; H. Chen & Rahman, 2018). Research confirms the relevance of interaction between the parts involved in the process, in the scope of tourism, since tourism has a relevant social dimension (Campos et al., 2018; Carù & Cova, 2015; Falk & Dierking, 2000; Prebensen & Foss, 2011; Rihova et al., 2015). One of the main reasons that motivate consumers to co-create (Pera & Viglia, 2015), social relationships are a social phenomenon and need to be understood as such, since customers co-create their experiences through relationships with other visitors (Carù & Cova, 2007; Falk & Dierking, 2016b; Prebensen & Foss, 2011; vom Lehn, 2006), with friends and family (Minkiewicz et al., 2014) and by interacting with employees/staff (Bitner et al., 1994; Minkiewicz et al., 2014; Simon, 2010; Slåtten et al., 2011), among others. Hence, social contacts can happen between those who are together or those who happen to be in the same place (Patel et al., 2016). Questioning the staff, asking for help, and sharing opinions with other visitors are types of interactions that can occur while traveling (Minkiewicz et al., 2016; Taheri, 2011). Within the literature, there is a general consensus

that interaction between consumers has gained relevance (Minkiewicz et al., 2014; Prebensen & Foss, 2011) and sometimes the social context of the visits is the main aspect remembered in later years (Antón et al., 2018; Campos et al., 2017; H. Chen & Rahman, 2018; Falk & Dierking, 2016b; Kempiak et al., 2017; Minkiewicz et al., 2014, 2016; Mirghadr et al., 2018; Taheri, 2011). Selby (2004, p. 191) referred tourists have been “dynamic social actors, interpreting and embodying experiences, whilst also creating meaning and new realities through their actions”. The social component during travel is an essential output as social interaction helps knowing new people, making new friends or spending time with relatives (Buonincontri et al., 2017). Socialization is already considered as an important motivation in the scope of tourism and, sometimes, social interaction can also contribute to meet other needs and desires of visitors, such as expanding knowledge. However, the potential outcomes of co-creation will be discussed more in-depth in chapter 4. The stakeholders with which the visitor may interact, and the character of these interactions will also be more deeply explored in chapter 3, when talking about the contexts of interaction. Co-creation is thus a process through which organisations and individuals work actively together, interacting with each other, delivering benefits for the several parties involved.

Personalization and **customization** are also considered facets of co-creation. There is not a consensual perspective about these concepts, which make them somehow difficult to delimit. According to some researchers (Minkiewicz et al., 2014; Shen & Ball, 2009), these concepts are unified, and personalization may be defined as “customizing services to an individual customer through the adaptive behaviour of service representatives” (Shen & Ball, 2009, p. 81).

Despite several authors do not establish a clear differentiation between personalization and customization, some literature differentiates them (Arora et al., 2008; Ball et al., 2006; Bettencourt & Gwinner, 1996; Cöner, 2003; Gilmore & Pine, 1997; Kumar, 2007; Montgomery & Smith, 2009; O’Shaughnessy & O’Shaughnessy, 2009). Cöner (2003) states that personalization is performed by the company and is based on adapting contents to users, while customization is performed by the users. According to the author, customization is a form of personalization which is done by the customer (e.g., during a tour guided visit, the guide adapts the visits’ contents to the public).

Sunikka and Bragge (2012, p. 10050) referred to **personalization** as “to offer the right products and services at the right time and in the right place to the right customers”. According to Minkiewicz et al. (2014), personalization may take three forms: (i) tailoring of

the experience (e.g., take some control of their experience, for example experiencing the exhibits in one's preferred manner, using the space in one's own way); (ii) interaction with employees; and (iii) technology and interactive displays personalization (using technology as a personalization tool). Minkiewicz et al. (2014), following the line of Shen and Ball (2009), have a broader perspective of personalization highlighting various dimensions, with one of these corresponding to customization. They are partially in the same line of Gwinner et al. (2005) and Surprenant and Solomon (1987) since the latter consider that one dimension of personalization is the interpersonal adaptive behaviour, where employees may adjust their verbal and non-verbal behaviour to the interpersonal context of the service interaction such as addressing customer by first name, engaging in a small talk, giving personal attention and warmth and displaying a genuine desire to assist him/her. Shen and Ball (2009) also suggest a third way of personalizing interactions with visitors through technology-mediation, also considered by Minkiewicz et al. (2014), such as individualized interactions on websites and/or through the telephone, personalized emails, and customization of websites messages.

In this context personalization has become an important aspect of co-creation due to the diversity of customers' identity and cultural background and to the uniqueness of services (Sugathan & Ranjan, 2019).

Customization has been considered by Eugene Anderson et al. (1997) as the more or less degree of tailoring of the services/products done by the firms to satisfy the different needs of the customers. The desire to personalize products or services to fit them to the individual needs of consumers is, according to Fan and Poole (2006), as old as humanity. Traditionally, customization was in the form of "made to order" products and services (Wind & Rangaswamy, 2001). The aim of customization is to satisfy as many needs of the customers as possible (Fiore et al., 2004; Simonson, 2005) through personalization. Gilmore and Pine (1997) define four basic types of customization: (i) adaptive customization offers standard products that can be changed by the users; (ii) cosmetic customization supplies standard products differently to diverse customers; (iii) transparent customization serves individual customers, with unique goods or services without customers being aware that those products and services have been customized for them; lastly, (iv) collaborative customization leads to dialog with customers in order to make customized products and services for them. According to Wind and Rangaswamy (2001), in customization the customer is an active participant at every stage of the product development, purchase and consumption process, and a co-producer of the product and service offerings. Many firms

now offer highly customized products in a wide range of categories. In some offerings, when customers desire a high level of customization, the production process allows the customization of the product and service offerings at feasible costs (Wind & Rangaswamy, 2001). However, there are some products and services where the customer's needs are best satisfied by product customization, but there may be high costs in the selling price (Wind & Rangaswamy, 2001). In the present study, there will be a focus on customization, where the customer is an active player at every stage of the product development and controls the experiences, having a main role in their development.

Another facet of co-creation is **engagement**, that has been discussed from various perspectives. Engagement is used by some authors as a synonymous of active participation. The literature review reveals that when engagement is related to a behavioural component, involving a physical action, the preferred denomination is active participation (Bertella, 2014; Mathisen, 2013; Minkiewicz et al., 2014; Mkono, 2012). Co-creation of experiences is often mainly associated with the behavioural dimension of the experience, with co-creative experiences being characterized by the presence of behaviourally active people (Bertella, 2014; Larsen, 2007; Minkiewicz et al., 2014; Mkono, 2012; Morgan & Xu, 2009; Prebensen, Vittersø, et al., 2013). The behavioural engagement refers then to the active component of the experience, which may involve doing physical activities such as touching and smelling things (Minkiewicz et al., 2014).

According to Kahn (1990, p. 694), "in engagement, people employ and express themselves physically, cognitively, and emotionally during role performances". Some authors refer that engagement goes beyond behaviour and is also highly associated with the **emotional or cognitive dimensions of the customer** experience (Bowden, 2009; Brodie et al., 2013; Cheung et al., 2015; Fornerino et al., 2006; Harrigan et al., 2017; Minkiewicz et al., 2014; Pine & Gilmore, 1998; Schmitt, 1999). Hence, according to Minkiewicz et al. (2014), engagement is an individual's psychological state of cognitive and emotional immersion in the consumption experience. To immerse, according to the Cambridge Dictionary is "to become completely involved in something" (Cambridge University Press, 2021). Following Black (2012), engagement usually requires a sufficient amount of time to be involved with the activity and implies deep sensory-perceptual, mental and/or affective involvement with the exhibition. Personal interpretation of the contents is required. These two aspects of the experience – emotional and cognitive engagement – correspond to important ways of producing experiences (Carù & Cova, 2007; Minkiewicz et al., 2014; Zatori et al., 2018).

Emotional immersion happens when visitors experience a deep understanding, a feel of personal relevance and connection to the experience, for example, when customers interact with other people (e.g. staff or other visitors), and stories, information and memories are shared (Kempiak et al., 2017; Minkiewicz et al., 2014). Emotional immersion is influenced by customers' state and also by external aspects of the space. According to Payne et al. (2008, p. 92), "For many customers, recreational travel is about making their dreams come true"; travelling involves emotional and experiential aspects. The degree of a costumers' identification with the experience leads to a higher level of emotional engagement. When costumers perceive the experience as unique, a feel of inspiration, pride and wellbeing is raised by engagement and immersive experiences (Prebensen et al., 2018). Thus, it becomes harder to forget those moments, and the intention to recommend the places and to revisit them later on pops up.

In turn, **cognitive engagement** is associated with the desire of acquiring knowledge and learning (Black, 2005; Minkiewicz et al., 2014). Suppliers of tourism services can provoke thought and stimulate curiosity through several approaches such as conveying interesting information and questioning consumers, motivating them to reflect about certain topics and, even, about their own lives (Black, 2005; Minkiewicz et al., 2014). Personal stories are highly recommended in order to stimulate thought and to capture visitors' attention (Black, 2005). Cognitive engagement enriches customers' understanding by gaining information and knowledge (Black, 2012; Doering, 1999).

Behavioural, emotional, and cognitive engagement can be interrelated since some activities and, therefore, behavioural engagement, may elicit emotions and provoke thought, leading to emotional and cognitive engagement. Both elements cannot be separated as they are associated and one can lead to the other (Carneiro et al., 2019). The frequent option of operationalizing co-creation based on **behavioural engagement** will be further discussed in section 3.5.

Figure 2.6 summarizes the facets of co-creation of experiences identified in this section. They are designated as facets since they are not completely exclusive and partially overlap, as may be understood, every time that, for example, active participation requires interaction.

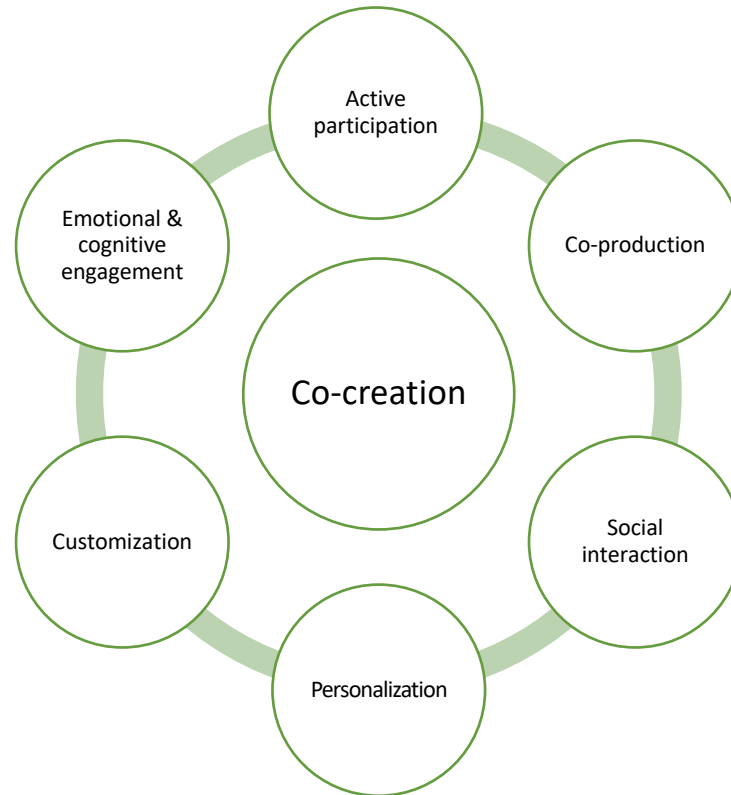


Figure 2.6. Facets of co-creation

Sources: Elaborated based on Antón et al. (2018), Azevedo (2009), Bertella (2014), Binkhorst (2007), Binkhorst and Den Dekker (2009), Cabiddu et al. (2013), Campos et al. (2016), Ciasullo and Carrubbo (2011), Eraqi (2011), Falk and Dierking (2016b), Farsani (2019), Grisseemann and Stokburger-Sauer (2012), Haahti (2006), Ihamaki (2012), Jager (2009); Kempiak et al. (2017), Kreziak and Frochot (2011), Lugosi and Walls (2013), Lugosi (2014), Mehmetoglu and Engen (2011), Minkiewicz, Evens and Bridson (2014), Mkono (2012), Morgan (2006), Morgan et al. (2009), Mossberg (2007), Neuhofer et al. (2012), Prebensen and Foss (2011), Prebensen et al. (2013), Tan et al. (2014), Thompson (2008), Volo (2009), Wang et al. (2011), Zouni and Kouremenos (2008).

The definition of co-creation of experiences adopted in this thesis, built on the literature reviewed, defines co-creation as a process in which “the tourists play an active part in both the production and the consumption of their own experiences” (Neuhofer et al., 2013, p. 291) and in which interaction between all stakeholders is of primary importance, with consumers being described as co-creators of value (Li & Petrick, 2008) through active participation, co-production, social interaction, personalization, customization and emotional and cognitive engagement.

2.4. Conclusion

This chapter highlighted two different concepts that emerged in tourism research in the last decades. First, the growing relevance of **experiences**, namely in the domain of tourism

attractions, in which visitors increasingly seek for more participatory and interactive experiences, is discussed. The study of the experience **concept evolved** from a simple definition where the personal occurrence of an emotional state associated emerged to a more complex definition where many elements involved the consumer in emotional, physical, intellectual, and spiritual levels. The first definition was presented by Cohen (1979) and since then several researchers have identified other key aspects of the concept.

The literature review indicates that despite the different approaches proposed by researchers some **common aspects** still exist. Researchers agree that even if experience is individual and subjective, it is an amalgam of different components and involves customers at different levels. Also, the active participation and the connection with the event are considered to be at the center of experiences. Nowadays, experiences are an important way to add value and to create sustainable competitive advances. The emotional, physical, spiritual and /or intellectual involvement perceived by the tourists leads to different emotions. The consumption experience can be divided in three major stages related to the pre-purchase stage, the on-site stage, and the post-visit stage. Despite the increase of studies concerning this topic, it is concluded that **further research** is needed in these areas due to the subjectivity and complexity of the concept.

The second concept discussed in the present chapter is **co-creation**. As the above discussion indicates, there has been also a growing research and managerial attention to co-creation as customers want to be active players, in the tourism system, interacting with environment, other consumers and objects. Co-creation is related to the core of service-dominant logic where value is created by the user. The visit experience is a dynamic process, with different stages, where co-creation can happen. Despite all the research on co-creation, there is not a universally accepted definition of the concept nor a consensus regarding its facets. Even though, the literature review made possible to identify several facets of co-creative experiences, such as active participation, co-production, interaction, personalization, customization, and emotional and cognitive engagement. Apart from behavior engagement, co-creation may involve customer emotional and cognitive engagement, leading visitors to experience a deep understanding and a feel of personal relevance and connection to the experience.

In the next chapter co-creation of experiences of visitors with disabilities in museums will be analysed in order to ascertain the relation established between museums and visitor with disabilities and the way visitors co-create in these cultural spaces. It starts with an overview

about museum definition and about its functions, finishing with the subject of co-creation in museums in different contexts. The literature which sheds light to these concepts will be explored in order to understand the challenges museums are facing nowadays, specifically regarding the aforementioned visitors.

3. Co-creation of experiences in museums by PwSI

“I choose not to place ‘DIS’, in my ability.”

Robert M. Hense

3.1. Introduction

In the previous chapter, some important concepts related to the thesis were analysed. Even if both concepts, experience, and co-creation have emerged in the last decades, the review revealed some limitations that could be addressed by future research.

The context of this thesis are museums, and the aim is to understand co-creation of experiences in museums for the general public and people with sensory impairments. Museums as important cultural attractions have become an essential component in constituting attractiveness and competitiveness to tourism destinations (H. Kim et al., 2007).

The aim of this chapter is to review the concept of museum and museums’ functions, as museums’ space and functions have changed since their begin.

After the critical review of the museum concept and functions, a discussion focused on people with disabilities will follow. Then, cocreation of experiences in museums for the general public, including people with sensory impairments, is discussed, by analysing how co-creation may occur in different museum contexts.

3.2. Definition and functions of museums

The growth of museums, viewed as a symbol of the Western society since the Renaissance (G. Hein, 2002), was the manifestation of the idea of the universality of culture of the bourgeois class. Museums, in an ample meaning, are as old as history and they exist since Humankind began to collect and store objects for gods or himself. The word “museum” has its **origin** in the Greek word “*museum*”, the religious, contemplative “seat of the Muses” and, after passed into Latin, it acquired its present spelling while the original meaning remained (Kiefer, 2000; Yale, 2004).

Falk and Dierking (2000, 2016b) mention that museums, since the earlier times in their history, were created to preserve things considered valuable and precious. In the **modern sense**, museums were developed in the seventeenth century and, in 1682, the term “museum” was first used, describing the collection of strange, rare, and exotic things that a gentleman, Elias Ashmole, gave to the University of Oxford (Ambrose & Paine, 2018). At that time, its position concerning the public was one of superiority (Weil, 1990). Museums were developed for experts, excluding most of the population.

It was only by 1990 that museums had to carry out the greatest changes due to technological advances and different concepts were introduced such as value, performance management and commercialization (Foley & Mcpherson, 2000). **Twenty-first century museums** face several challenges since the global financial crisis in 2007/8, public subsidy has caused reductions in public funding. Museums were forced to generate their revenues and become dependent on the consumers’ buying power caused a pressure to increase visitors’ numbers and income (Black, 2012; Goulding, 2000; Taheri, 2011; Van Aalst & Boogaarts, 2002). Lack of supports, lack of funding, lack of clear policies and lack of institutional goals (Black, 2005, 2012; Goulding, 2000; Hooper-Greenhill et al., 2000; Taheri, 2011) are, among other, some of the potential problems the 21st century museums have to deal with.

According to the Dictionary of the English Language published in 1755, it was important to keep and care “learned curiosities” and a museum was a building used for the storing and exhibition of objects illustrating antiquities, natural history, arts, among others. From “simple repository of learning curiosities” (Yale, 2004, p. 22), museums became the **center of cultural tourism** (G. Richards, 1996) and one of the most popular cultural attractions, providing a wide range of benefits for communities (Ambrose & Paine, 2018).

The **definition of museum** is dynamic and has evolved in the last century, alongside society, being updated according to the changes of the community that it serves (ICOM, 2018). Defining the museum has been one of the concerns of ICOM (International Council of Museums), a nongovernmental organisation linked to United Nations Educational, Scientific and Cultural Organization (UNESCO), since its founding in 1946. The ICOM’s definition is of core importance in the museum legislation of different countries. The essence of museums are objects, and, despite the different typologies of museums, all have a common denominator – they all make a unique contribution to the public by collecting, preserving, and interpreting things of this world (Ambrose & Paine, 2018; Black, 2005, 2012;

Falk & Dierking, 2016a). The first definition of museum suggested by the ICOM in 1946, referred that museums include all collections open to the public, of artistic, technical, scientific, historical or archaeological material, including zoos and botanical gardens, but excluding libraries, except in so far as they maintain permanent exhibition rooms (ICOM, 2018).

Ten years later, in 1961, the purpose of **education and enjoyment** was added by ICOM with museums being recognized “as any permanent institution which conserves and displays, for purposes of a study, education and enjoyment, collections of objects of cultural or scientific significance”. Since then, minor changes have been introduced, although the purpose of preserving and studying was a common element in all the definitions formulated by ICOM.

The last ICOM definition was adopted by the 22nd General Assembly in Vienna, Austria, in 2017: “A museum is a non-profit, permanent institution in the service of society and its development, open to the public, which acquires, conserves, researches, communicates and exhibits the tangible and intangible heritage of humanity and its environment for the purposes of education, study and enjoyment” (ICOM, 2017, p. 46). In this definition, several levels of purposes are referred: first, museums are “in the service of society and its development”; second, museum purposes are education, study and enjoyment (ICOM, 2017). Another aspect that differs from the previous definition is the fact that also intangible heritage is referred.

Due to the fast changes that have been occurring in society and in museums principles, policies and practices, the ICOM museum definition seemed, no longer, to reflect the principles, vision and responsibilities of today’s museums (ICOM, 2019). A **new museum definition** was proposed to be voted during the Extraordinary General Assembly (EGA) that took place on September 2019: “Museums are democratizing, inclusive and polyphonic spaces for critical dialogue about the pasts and the futures. Acknowledging and addressing the conflicts and challenges of the present, they hold artefacts and specimens in trust for society, safeguard diverse memories for future generations and guarantee equal rights and equal access to heritage for all people. Museums are not for profit, they are **participatory** and transparent, and work in active partnership with and for diverse communities to collect, preserve, research, interpret, exhibit, and enhance understandings of the world, aiming to contribute to human dignity and social justice, global equality and planetary wellbeing”. This definition was not accepted and sparked controversy leading to the request to postpone

vote. Some of the causes of complaint from a number of organisations were that this new proposal was not a new definition but a statement of fashionable values or a political manifesto (Gould, 2019).

At **national level**, in the definition proposed by the Museums Association (MA), the oldest museum association in the world, located in United Kingdom, it was mentioned that “museums enable people to explore collections for inspiration, learning and enjoyment. They are institutions that collect, safeguard and make accessible artefacts and specimens, which they hold in trust for society” (Goskar, 2016). In the United States, the American Alliance of Museums, previously designated as American Association of Museums, is a non-profit association that has arose museums together since 1906, the date of its foundation. This important association is a vital part of the American Museums. In 1972, the American Alliance of Museums referred to financial aspects and human resources in its definition by characterizing a museum as an organized and permanent non-profit institution, essentially educational or aesthetic in purpose, with professional staff, which owns and utilizes tangible objects, takes care of them and exhibits them to the public on some regular schedule (American Association of Museums, 1972). Later, in 2011, this American association argued that museums make their unique contribution to the public by collecting, preserving, and interpreting the things of this world. They consider both governmental and private museums of anthropology, art, history and natural history, aquariums, arboreta, art centers, botanical gardens, children’s museums, historic sites, nature centers, planetariums, science and technology centers and zoos that, although diverse in their missions, have in common their non-profit form of organisation and a commitment of service to the public.

Even if the museums definition is under an updating process, there is a concern that it should keep the focus in the unity and interconnectivity of the multiple functions of a museum: acquiring, conserving, researching, communicating and exhibiting heritage (ICOM, 2018).

The **definition adopted** in the thesis is the aforementioned current ICOM definition of museum: “a museum is a non-profit, permanent institution in the service of society and its development, open to the public, which acquires, conserves, researches, communicates and exhibits the tangible and intangible heritage of humanity and its environment for the purpose of education, study and enjoyment” (ICOM, 2017, p. 47). This definition was found appropriate since it encompasses the several functions of museums, focusing on people,

and on their learning and enjoyment, rather than just on research and collection. Joining together educational and cultural activities with the help of digital means and new technologies have become essential to the 21st century museums and to the visitor who become more active and participative in the visit process (Van Aalst & Boogaarts, 2002).

Nowadays, museums vary tremendously in their size, purpose and public (Ambrose & Paine, 2018) and are expected to respond to their audience (Watson, 2007). Museums perform a very important role in attracting tourists due to the functions they hold (Hsieh et al., 2015). Museums are important places for obtaining information and increasing knowledge, and their **functions** evolved from an initial focus on the collections, namely on acquiring and conserving objects, to the provision of other services for visitors (Mirghadr et al., 2018).

Hence, Yale (2004) identified **three major functions** of museums: (i) collecting; (ii) education; and (iii) entertainment, all interrelated.

As said before, one of the museums' main purposes, since the beginning, involves conserving and exhibiting **collections**. However, thinking of museums simply as repository of collections can lead to problems, such as a surplus of objects that can't be displayed and that are expensive to store (Yale, 2004). The educational role of museums is widely recognized since the 19th century and is still vital nowadays. However, during much of the 20th century, the educational function came in second place after the function of conserving and exhibiting objects (Black, 2005). Today, one of the major functions of the museum is to use its collections and objects for enabling learning. Despite education is now considered a main function of the museums, they are trying to stimulate different forms of learning, such as live interpretation, guided talks and walks, sound and light shows, and learning supported by different technologies (e.g. audio-guides, audiovisuals, virtual and augmented reality, tablet/mobile phone apps, virtual reality simulators), different from the traditional ones, which were based on several rules and obligations (Ambrose & Paine, 2018; Black, 2005; Falk & Dierking, 2016b).

In contemporary society, one of the main roles of museums is indeed to be a place of **education**, a source of civic pride and a place to improve social behaviour and to encourage a sense of community by sharing time with friends and strangers that have similar interests (Ambrose & Paine, 2018; Stephen, 2001). These institutions have acquired a public role with the goal of benefiting a wider public, what forced these spaces to change the relationship they have with customers, promoting feelings of relevance and encouraging

consumer participation (Sweet, 2007). Although the protection of the site or collection remained the priority of museums, there has been an increasing pressure to change the way the collections are presented to the public (Black, 2005; ICOM, 2013). Museums are no longer simply exhibition spaces; rather they have become sites where people participate, interpret, and buy, rather than just visit, and become educated (Edson & Dean, 1994; McPherson, 2006). In fact, the commercial function has become an opportunity to increase the income generated by visitors as, today, visitors are the target (Van Aalst & Boogaarts, 2002). Hence, traditionally, museums are viewed as partners in curating public education, having evolved from collectors and preservers of objects to places where people learn and interact, and that contribute to civic enlargement.

According to Yale (2004), there are several ways for visitors to learn beyond examining collections, such as museum publications, loan services, libraries, lectures, exhibitions and improving interpretation, among others. Learning requires prolonged and meaningful user engagement (Ambrose & Paine, 2018; Black, 2005; Falk & Dierking, 2016b; Simon, 2010). Learning, according to some authors, is both a process (how we learn) and an outcome (what we gain); it is not just about contents as it includes experiences and emotions (Ambrose & Paine, 2018).

The broader public role of museums also includes **entertainment**, which contributes to increase the value of these institutions within the contemporary society (Stephen, 2001). Education and culture become deeply related with commerce and entertainment (Van Aalst & Boogaarts, 2002). The idea that “learning is fun” has become part of museums since they become part of the amusement industry (Van Aalst & Boogaarts, 2002) and they will become hybrid places, allying learning with entertainment in order to fulfil their mission (McPherson, 2006). Black (2005) argues that it is important to provoke thought, to increase and motivate visitors in a funny way. There are many ways to learn, and nowadays interactive exhibits become common in museums. A huge number of devices exist in order to offer a better experience to those who visit museums. Computer games, clothes to try on and jigsaws, touch screens and trackballs, are among some of the interactive tools that can be used to help learning with pleasure (Ambrose & Paine, 2018; Van Aalst & Boogaarts, 2002). Falk and Dierking (2016b) refer that both the community inside and outside the museum dichotomize the reasons for visiting a museum: fun or recreation and, on the other hand, education, or learning. Nevertheless, this argument, according to some authors, is false, since several visitors see both learning and fun as important reasons to visit a museum (Falk et al., 1998; J. Packer, 2006; Sickler & Fraser, 2009). Having museum

experiences that are entertaining and enjoyable does not mean minimizing the experience or the mission of the institution (Falk & Dierking, 2016b). Entertaining experiences in museums actively engage the visitors both intellectually, emotionally, and physically by leading them to get involved in the exhibitions by touching objects, posing questions, manipulating machines, smelling an environment and hearing sounds (Falk & Dierking, 2016b).

Immersive environments have been designed to respond to the demands of new users who want to actively participate in the construction of their own understanding of the context of visit. Liu (2008) argues that visitors want to **participate interactively** in the visit and, within the literature, is consensual that visitors can learn and have fun at the same time (Taheri, 2011). Kotler (2001, p. 418) points that one observable trend in contemporary museums “is a growing attention to sociable, recreational and participatory experiences that redirect the traditional and singular focus on collections and exhibitions”.

It is not only important to know the main functions of museums, but also that the way of implementing these functions has evolved across the time. Hence, additionally to the fact that some functions assumed more importance across time, the implementation of these functions (e.g., education) has known modifications. Nowadays, museums maintain their inner functions, like protection of their collection, but must concentrate more on the way these collections are explored to provide valuable experiences to visitors (Hooper-Greenhill, 1999). Leinhardt et al. (2011) argue that, firstly, museums are leading institutions for learning that represent a special kind of sociocultural institution. Museums facilitate learning about societal subjects like culture, history, society, and science (Dierking & Falk, 1998). The new perspectives on learning have not emerged suddenly. They resulted from several reflections made across the years, some of them incorporated in different kinds of bibliography, such as some key reports that recognize the **importance of the museums** to the society (Black, 2005, 2012), presented in table 3.1.

Table 3.1. Key reports on the importance of museums to society

Key reports
America’s Museums: The Belmont Report (American Association of Museums) (1969)
Museums: Their New Audience. A Report to the Department of Housing and Urban Development by a Social Committee of the American Association of Museums (American Association of Museums) (1972)
Museums, Imagination and Education (UNESCO) (1973)
Museums for a New Century: A Report of the Commission on Museums for the New Century (American Association of Museums) (1984)
Excellence and Equity: Education and the Public Dimension of Museums (American Association of Museums) (1992)
A Commonwealth: Museums in the Learning Age (DCMS, 1997)
Learning Power of Museums (DCMS, 2000)
Mastering Civic Engagement: A Challenge to Museums (American Association of Museums) (2002)
Annual Report (Museums Association, 2007)
Annual Report 2017 (ICOM, 2018)

Source: Elaborated based on Black (2005, 2012) and American Association of Museums (2018).

In the United States, the “America’s Museums: The Belmont Report” focus on the conditions and the needs of the American Museums and request the Federal recognition of the Museums’ Educational Role (Fleming, 1967). In the UK, the increase of the importance of education in museums can be attributed to the publication “A Commonwealth”, the establishment of the “Campaign for Learning in Museums” and to the election of the New Labor Government with Tony Blair speech in 1997, which emphasizes education and the increase of social inclusion (Black, 2005). Both functions, education and social inclusion were stated in the “Learning Power of Museums: A vision for Museum Education” (Department for Culture Media and Sport, 2000) publication, where key objectives and

areas of action were identified. In that publication it was explicitly stated that “The Government believes that education is central to the role of Museums” (DCMS, 2000, p. 4). According to these reports, “life-wide” and “**lifelong**” **learning** must become a central function of museums.

The challenge for the 21st century museums is to provide an environment in which visitors can increase their knowledge. Learning is a process of active engagement (MLA - Modern Language Association, 2001), in which most of what is learnt comes from doing, from active participation. In this context, to learn, people need to do and see rather than to be just told (G. Hein, 2002). Museums are no longer cellars of collections, but places that provide attractive and interesting experiences, including education and learning (Mirghadr et al., 2018). Among its traditional functions, the contemporary museum thus encourages a range of **experiences** that provide recreational, cultural, and educational benefits and that have potential to develop social capital (Kingham & Willis, 2008). The users are now engaging with museums in different ways: physically, online and through mobile applications (Kelly, 2010). Exhibitions are designed with more interactive and flamboyant areas, along with areas that are quieter and contemplative (Falk & Dierking, 2016b) and the activities are created for enjoyment and education purposes (J. Barr, 2005; Bourgeon-Renault et al., 2006; Dewey, 1980; Falk & Dierking, 2000; Taheri, 2011). Museums are becoming extremely sensory, and visitors are overloaded with sights, sounds, smells and motion (Black, 2012; Falk & Dierking, 2000, 2016b; Taheri, 2011). The museum space design can be a facilitator of the experience and influence visitor behaviour, being unpressured and open-ended, sensory, safe for experimentation, impacting on the emotions and on the intellect, and creating diverse stimuli and responses (Falk & Dierking, 2016b).

As the above discussion indicates, museums today are facing an enormous challenge due to the changes that occurred in society. These transformations occurred at different levels: first, the cuts of budgets forced museums to adopt new strategies to generate their own revenues; second, the increase of facilities in the leisure sector forced museums to adopt new ways to attract visitors; third, visitors want more participative experiences, in which they can mix educational and entertainment functions (Van Aalst & Boogaarts, 2002). The functions of museums evolved, and specially education and entertainment should be carried out in order to allow audience engagement and offer satisfying experiences (Black, 2012), considering the services that museums provide to visitors. Later, in section 3.2, the way museums functions are carried out will be discussed. The growth of the cultural, social, educational value of museums makes museums one of the most important tourist

attractions worldwide. One of the actual concerns must be the equal accessibility of these important cultural places for all, as we will see later on.

3.3. People with disabilities

People with disabilities (PwD) are one of the most **marginalized group**, which results in poorer health outcomes, lower education, less economic participation and higher rates of poverty for this group than non-disabled people (Jacob, 2005; WHO, 2015; WHO & The World Bank, 2011).

Even if disability is considered a minority issue for most of the people, PwD represent 15 per cent of the population, which means that over 1 billion people, live with some form of disability, 20% of whom live with great functional constraints in their daily life (Shakespeare, 2018; The World Bank, 2018; WHO, 2021).

A “Visual impairment occurs when an eye condition affects the visual system and one or more of its functions” (WHO, 2019, p. 10). According to WHO (2019) approximately 2.2 billion people have a near or distance vision impairment.

Hearing loss has often been referred as an “invisible disability” and represents the third largest disability that affects people of all ages. Someone with a hearing impairment is someone that is affected by hearing loss as soon as he loses 20 decibels. According to WHO (2021) considering deafness and hearing loss, 466 million people currently experience some degree of hearing loss, which represents 6% of the world population.

About 450 million people have an intellectual disability (IQ below 75), and 75 million people need a wheelchair on a daily basis (WHO, 2019).

Almost everyone will be affected by a disability at some point in life, temporarily or permanently. Therefore, almost everyone has a relative and /or friend with a disability. Length of life and, therefore, older people, are increasing throughout the world which can be associated with more illness, disability and dependency. The number of people aged 65 or more is estimated to grow from 562 million (or 8.0 percent) in 2015 to nearly 1.5 billion in 2050, with most of the increase in developing countries (He et al., 2016). Despite the oldest population profile being in the more developed countries, it is in the less developed countries that the most rapidly aging population occurs with the number of older people expected to increase more than 250 percent, compared with a 71 percent in developed

countries (WHO, 2007). There is an important relationship between ageing and rates of disability (Uhlenberg, 2009; WHO & The World Bank, 2011).

Some reasons why it is so **difficult to carry out studies** on PwD are: (i) more than half of those who could be defined as disabled, do not think of them as disabled due to the stigmatized identity of the condition; (ii) the existing disabilities are diverse; (iii) approaches to measuring disability are not the same in all countries and (iii) cultural stereotypes exist, as well as the tendency to generalize some aspects of disabilities (Shakespeare, 2018).

When talking about PwD, **three concepts** must be analysed: disability, impairment, and handicap (Burnett & Baker, 2001; Poria et al., 2009; Shakespeare, 2018). Usually, these terms are used interchangeably in common sense.

Disability results from an impairment and is a restriction or lack of ability to perform an activity. The words “disability” and “disabled” both describe functional limitations that can affect daily life activities such as walking, learning and breathing, among others (Disabled World, 2020). Disability is a complex, dynamic and multidimensional concept that has been studied in different fields such as social and health sciences. A disability, according to Disabled World (2020), is defined as a condition or function that is impaired in terms of the usual standard of an individual or group. It refers to individual functioning, such as physical, sensory, cognitive or intellectual impairments, as well as various types of chronic disease. Disabilities are diverse and heterogeneous but, for many people with stereotypical views, PwD are only wheelchair users and other groups such as blind or deaf people. Health conditions related to disabilities may have different characteristics, since they may be: (i) visible (e.g. restricted growth or phocomelia – a congenital condition causing limb defects, associated with the use of drug thalidomide in pregnancy, cerebral palsy, Down syndrome) or invisible (e.g. epilepsy, depression or heart disease); (ii) temporary or long term; (iii) static, episodic or degenerating; and (iv) painful or inconsequential (World Health Organization & The World Bank, 2011). The PwD group covers children born with cerebral palsy, people with physical, sensory and learning difficulties or mental health conditions, as well as persons who experience difficulties in functioning due to a huge range of conditions such as noncommunicable and infectious diseases, neurological disorders, injuries, and conditions that result from the ageing process and people with chronic illnesses (Deville, 2009; Shakespeare, 2018; WHO, 2011, 2015). Some of the disabilities are more visible than others and the latter group is often ignored, even being among the most common forms of disabilities (Shakespeare, 2018).

Lately, the terms “disability” and “disabled” have been going through changes due specially to the US and UK right movements. According to the purpose of data collection or according to classifications used, **definitions of disability can vary** (Buhalis & Darcy, 2011; WHO, 2015, 2019, 2020). The aim of WHO revision through the development of a universal classification system is “to establish a common language for the area, provide a scientific basis for comparative data collection and provide a systematic coding scheme for health information systems” (Buhalis & Darcy, 2011). In the last revision of the International Classification of Functioning, Disability and Health (ICF), done by World Report on Disability (2011), disability is an interaction between health conditions and contextual factors (attitudinal and environmental barriers). This subject will be discussed later in this section.

Impairment is any loss or abnormality of psychological, physiological or anatomical structure or function (Poria et al., 2009; WHO, 2016; WHO & The World Bank, 2011).

A **handicap** is a disadvantage that limits a person, preventing the fulfilment of a role that is normal for that person (Disabled World, 2020). The word “handicap” started to be used in 1915 and, in certain countries like UK and US, it is employed to connote people with a range of impairments. With the rise of the disability rights movement, the term “handicap” became an inappropriate word for referring those with any kind of disability (Ralph, 2017; Shakespeare, 2018).

The way society faces PwD and how people designate them has also **evolved over time**. Nowadays, traditional disability words like “handicapped”, “crippled”, “invalid”, “retarded”, “spastic”, “deaf and dumb”, “mad”, “crazy” or “psycho” are not acceptable since they are considered offensive. As said before, it is important, in the disability terminology debate, to put people as persons first (e.g. “people with epilepsy” instead of “epileptics”, “people with visual disabilities” instead of “visual disabled people”) (Ralph, 2017; Shakespeare, 2018). Nevertheless, the choice of some organisations and researchers to designate this group can vary depending on the focus they want to put on the problem, so we can have “person with disability” because it emphasizes the person rather the disability or “disabled person” because it refers that the person is disabled by society (Goodall et al., 2004). The most common, however, is to consider the person first and then the medical condition. For the same reason, institutions and researchers (Bergier et al., 2010; Devile & Kastenholz, 2018; Lyu et al., 2013; McKercher & Darcy, 2018; WHO & The World Bank, 2011), adopted the term “people with disabilities” and “disability”. The term disability is understood as encompassing the positive and negative aspects of functioning from a biological, individual

and social perspective and reflects the interaction between health condition, environmental and personal factors (WHO, 2001).

To understand the topic, it is essential to understand the different models of disabilities, each means the way society understood disability and the way they have historically and socially evolved (Ralph, 2017). It is not easy to talk about disabilities as the thinking on disability changes over time and even for disabled people there is no consensus on the way to understand disability. The models of disability are, somehow, used to refer who in the society is disabled and who is not disabled. These changes shaped what is acceptable or not when talking about or to PwD. It is important to understand that who is disabled today has change according to the different models of disability. Even if there are a huge number of models of disability, in the present study, only three approaches will be discussed. These approaches correspond to **three models**, which are currently used to conceptualize the subject: impairment (medical model), functional (social model) and ecological (biopsychosocial model) (Balakrishnan et al., 2019; Barnes & McPherson, 2019; Buhalis & Darcy, 2011; Poria et al., 2009; Shakespeare, 2018).

The **medical model** considers disability as an individual medical condition, which requires medical intervention and lies in the individual's body or mind (Balakrishnan et al., 2019; Figueiredo et al., 2012; WHO & The World Bank, 2011). Medical intervention is required in the form of personal treatment to normalize his/her disabled body (Buhalis & Darcy, 2011). In this model, the environment and social factors are neglected, and health care is the issue and the focus of intervention is at the political level (Buhalis & Darcy, 2011). The term "the handicapped" is a key word from the medical lexicon together with "the blind" to refer to disabled or blind people. This model branched into other models that consider disability as a tragedy and something to be pitied (Ralph, 2017).

In 1970s and 80s, PwD started to develop and demand for a new way of thinking, namely the social model. The social model was born of a disability rights movements, in the UK. By this approach persons are disabled by society; they may have an impairment, but they don't have a disability (Ralph, 2017). This **social model** highlights the existence of obstacles to functioning and participating in society. In this case, it is the complex number of social environments and attitudes imposed by society that excludes disabled people from daily participation (Buhalis & Darcy, 2011). People are disabled by society and the ableist structures and systems; they have impairments, but it is barriers that disable them (Ralph, 2017). Therefore, the model focus on social responsibility and on the inclusive society. As

pointed by some authors, impairment is an individual condition while disability is also a social condition (Fontes, 2009; Shakespeare, 2018) and, since the issue is ideological, it must be placed on the political, economic, social and attitudinal agendas (Buhalis & Darcy, 2011).

With the social model, new strategies of social transformation became a priority, as well as removing barriers to promote inclusion and replacing the negative connotation of the condition felt by PwD (i.e., it was society that was at fault, not themselves, rather than demeaning charity, PwD should demand their rights) (Shakespeare, 2018). With this social model, the idea that people are disabled by society, rather than by their bodies, was established (Shakespeare, 2018).

The last perspective is based in the **biopsychosocial model**, which recognizes that disability is an interaction of biological, social, environmental, cultural, and economic factors (Balakrishnan et al., 2019) and that both individual and environmental conditions should be taken into account to address disability and promote accessible activities and adequate public policies. According to this model, disability is regarded as an outcome of the interaction of impairment, activity limitations, and participation restriction in a certain environment (Balakrishnan et al., 2019; Poria et al., 2009; WHO & The World Bank, 2011). Thus, if the environment poses no restrictions, having an impairment does not mean that a person is disabled (Engel, 2012; Fontes et al., 2014; Kastenholz et al., 2015; Poria et al., 2009). Disabilities are considered, by several researchers (Balakrishnan et al., 2019; WHO, 2011), as dynamic interactions between health conditions and contextual factors that include attitudinal and environmental barriers. Being a mix of the biomedical and biosocial models, the biopsychosocial model was developed by George Engel and John Romano in 1977 and considers biological, psychological, and social factors and their interaction in health, illness and health care delivery (Balakrishnan et al., 2019; Poria et al., 2009; World Health Organization & The World Bank, 2011).

In the present study, the **biopsychosocial model is adopted** as it represents the compromise between the medical and social models. This is also the model adopted by the ICF as it understands disability and functioning as an interaction between health conditions and contextual factors (personal and environmental). Thus, according to that international classification (WHO, 2001, p. 220), health conditions “is an umbrella term for body function/structure, activity limitations or participation restrictions” and replaces disability conditions. This classification system and model of disability (referred as ICIDH-2 or ICF)

relates to health domains, as well as health related domains (WHO, 2001). Adopted by WHO as the framework for measuring health and disability at both individual and population levels, it changed the classification to “Body Function/ Structure, Activities and Participation”. This new perspective materialised in the publication of ICDH-2, recognizes disability as a result of the interrelation between body functioning, body structures, activities and participation as well as personal and environmental contextual factors (Figure 3.1) (WHO, 2001).

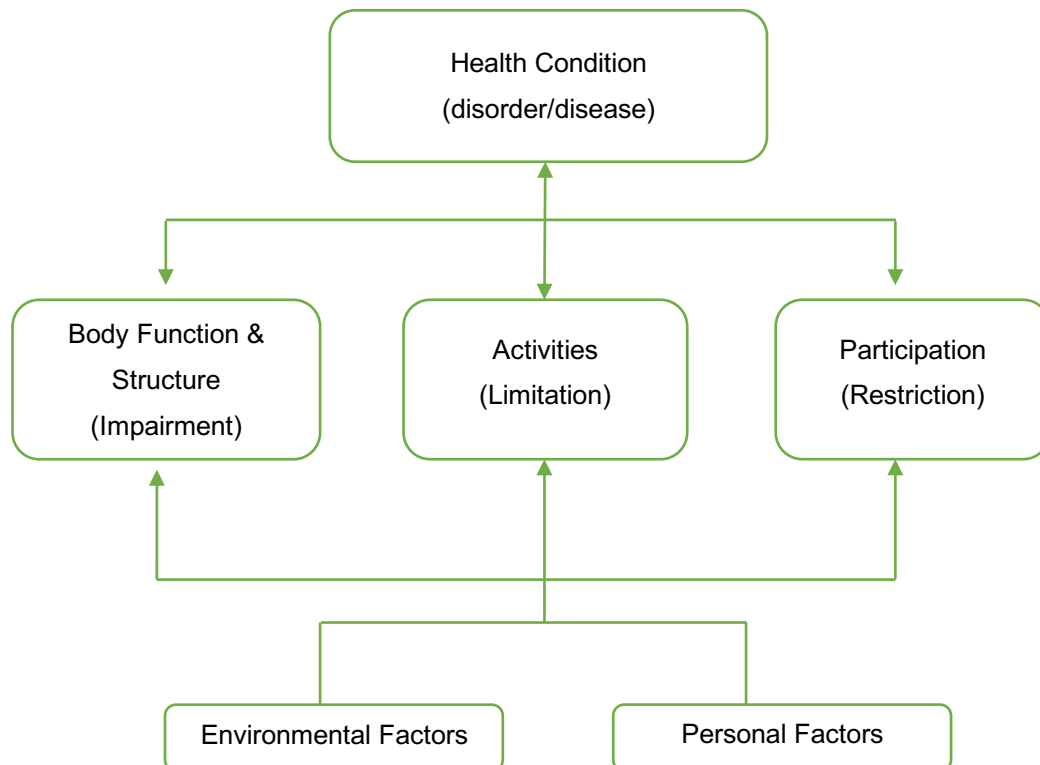


Figure 3.1. ICF Classification

Source: World Health Organization (2011).

The aims of the **ICF classification system** are (i) to provide a scientific basis for understanding health and health related states, outcomes and determinants; (ii) to establish a common language for describing health and health related states; (iii) to permit comparison of data across countries, health care disciplines and services among other aspects; and (iv) to provide a systematic coding scheme for health information systems (United Nations & Escap, 2008). Developed by a large number of academics, clinicians and PwD, the ICF classification overrides the previous International Classification of Impairments, Disabilities, and Handicaps (ICIDH). The main difference between the new

classifications and the previous one is the highlight of environmental factors in creating disability. The ICF is organized in two components:

- Functioning and disability – body functions and structures (impairments, which include problems and alterations in body functions and structures, like paralysis, blindness or deafness, that can be temporary or permanent; progressive, regressive or static; intermittent or continuous), activities limitations (walking or eating) and participation restrictions which are problems with any area of life like discrimination;
- Contextual factors – environmental factors and personal factors.

Based on the medical conceptualizations of the health conditions, disorders and diseases, the system remains controversial among specialists, and it identifies the aspects that act as facilitators or obstacle for people in physical, social or attitudinal environments (Table 3.2) (WHO, 2001, 2011).

Disability is a **multidimensional concept** and due to its complexity, its measurement is quite difficult. The way disability is measured varies from country to country, which influences the results; most of the times, the different types of disabilities are defined using only one of the aspects of disabilities which pose difficulties in determining their scope (WHO, 2015). Disabling conditions can be congenital or acquired with either acute or insidious onset; they may be degenerative over time or due to a single event (Yau et al., 2004). The tendency to generalize can cause problems as there are significant differences among the several kinds of disability (Buhalis & Darcy, 2011; Darcy et al., 2010).

Disability **data improvement** is needed in quest to better understand the barriers these groups face during their daily life or when participating in tourism activities or other (Yau et al., 2004). The use of a standard classification as ICF, the international framework mentioned before, is advisable in order to provide a standard for health and disability statistics and helps to homogenize approaches between sources, provided by countries, of disabilities data (World Health Organization, 2015). According to the Practical Manual for using the International Classification of Functioning, Disability and Health (ICF) (WHO, 2013), information concerning disabilities should be shared among countries and should be collected from different sources like statistical and administrative data from governmental agencies, reports produced by governmental bodies, international organisations, nongovernmental organisations or PwD organisations, as well as from academic journals.

Table 3.2. The International Classification of Functioning, Disability and Health

	Functioning and Disability		Contextual Factors	
Components	Body Functions	Activities	Environmental Factors	Personal Factors
	Physiological aspects of the body and Body Structures (anatomical structures)	Actions and tasks executed by individuals and Participation (involvement in life situations)	Physical, social and attitudinal environment in which people live and conduct their lives	Gender, age, race, lifestyle, habits, education and profession
Domains	Body Functions Body Structures	Life areas (tasks/actions)	External influences on functioning and disability	Internal influences on functioning and disability
Constructs	Change in body functions (physiological) Change in body functions (anatomical)	Capacity Executing tasks in a standard environment Performance Executing tasks in a current environment	Facilitating or hindering impact of features of the physical, social, and attitudinal world	Impact of attributes of the person
Positive aspects	Functional & structural integrity	Activities participation	Facilitators Resulting performance will be above the expected capacity	Not applicable
	Functioning			
Negative aspects	Impairment (problem in body function and structure such as significant deviation or loss)	Participation restrictions (problems an individual may experience in involvement in life situations)	Barriers Resulting performance will be below his or her capacity	Not applicable
	Disability (umbrella term for impairments, activity limitations and participation restrictions)			

Source: World Health Organization (2001.p.212,213).

Due to the heterogeneity of this market, it is difficult, as said before, to tell exactly the number of disabled people. The World Health Organization provides a **framework** known as the MDS (Model Disability Survey) that intends to help countries understand better the situation of each person, including whether they have mild, moderate or severe disability. This model also supports countries to apply the principles presented at the Convention on

the Rights of Persons with Disabilities and Sustainable Development Goals (CRPD & SDGs) (United Nations, 2006). The MDS is based on the WHO ICF classification.

According to the World Report on Disability (2011, p. 22), “People with the same impairment can experience very different types and degrees of restriction, depending on the context”. In practice, there are several ways to classify different types of disabilities (Buhalis & Darcy, 2011; Darcy, 2002; WHO, 2015; Yau et al., 2004).

Several authors (Balakrishnan et al., 2019; Buhalis & Darcy, 2011) recognize that a large number of disability statistics are collected using the ICF system. As so, in the present study, the main categories of impairment identified by the classification list will be used. The WHO (2001) describes the **main categories of impairment** as being mobility (physical mobility restrictions), sensory (vision, hearing) and communication (speech), intellectual/mental and hidden impairments (comprise a range of illnesses that are not obvious or visible). Yau et al. (2004) argue that disabling conditions involve mobility, vision, hearing, intellectual and psychiatric disorders and may be caused by a single event or being degenerative over time (Yau et al., 2004).

Darcy and Buhalis (2011) refer five major dimensions of disability important for accessible tourism, classified in **three categories**: physical/mobility, sensory and/or cognitive. The first one includes people with varying levels of physical mobility restrictions, affecting legs, feet, back, neck, arms or hands. The second is when the capacity to see is limited or absent, when people are completely deaf or are hard of hearing, or when people have limited, impaired or delayed capacities to use expressive and/or receptive language. Finally, the third includes lifelong illnesses with multiple aetiologies that result in a behavioural disorder (Domínguez, Alén, et al., 2013).

In the last decades, not only designations, as pointed out before, but also **perspectives on disability have evolved**. There has been a radical change in PwD subject since the 1970^s and lives of PwD have been radically transformed in a large number of countries over the last fifty years. Many PwD were segregated, did not work and faced important barriers which lead them to experience several disadvantages (Shakespeare, 2018; WHO, 2011). The human rights have been expressed by the United Nations since 1948 with the “Universal Declaration of Human Rights”. Later, in 1970, disabled people began claiming for a better life and, in 1980, the expression “Disability Rights”, used by activists, grew in popularity (Disabled World, 2020). The planning of the United Nations (UN) International Year of Disabled Persons counted with only a member with a disability, Frank G. Bowe, a

distinguished professor on the study of disabilities, from New York University. He was named the father of Section 504, that in 1990 led to “Americans with Disabilities Act”. In 1981, the International Year of Disabled Person (IYDP) was declared and, 10 years later, the concern about the designations and the new way to talk about this target led to the adoption of the following “**person first**, disabled second”, which means that the term “people with disabilities” should be used instead of “disabled people” (Ralph, 2017; Shakespeare, 2018).

From 1983 to 1993, the United Nations Organization established a “World Programme of Action Concerning Disabled Persons”, adopted by the General Assembly on 3 December 1982, by its resolution A/RES/37/52. This program emphasized the need to approach disability from a human rights’ perspective. The “equalization of opportunities” was the central theme of the World Programme of Action (WPA). Another major outcome of the decade of Disabled Persons (1983 to 1993) was the “Standard Rules on the Equalization of Opportunities for Persons with Disabilities” on December 1993 (A/RES/48/96). These rules are a powerful moral and political commitment of governments to take action to ensure the same opportunities for persons with disabilities.

In the 1995 Persons with Disabilities Act, a person with disability was “a person suffering from nor less than forty per cent of any disability as certified by a medical authority”, with disabilities meaning:

- (i) Blindness – total absence of sight, visual acuity not exceeding 6/60 or 20/200 (Snellen) in the better eye with correcting lenses or limitation of the field of vision subtending an angle of 20 degree or worse;
- (ii) Low vision – means a person with impairment of visual functioning even after treatment or standard refractive correction but who uses or is potentially capable of using vision for the planning or execution of a task with appropriate assistive device;
- (iii) Hearing impairment – loss of sixty decibels or more in the better ear in the conversational range of frequencies;
- (iv) Leprosy cured – any person who has been cured of leprosy but is suffering from loss of sensation in hands or feet, as well as loss of sensation and paresis in the eye and eye-lid but with no manifest deformity, manifest deformity and paresis, but having sufficient mobility in their hands and feet to enable engage in normal economic activity or extreme physical deformity, as well as advanced age which

prevents him from undertaking any gainful occupation, and the expression “leprosy cured” shall be construed accordingly;

- (v) Loco motor disability – disability of the bones, joint muscle leading to substantial restriction of the movement of the limbs or any form of cerebral palsy);
- (vi) Mental retardation – means a condition of arrested or incomplete development of mind of a person which is specially characterized by sub normality of intelligence;
- (vii) Mental illness – means any mental disorder other than mental retardation.

The previous definition typifies a person based uniquely on the degree of disability (Buhalis & Darcy, 2011). In 2000, agreed by the international community and endorsed by 189 countries, the **Millennium Development Goals (MDGs)** established a set of development objectives to be achieved by 2015 (WHO, 2018b). Then, in 2010, the limited opportunities faced by children with disabilities and the link between disability and marginalization in education were first mentioned. Disability was recognized as being a cross-cutting issue of major importance, that should be considered to achieve the aforementioned goals, and the United Nations General Assembly stated that policies and actions to attain that purpose must focus, among other, on PwD. The same United Nations General Assembly set up, via resolution 56/168, a commission to examine proposals that "promote and protect the rights and dignity of persons with disabilities" to better respond to some aspirations of non-governmental organisations, on February 2002.

The year 2001 was also critical for PwD since the World Health Organization approved the **International Classification of Functioning of Disability and Health** (resolution WHA 54.21) (WHO, 2001). This resolution endorses the second edition of the International Classification of Impairments, Disabilities and Handicaps, with the designation International Classification of Functioning, Disability and Health, to be known as ICF (classification system previously mentioned). In 2006, the United Nations Convention on the Rights of People with Disabilities (UNCRPD) and its Optional Protocol (A/RES/61/106) were adopted with the highest number of signatories in history to a UN Convention. This convention led to a change of attitudes and approaches to persons with disabilities, who evolved from being viewed as “objects” of charity, medical treatment, and social protection towards being considered as “subjects” with rights. The UN Convention was the beginning of a new step in disabilities rights and the end of a long period of struggles led by advocates of human rights and disability rights movements (Rioux, 2011).

In 2015, the United Nations Sustainable Development Goals (SDGs) built on the MDGs established 17 goals with 169 targets that all Member States have agreed to work towards achieving by 2030 (WHO, 2018a).

In 2016, the Rights of Persons with Disabilities (RPwD) Act replaced the People with Disabilities Act (1995) due to the need to **shift from the medical model to the social model**. According to this act, a person with a disability “means a person with long term physical, mental, intellectual or sensory impairment which, in interaction with barriers, hinders his full and effective participation in society equally with others”. The number of conditions of PwD Act (1995) were expanded from seven to twenty-one. The RPwD Act (2016) includes a wide range of disabilities such as cerebral palsy, dwarfism, muscular dystrophy, chronic neurological disorders (including Parkinson’s disease and multiple sclerosis), blood disorders (including haemophilia, thalassemia, and sickle cell disease), acid attack victims, speech and language disability, and intellectual disability (ID, which includes specific learning disability – SLD – and autism spectrum disorder). In contrast, in the RPwD Act a holistic view of what the person’s disability could comprise is provided, giving focus to biological, social, environmental and relational determinants (Balakrishnan et al., 2019).

In the **European Union**, according to Eurostat (2019), in 2014, 37% of the EU-28 population aged 15 and over reported moderate or severe physical or sensory limitations; 26.8% referred moderate functional limitations and another 10.1% mentioned severe functional limitations of this type. In this survey, the proportion of women that reported (moderate or severe) physical and sensory limitations was higher than men, with exception of Luxembourg. With one in six people having a disability that ranges from mild to severe, numbers are expected to rise as the European Union population is getting older and over one third of people aged over 75 years have some kind of disability that do not allow them to have a normal life. Thus, it is estimated that there will be around 80 million people with disabilities in European Union, in 2020. In the European Union, the term “disabilities” was first introduced in the article 13 of the Treaty of Amsterdam, signed on October 1997 and lately replaced by the Lisbon Treaty, in 2007. On December 2000, another important document was produced – The Charter of Fundamental Rights of The European Union, which included two articles concerning integration of persons with disabilities (Articles 21 and 26). During 2000 and the following year, important legislation was issued on this matter: directive 2000/78/EC, which establishes a general framework for equal treatment in employment and occupation of persons with disabilities, and the directive 2001/85/EC,

which refers that Class I vehicles shall be accessible to persons with reduced mobility, including wheelchair users, among others. In 2007, on 30 March, the European Union signed the UNCRPD (IP/07/446), which was the first time the Union signed an international instrument setting minimum standard for rights of people with disabilities, and a core human rights convention (Treaty On Disability Rights, 2007). It was in 2011 that the convention has been signed by all 27 EU Member States and ratified by 16 of these. All EU Member states signed and ratified the convention (MEMO/10/198) and some of them also signed the Optional Protocol. The countries that ratified the Convention must inform, periodically, the Committee on the Rights of Persons with Disabilities about the measures taken to implement the Convention. The Optional Protocol, ratified separately, was where countries accept that complaints can be submitted individually by national citizens and that the Committee can probe Human Rights violations. The European Charter of Fundamental Rights says (Article 26 – Integration of persons with disabilities) that the “Union recognizes and respects the right of persons with disabilities to benefit from measures designed to ensure independence, social and occupational integration and participation in the life of the community” (European Union, 2020). In 2010, the European Union’s Disability Strategy for 2010-2020 complements and supports actions by Member States which have the main responsibility in disability policies, with the aim to help implement the provisions of the Convention in practice, both at the Union and at national level (European Commission, 2010).

Countries also made legal regulations about disabilities. Legislation, together with international, regional, and national policies is indeed of great importance to improve availability of health care and promote better conditions for PwD. In 1995, the United Kingdom proclaimed the Disability Discrimination Act, which states that it is illegal to refuse to serve a disabled person, to provide disabled people with a lower standard of service or to provide a disabled person with a service on worse terms. In 1999, other aspects were introduced to that legislation, like changing practices, policies or procedures which make impossible or unreasonably difficult for disabled people to use services, providing auxiliary aids or services which could make it easier, or enable disabled people to use a service or overcoming physical features which make it impossible or unreasonably difficult for disabled people to use a service, by providing the service by a reasonable method instead (G. Miller & Kirk, 2002). In 2004, the physical features duties of the aforementioned Disability Discrimination Act became law and service providers were expected to remove any physical barriers (Darcy & Buhalis, 2011).

The **Portuguese Constitution**, adopted in 1976, dedicates an article to persons with disabilities, referring to the equality of all citizens, together with the obligation of the State to carry out a rehabilitation policy and to support organisations representing citizens with disabilities (Constituição Da República Portuguesa, 1976). Other important laws in Portugal that refer to people with disability are: (i) Law 6/71 of November 8 (that promulgates the bases for the rehabilitation and social integration of disabled individuals) (Lei N° 6/71 Da Presidência Da República, 1971); (ii) Law 9/89, of May 2 (basic Law on Prevention and Rehabilitation and Integration of Persons with Disabilities) (Lei N° 9/89 Da Assembleia Da República, 1989) ; (iii) Law 38/2004, of August 18 (defines the general bases of the legal regime for the prevention, abilities and participation of persons with disabilities) (Lei N°38/2004 Da Assembleia Da República, 2004) ; (iv) Decree-law 163/2006, of August 8 (approves the system of accessibility to buildings and establishments, repealing Decree-law 123/97, of 22 May) (Decreto Lei N°163/ 2006 Do Ministério Do Trabalho e Da Solidariedade Social, 2006); and (v) Law 46/2006, of August 28 (prevents and punishes discrimination of persons with disabilities). Due to non-governmental pressure, the UNCRPD (2006) was signed in Portugal, by the Portuguese Parliament on 30 March 2007 and the ratification on 23 September 2009. In the preamble, it is stated that the States Parties to the Convention recognize “that disability is an evolving concept and that disability results from the interaction between persons with impairments and attitudinal and environmental barriers that hinders their full and effective participation in society on an equal basis with others”. In Portugal, although there is still a lot of work to be done, the award for Best Accessible Tourism Destination, bestowed in 2019 by the World Tourism Organization, somehow shows that the country is going on the right track.

As the above discussion indicates, **for tourism**, disabled people represent a huge and heterogeneous market difficult to conceptualize, with a series of different sub-markets. Darcy and Buhalis (2011) identified seven main clusters in this market: (i) people with mobility impaired; (ii) blind or vision impaired; (iii) deaf or hearing impaired; (iv) speech impaired; (v) cognitive impaired; (vi) hidden impaired; and (vii) elderly/seniors/boomers. The way people live with impairments and disabilities may differ, among many other issues, according to whether they were born with the disability or acquired it. So, those who are born with an impairment and those who acquire one, may have different perspectives about barriers (Shakespeare, 2018). In the first case, PwD do not know some issues since they have no references from a life without impairments (e.g., people with visual impairments who already born blind do not know the colours and cannot compare them). In contrast, in the case of those who acquire an illness or impairment, the disability is experienced in

different ways depending on the age people have when they are affected (Shakespeare, 2018). Depending on their level of dependence, this group may travel alone or need to travel in the company of friends, family member or an assistant. The levels of dependence (none, mild, moderate, severe, and profound) are also essential to understand the needs and motivations of this public.

In an attempt to understand disability, this section explored the dominant models of disability: the medical, the social and the biopsychosocial model, with the latter being adopted in the present work. Despite the different types of disability mentioned, all have common features and three major dimensions of disability are referred: physical/mobility, sensory and/or cognitive. An important work has been done in this area; however, despite previous studies' significant theoretical contributions, the theme of co-creation of experiences in museums to PwSI requires further investigation which is one of the main objectives of the present study. PwSI represent a challenge and an opportunity for the travel and tourism industry, where museums are included. In the following section, the legislation on museums and the museums' perspective regarding this public will be presented.

3.4. Museums and visitors with disabilities

Research on **tourism and disabilities** has increased over the last years (Altinay et al., 2016; Domínguez et al., 2015; Lehto et al., 2018; Poria et al., 2009; Shaw et al., 2011; Shaw & Coles, 2004). However, much of the published research focuses on specific topics such as: (i) the characteristics of PwD and the potential of the market of PwD for tourism (Cloquet et al., 2018; Olya et al., 2018; Poria et al., 2009); (ii) the legislation concerning disabled people (Balakrishnan et al., 2019; United Nations, 2016) and (iii) the growing of minorities agenda (Farsani, 2019; Wong et al., 2019; Yau et al., 2004). Only some few studies, mentioned in table 3.3, explore some components of tourism or leisure experience for PwD in museums (Angkananon et al., 2015; Asakawa et al., 2018; Belver et al., 2018; M. Davies & Shaw, 2013; Erbay, 2017; Hesseldahl et al., 2018; Lanir et al., 2017; R. McMillen, 2012; Mesquita & Carneiro, 2016; Migliaccio, 2019, 2018; M. Newman & Weldin, 2010; Poria et al., 2009; Rieger et al., 2019; Sandell, 2003; Udo & Fels, 2010; vom Lehn, 2010; Walters, 2009; Wiastutu et al., 2018). **No study was found** that focused on co-creation of experiences in museums considering PwSI and provided a deep analysis in this scope, which is the focus of the present thesis. Although some of the researchers mentioned in table 3.3 examined some features that may be related to cocreation, any of them focused

especially on this issue nor provided a broad view of the co-creation of experiences of PwSI in museums. This type of cocreation will be further discussed in section 3.5. As privileged learning environments, museums are of great value to PwD (Metatla et al., 2018). However, a lot of work still needs to be done to increase accessibility in museums, even if inclusion concerns have increased in the past decades (Cachia, 2013; Krivec et al., 2014; Mesquita & Carneiro, 2016; Small et al., 2012). Museums, as places for education and social encounters, have a prime importance in the **inclusion** of PwD (vom Lehn, 2010; Walters, 2009). Several authors point out that museums have been seeking to enlarge their audience and claim to a wider social mix (Ambrose & Paine, 2018; Merriman, 2000). Museums are becoming agents of social inclusion and, therefore, working practices to promote that inclusion are required (Black, 2005).

Table 3.3. Research on PwD and museums (continues)

Authors	Country	Title		Objectives
Angkananon et al. (2015)	UK	Technology enhanced interaction framework and method for accessibility in Thai museums	PwHI	The aim was to describe a Technology Enhanced Interaction Framework and method to help developers make local Thai museums more accessible for disabled visitors (reduce discrimination in access to information).
Asakawa et al. (2019)	USA	An Independent and Interactive Museum Experience for Blind People	PwVI	The aim was to develop a solution to support an independent, interactive museum experience that uses the continuous tracking of the user's location and orientation to enable a seamless interaction between Navigation and Art Appreciation and to provide the accurate localization and context-awareness and detailed audio content when facing an artwork within close proximity.
Belver et al. (2018)	Spain	Art museums as a source of well-being for people with dementia: an experience in the Prado Museum	PwD	The goal of this study was to describe the design, development and evaluation of a programme of artistic education activities for people with dementia based on visits to the Prado Museum.
Davies and Shaw (2013)	Turkey	Diversifying the museum workforce: the diversity scheme and its impact on participants' careers	PwD	The aim was to increase the accessibility of museum careers to Black, Asian, and minority-ethnic individuals and also to offer training to PwD and people from low-income backgrounds.
Erbay (2017)	Turkey	Museums and education projects targeting visitors with disabilities	PwD	The aim was to show social responsibility projects organized under the slogan "Accessible Museums". The article shows different supporting programs, held by museums, that develop training and education activities for people with disabilities.
Hesseldahl et al. (2018)	UK	Using design thinking to develop new methods of inclusive exhibition making	PwD	This paper outlines recent approaches by relevant experts, in the field of attitude in the context of anti-discrimination legislation and outlines a new approach to use an inclusive design within the process of exhibition creation. It uses co-design methods to provide a set of principled guidelines that respond to all relevant stakeholders.
Kinsey et al. (2019)	UK	The impact of including carers in museum programmes for people with dementia: a realist review	PwD	This review aimed to understand how including carers in museum programmes impacts the PwD, the carer, and the relationship between them.
Kusayama (2005)	UK	Access to museums for visually challenged people in Japan	PwVI	The purpose of this study was to share the present state and future prospect of accessibility to museums especially for visually impaired people in Japan.
Vom Lehn (2010)	UK	Discovering "Experience-ables": Socially including visually impaired people in art museums	PwVI	The aim was to explore how shared experiences of works of art are produced in interaction between sighted and visually impaired visitors. It explores how the participants have access to the pieces through sight, touch, and other means.
McMillen (2012)	USA	The inclusive art museum: Determining disability access	PwD	The research shows disability access at a Midwestern contemporary art museum (MWCAM) in the United States using a nine-step strategy of accessibility for museum visitors published by the American Association of Museums (AAM)
Mesquita and Carneiro (2016)	Portugal	Accessibility of European museums to visitors with visual impairments	PwVI	The study identifies a board set of strategies to increase the accessibility of museums to visitors with visual impairments and analyse the accessibility of museums in four European cities.
Migliaccio (2018)	Italy	Accessible museums in Italy: An overview	PwD	The aim was to explore some valid experiences to propose useful benchmarking to public entities, associations, etc., in Italy.

Table 3.3. Research on PwD and Museums (continuation)

Authors	Country	Title		Objectives
Migliaccio (2019)	Italy	Tourism for PwD in Italy: An overview	PwD	The aim is to make an adequate review of international literature, a small summary of the evolution of the tourism sector and focus on some of the main laws. Some strategies implemented by different stakeholders, in Italy, were critically described.
Newman and Weldin (2010)	UK	Museums, Multimedia and Me: Enhancing the Experience of Visiting the British Museum through the Use of Multimedia with People with Learning Disabilities	PwD	The aim was to explore ways of enhancing the experience for people with learning disabilities visiting the Hadrian exhibition at the British Museum in London.
Poria et al. (2009)	Israel	People with disabilities visit art museum: an exploratory study of obstacles and difficulties	PwD	The goal of this article was to show some obstacles that people with disabilities (wheelchairs, crutches, and visually impaired people) face while visiting art museums. The non-physical elements of the museum environment (e.g., staff attitudes and interaction with other visitors), are presented as being major difficulties in achieving a full museum experience.
Rieger et al. (2019)	Australia	Doing Dis/ordered Mappings: Shapes of Inclusive Spaces in Museums	All	The aim was to investigate how museum spaces are shaped, where spatial configurations, specifically when considering inclusion. Issues of accessibility and how knowledge is conveyed are presented.
Rodgers (2005)	Canada	Managing Access at the Museums: Disability & Institutional Boundaries	PwD	The aim was to embody and institutionalize accessibility and to discover its context in the human realm and as organisational practice.
Udo & Fels (2010)	Canada	Enhancing the entertainment experience of blind and low-vision theatregoers through touch tours	PwD	The aim was to present how universal design theory and the research available on museum-based touch tours can be used to develop a touch tour for blind and low-vision theatregoers.
Walters (2009)	Sweden	Approaches in museums towards disability in the UK and US	PwHI	The study was based on questionnaire surveys relating to responses to disability in museums in the United Kingdom and the United States, undertaken as part of a broader research enquiry. The aim was to identify underlying attitudes in museums, particularly within the imperatives of a dominant paradigm of inclusion.
Wiastuti et al. (2018)	Indonesia	Implementation of accessible tourism concept at museums in Jakarta	PwD	The aim of this study was to identify the implementation of accessible tourism concept at the museum in Jakarta and to provide practical accessibility-improvement measures for the museum in Jakarta towards accessible tourism concept.

Source: Own elaboration.

PwHI – People with Hearing Impairment | PwVI – People with visual Impairment | PwD – People with Disabilities

Concerning the **museum legal context** related to PwD (Table 3.4), it is important to mention the ICOM Code of Ethics for museums, adopted in 1986 and revised in 2004. This important document provides some important guidance and principles in order to help museums' professionals (ICOM, 2017). As said before, museums are responsible for the tangible and intangible natural and cultural heritage and so, museums and their collections must be available during reasonable hours and for regular periods. According to the previously mentioned code, during these periods special attention must be given to PwD. According to the same document, museums should conform to all national and local laws and respect the legislation of other states insofar as they affect their operation. Museums should also acknowledge the international legislation that is taken as a standard in interpreting the ICOM Code of Ethics for Museums presented in table 3.4.

Table 3.4. International legislation on museums

Designation	Date/Organisation
Convention on the Means of Prohibiting and Preventing the Illicit Import, Export and Transfer of Ownership of Cultural Property	1970 UNESCO
Convention on International Trade in Endangered Species of Wild Fauna and Flora	1973 U.S. Fish & Wildlife Service
Convention on Biological Diversity	1992 UN
UNIDROIT Convention on Stolen or Illegally Exported Cultural Objects	1995 UNESCO
Convention for the Protection of Cultural Property in the Event of Armed Conflict with Regulations for the Execution of the Convention	1954 1999 UNESCO
Convention on the Protection of the Underwater Cultural Heritage	2001 UNESCO
Convention for the Safeguarding of the Intangible Cultural Heritage	2003 UNESCO

Source: ICOM,2017.

In **Portugal**, the law of museums dates from 2004 and the main concerns are related to physical accesses. According to Law 47/2004 of August 19 (Article 42), "The museum systematically develops cultural mediation programs and educational activities that contribute to access to cultural heritage and cultural events. The programs referred are

articulated with sectoral public policies concerning family, youth, support for persons with disabilities, tourism and the fight against social exclusion". This law takes in account the principle present in the Article 27 of the Universal Declaration of Human Rights that states that every person has the right to take part freely in the cultural life and to enjoy the arts including PwD (Lei N°47/2004 Da Assembleia Da República, 2004).

The term "excluded" was first used in France in the 1960s to refer to the poorest groups within the society, followed by "**social exclusion**", an expression first used in 1974 (Black, 2005; A. Newman & McLean, 2002). Slowly, the first term evolved from poverty to social disintegration. In 1989, within the European Union, the concept came to the political agenda and the European Observatory on Policies to Combat Social Exclusion was established, simultaneously with the European Community Programme to Foster the Economic and Social Integration of Least Privileged Groups (Black, 2005).

In 1992, the Organization for Economic Cooperation and Development (OECD) and the Community Development Foundation organized the "International Community Development Conference", exploring the reasons why urban areas faced some problems such as social exclusion, and the way to reduce urban decline. Since then, the social exclusion/inclusion moved up into the **political agenda worldwide** becoming the big social policy idea of the New Labour Government in 1997 (Hall, 2010).

In the UK, the Reaching Out: An Action Plan on Social Exclusion, elaborated by the Cabinet Office (2006), stated that social exclusion can happen to anyone. However, people with certain backgrounds and experiences are disproportionately more likely to suffer from social exclusion. In this document, some **factors** that may contribute to social exclusion are mentioned, such as: low income; family conflict; school problems; being an ex-prisoner; being from an ethnic minority; living in a deprived neighbourhood in urban and rural areas; mental health problems; age and disability. Disability, together with unemployment, poverty, criminality, sexual, racial and ethnic and gender discrimination, corresponds to one of the most important factors of social exclusion (Abbott & McConkey, 2006; Kastenholz et al., 2015; Michopoulou et al., 2015; Moussouri, 2007).

In 1970^s, museums were considered isolated from the modern world, being elitist spaces, obsolete and a waste of public money (Hudson, 1977). Concerned with their collections-based functions, museums were socially associated with the cultural taste of a particular social group (McCall & Gray, 2014). Since then, a long road has been travelled. In 1980^s, in the museums' context, inclusion has become the word of the day, and, since 1990^s,

boosting inclusion became a major concern of museums. Combating social exclusion became one of the highest priorities of Governments (Department for Culture Media and Sport, 2000). Kinsley (2016) points out that there has been an increasing recognition that museums have excluded some groups from their activities for years and that nowadays there is a concern to redress this.

Museums developed from inward-looking and collection focused to outward-facing and **audience-focused** (Black, 2012). This change of direction toward the people is a reversal of the meaning and purpose of museums (Black, 2005, 2012; O'Neill, 2006). Collections naturally lose their primacy once the museum puts the visitors needs at the focus of their work (Appleton, 2007). This decline can be seen in several ways, namely in features such as museums projects involving polemic topics that reflect actual concerns, interactive exhibits with animations and technology replacing objects (Black, 2005, 2012; vom Lehn, 2010).

Sandell (2003) highlighted the potential **positive impacts of museums** on the disadvantaged or marginalized individual, community and society. At an individual level, engagement with museums can deliver positive outcomes such as enhanced self-esteem, confidence, and creativity. At a community level, museums can act as a catalyst for social regeneration, empowering communities to increase their self-determination and develop the confidence and skills to take greater control over their lives. Lastly, museums, through the representation of inclusive communities within collections and displays, have the potential to promote tolerance, inter-community respect and to challenge stereotypes. Several potential positive impacts of museums will be discussed in further detail in section 4.3.

The concept of inclusion became a part of museums concerns and these organisations are expected to help alleviate factors that contribute to social exclusion (Appleton, 2007; Moussouri, 2007; Sandell, 1998; Tili et al., 2007). Significant changes have occurred over the past 50 years within society due to social, economic, technological, and political changes. The movement known as the “**New Museology**” is a phenomenon with adherents across a variety of museums and was developed as a reaction against traditional museum practices considered outmoded, introducing a new philosophy to change the relationship that museums had with society and communities (McCall & Gray, 2014; Witcomb, 2007).

The “new museum” involves, among other aspects, a redefinition of the relationship that the museum has with the community and the people, developing a new body of theories around museums in order to stop discrimination and inequality within society (Ambrose & Paine,

2018; Black, 2005; Sandell, 2002, 2003). Thus, museums are expected to be a refuge and a source of education and entertainment that offer broad and varied opportunities of experiences for their communities in many ways (Salmen, 1998).

Social and cultural inclusion implies the removal of all kinds of **barriers** that don't allow citizens to participate in society (Cass et al., 2005; Kastenholtz et al., 2015). Being expected to offer a large and varied set of opportunities for experiences, museums should also be places with no barriers to participation, where the provided experiences should not be affected by the fact of being carried out by PwD (Poria et al., 2009; Rodgers, 2005; Salmen, 1998; vom Lehn, 2010; Walters, 2009).

In a recent report of American Alliance of Museums² (American Alliance of Museums, 2018), the main concern are the effective museum inclusion practices and the diversity, equity, accessibility, and inclusion in all aspects of museums. ICOM's Annual Report (2018) highlights the role of museums in serving society and promoting its development. Museums are essential in the increase of **social cohesion** and in minimizing discrimination and other human rights abuses.

Constraints faced by PwD in museums and strategies that can be adopted to remove barriers in terms of physical access, attitudes and information will be addressed in more detail in section 4.2.2.2.

Although interest on PwD in museums has increased over the last years (Angkananon et al., 2015; Asakawa et al., 2018; Belver et al., 2018; M. Davies & Shaw, 2013; Hesseldahl et al., 2018; R. McMillen, 2012; Mesquita & Carneiro, 2016; M. Newman & Weldin, 2010; Poria et al., 2009; Reed, 1997; Rieger et al., 2019; Sandell, 2003; Udo & Fels, 2010; vom Lehn, 2010; Walters, 2009; Wiastutu et al., 2018), **research** in this field **remains scarce**.

This section has provided a comprehensive account on legal framework in museums legislation. Museums have a prime importance in the **inclusion of PwD** and legislation can make the difference by encouraging people to minimize barriers in these spaces. However, the willingness to implement strategies that permit to increase the accessibility of museums is also crucial in this scope. The potential positive impacts of museums on the

² Facing Change: Insights from the American Alliance of Museums' Diversity, Equity, Accessibility, and Inclusion Working Group (American Alliance of Museums, 2018).

disadvantaged or marginalized individual, community and society were approached referring inclusion as being one of the main concerns of museums nowadays.

In the next section co-creation in museums in different contexts for the general public including PwD will be analysed.

3.5. Co-creation of experiences in museums in different contexts by PwSI

Museums are considering ways to increase **access for PwD** (Lussenhop et al., 2016; Reich et al., 2010). Tourism and disability are phenomena where the collaboration between stakeholders across demand and supply is necessary in order to enable PwD – including mobility, vision, hearing and cognitive dimensions – to have access to tourism (Buhalis & Darcy, 2011; Darcy & Dickson, 2009; Michopoulou et al., 2015).

The consensus that museums should be open to the public and the idea that museums should be accessible to all are rather new (Poria et al., 2009; Soren, 2009). A common language between all the stakeholders is important in order to better understand the subject. This is not an easy task as standards for accessibility vary across European countries (Eichhorn & Buhalis, 2011).

The rise in the number of PwD (W. G. Kim et al., 2012; Lyu, 2017) brought several implications for tourism, such as an increasing importance of not disregarding this market. It is agreed that tourists with disabilities are a lucrative market segment (Lyu, 2017; Mesquita & Carneiro, 2016). However, despite this potential, the tourism industry has paid little attention to the constraints and needs felt by PwD, which are different from those of tourists without disabilities (Lyu, 2017; Pagán, 2012; Poria et al., 2009). The current ongoing interest in this market segment is also due to the growing awareness that tourism contributes to the wellbeing of PwD (Daniels et al., 2005).

PwD face more difficulties and require a much higher degree of accessibility than non-disabled people. Information on accessibility allows PwD to decide either to visit or not a certain place or destination. This information should be reliable, easy to obtain and presented in a variety of formats (Chiarelli et al., 2018). Knowledge and structures with a design that is inclusive for all citizens are the best way to ensure the access to travel and tourism for PwD (Eichhorn & Buhalis, 2011). The existence of a large number of barriers (Gillovic et al., 2018; Liasidou et al., 2019; Randle & Dolnicar, 2019) is one of the main

reasons why PwD are not well served by the tourism industry. The term accessibility has different meanings to different people. **Tourism for all, or accessible and inclusive tourism**, is of main importance and can address the needs of disabled people (permanent and temporary disabled) as well as the needs of people without disabilities but who have a special need, such as seniors, people traveling with young children, the obese, among other groups, as previously said (Buhalis & Darcy, 2011; Darcy & Dickson, 2009; Michopoulou et al., 2015; Poria et al., 2011).

Accessible and inclusive tourism is defined by Souca (2010, p. 1154) as “access requirements including mobility, vision, hearing and cognitive dimensions of access, to function independently and with equity and dignity through the delivery of universally designed products and environments”.

Generically the accessible tourism is a form of tourism that involves collaborative processes between stakeholders who provide reasonable adjustments to services eliminating or minimizing barriers. This concept is inclusive to all people including PwD and people with special needs (Darcy & Dickson, 2009).

The AAM provided a manual along with the ADA which is part of a program addressing the issues of accessibility in museums. To museums, according to Salmen (1998, p. 11), “accessibility means making the site’s exhibits and programs available to all visitors”. The aim is to eliminate the physical, communication, and policy or procedural barriers present in the museums.

One of the most relevant researchers in the field of accessible tourism, Darcy (1998) identifies the three dimensions underlying the term “**access**”: the **physical, sensory and communication access**. Meanwhile, Dwyer and Darcy (2011) refer the most common dimensions of access as being: **mobility, sensory (hearing and vision), cognitive/ learning/ communication and environmental barriers** (experienced by those having asthma, being affected by chemicals, among others). Accessibilities along with the topic of constraints will be discussed in section 4.2.

Another important statement is that from Ralph (2017), a community activist, freelance trainer, when he refers that disability is created by barriers put in the way to accessing the world by society and that these barriers are attitudinal (e.g. schools not thinking about disabled students, or not believing that staff have the right skills or resources to engage students), physical (e.g. the lack of adaptations of the spaces for disabled people) and

organisational (e.g. the existent inflexible policies and practices that don't allow PwD to access services or employment).

Eliminating barriers and increasing accessibility in museums is crucial to foster cocreation in museums, especially as far as PwD are concerned. However, despite the importance that co-creation may assume in museums (potential benefits of co-creation in museums will be discussed in section 4.3), only a small number of researchers has deeply analysed the co-creation in museums, and specifically considered **contexts of museums** where co-creation may occur, with some of them not even referring directly to the expression "co-creation" (Falk & Dierking, 2016a, 2016b; Farsani, 2019; Goulding, 2000; Mirghadr et al., 2018; Moscardo, 1996; Taheri, 2011).

As mentioned before, co-creation involves an effort among suppliers to co-create experiences collaboratively with the consumer (Minkiewicz et al., 2014). Co-creation is a process that implies action by both suppliers and customers (Frow & Payne, 2011; Pera et al., 2016) and, consequently, to promote it, it is necessary to study customer behaviours in order to better adapt the spaces to the current needs of visitors. Moscardo (1996), in her earlier studies, introduced the concept of mindfulness, which can enhance the quality of the visitors' experience. The author referred that when people have the opportunity to control and influence the situation and when they recognize the relevance and the novelty of the situation, people are most likely to be mindful.

Museums are important places for non-formal learning and education (Farsani, 2019) and, in order to achieve the goals of twenty first century museums and heritage sites, it is important to produce mindful visitors who are active, interested and questioning (Moscardo, 1996). According to the same author (Moscardo, 1996) there are two sets of factors that influence visitors experience in heritage sites: setting factors (exhibits, displays, guided tours, signs, maps, guidebooks, brochures, and walks); visitors' factors (familiarity with the space, motivation for visiting, and fellow visitors). Studies of museum visitors' behaviour shows that there are a number of theories relating several aspects of the visit (Goulding, 2000): social (status symbol of the cultural ones to the uncultured others, level of engagement with the museum); psychological (level of involvement and participation between visitors and exhibits); and environmental and spatial (museum setting and layout).

One of the works that sheds more light on this topic and expresses a similar view is Falk and Dierking's (2016a, 2016b) model of learning or "interactive experience model". In this model the authors identified three context affecting visitor's participation in creating

interactive experiences in museums (Figure 3.2): (i) the physical context; (ii) the personal context; and (iii) the sociocultural context. The model has been cited by many researchers and led to further works in the museum field (Falk & Storksdieck, 2005, 2010; Taheri, 2011). The three overlapping contexts which influence interaction and experiences are dynamic and continuously constructed by the visitor. In 2013 the model has been adapted in order to respond to the actual changes operated in museums. The perspectives on all the contexts have been enriched by new thinking and research.

The **physical context** includes the architecture of the place, the objects and artifacts within the museum and the ambience of the place. Falk and Dierking (2016b) referred that this context strongly influences the visitors' visit to the museum and the way they move inside the space. The physical aspects can make easier or harder for people with special requirements to use the museum. Considering these people, for example, the entrance should be identified easily (Fédération Nationale des Comités Départementaux du Tourisme, 2004; Mesquita & Carneiro, 2016), glass doors should be avoided (Barker et al., 1995a; Instituto Português de Museus, 2004; Mesquita & Carneiro, 2016), the name of the museum should be easy to read, there should be a logical arrangement of places (e.g. reception near the entrance), a differentiation of spaces through varied approaches – lighting, climate, colours or sound and furniture like benches or some materials like carpeting can lessen fatigue (Barker et al., 1995; den Brinker & Daffertshofer, 2005; Dos Santos & De Carvalho, 2012; Fédération Nationale des Comités Départementaux du Tourisme, 2004; Instituto Português de Museus, 2004; Mesquita & Carneiro, 2016; V. Richards et al., 2010). Also in the physical context, there are objects that visitors can interact with and activities they can participate in (e.g., reading information panels, touching objects). Later, in 2013, the authors emphasize the importance of the virtual due to the importance of technologies in society. Nowadays museums use a huge number of digital media to improve the visitors' experiences (Falk & Dierking, 2016b), such as augmented and virtual reality, audio presentations (included in audio guides or not), in-gallery interactives, digital transactions (De Bernardi et al., 2018), smartphones apps, audiovisual presentations (that may be accessed through terminal computers or through other tablets, smartphones), audio-pens (optical reading pens that when pointed to a map, image or text, start an audio commentary), among many other technologies. Among the new technological innovations adopted in museums we have QRCode and the RFIDCode (De Bernardi et al., 2018).

According to Falk and Dierking (2000, 2016b) it is also important to consider each museum visitor's **personal context**, which is unique and leads to different experiences and knowledges. This context includes visitor's individual interests, attitudes, and motivations, very important aspects nowadays, being the visitor focused service approach an essential and systematic element in all activities (Black, 2005; Falk & Dierking, 2016b). This context represents the amount of personal and genetic history that a visitor carries with him/her (Falk & Storksdieck, 2005).

When talking about the **sociocultural context**, Falk and Dierking (2000) argue that people visit museums in group or alone, but even so, visitors come into contact with other visitors or staff and get influenced by each other. Therefore, museum visitors are deeply influenced by social interaction factors. The social context in museums refers to the interaction with multiple stakeholders such as with people within the group of visit, volunteers and other museum staff, producing different experiences (Dierking, 1989; Evans et al., 2013; Falk & Dierking, 2016a; Kelly, 2007; Minkiewicz et al., 2014). Dialogs between different social and cultural groups can occur (Rahimi, 2014).

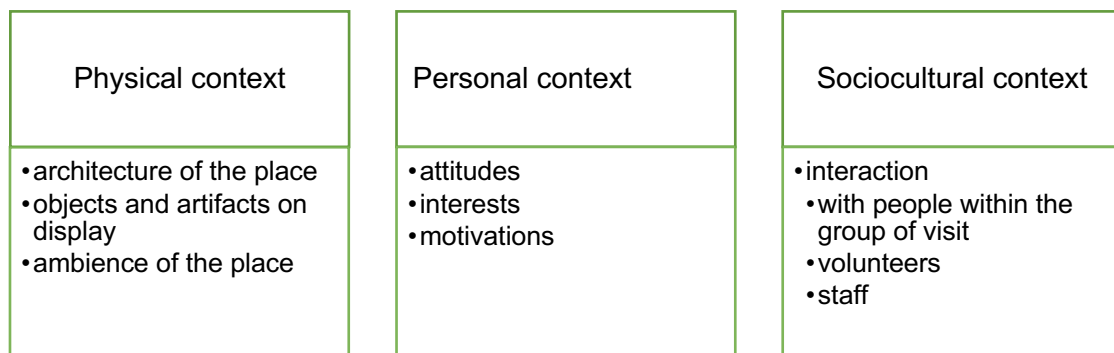


Figure 3.2. Contexts of interactive experience in museums

Source: Elaborated based on Falk and Dierking (2000, 2016a, 2016b).

There are other models or frameworks, some related to museums and others associated with tourism in general, that also provide insights on the contexts in which co-creation of experiences can occur in museums. Another relevant model in this context, “**The experience pyramid**”, was developed by Tarssanen and Kylanen (2005), in order to show the main important elements that are central to the creation of experiences. The first experiential element is **individuality**, which refers to awakening in the customer a sense of being worthy. The second is **authenticity**, which is the customer's perception of what is a genuine product. The third element is **story**, which has the function of linking all the elements of the story. The fourth element is **multi-sensory** perception that means that this

kind of experiences may be created so that people can appreciate things through their different senses. The fifth element refers to the **contrast the experience represents to the customer's everyday routine**. Finally, the last element is the interaction that represents the **relation between the customer, the company and the other customers**. Although the core of this model is not co-creation, it provides an important perspective about co-creation contexts.

Mossberg (2007) proposed **two frameworks about tourist experiences**. The first one is related to creative industries (based on personal creativity, skill and talent) and coproduction of tourism products. The main important aspects of this framework are research, education, enterprises, culture, and cooperation between all the stakeholders. The second refers to the most important aspects influencing tourist's experiences. In this research, Mossberg (2007) proposed some essential factors that influence the tourist experience: experiencescape, wherein personnel, other tourists, physical environment, product/souvenirs and theme story. The experiencescape involves the consumers emotionally, physically, intellectually, and spiritually (Mossberg, 2007). All these aspects together create the atmosphere that is the focus for creating a positive tourist experience. The physical environment is an amalgam of three dimensions: the ambient (music, light, colour, scent), the space layout and functionality (furniture and equipment placement) and signs, symbols, and artefacts.

The central aspect of this model is the customer's involvement, where the customer plays an important role in co-creation of experiences by continuously interacting with the company. The core of this model is to present a new way to produce rich tourist experiences, adding value to the tourists by gaining a better understanding of factors that influence tourism experiences. In these models, the author highlights the importance of the value in the construction of tourism experiences.

The last two models, although not being related to museums, provide some light on the contexts where customers can co-create their experiences in the museum, making reference to some of the contexts also identified by Falk and Dierking (2016b). While Tarssanen and Kylanden (2005) refer to the personal and sociocultural contexts, Mossberg (2007) mentions the physical and sociocultural contexts.

Rahimi (2014) presents another model, the sociocultural interaction model (SCIM), for the creation of strong sociocultural interactions between visitors and the museum space. The physical surroundings (tangible properties) can influence the social environment. According

to this model, sociocultural interactions are the product of three connected factors: motivation, context, and actuation. This model suggests that a visitor, to perform an interaction, must become motivated (emotionally and intellectually) and be in the right context (tangible and intangible properties). The third factor - actuation - refers to the impulse that leads the interaction. This model presents elements that facilitate the occurrence of an interaction in the museum space. Again, there are some similarities to the Falk and Dierking's (2016b) approach, since the motivations are part of the personal context, the "context" dimension included in this model includes the physical context, and the outcome of the model – sociocultural interactions -, greatly corresponds to the sociocultural context.

Considering that the model of Falk and Dierking (2016b) provides, through a simple approach, useful insights on the contexts of the museum where co-creation can occur, and that several references are made to some of the contexts they proposed, this model will be taken as a reference. The present thesis will focus on the two contexts mentioned by Falk and Dierking (2016b) that are more manageable by service providers, namely by museum managers - the physical and sociocultural contexts. This last context will be designed simply as social context, similarly to what happens in some models or approaches (e.g., in Mossberg's model), to emphasise the social component of the interactions. Two other components are added to the two contexts already identified - the digital context, due to the increasing relevance of technology in experiences' co-creation (e.g., using internet, using website, participating in online activities) and the multiple contexts, since many kinds of co-creation in museums take place in more than one of the previously identified contexts (e.g., participating in guided visits, workshops, and role plays activities). Although Falk and Dierking (2016b) incorporated the virtual context in the physical context, given that the virtual world is not tangible it was decided to keep it as an autonomous component.

In order to understand what dimensions of experience and facets of co-creation have been considered and analysed in research on co-creation in museums and the data collection methodologies that have been adopted, it was decided to analyse research on co-creation in museums. However, due to the scarcity of research in this field, this approach was extended to other influential research on co-creation in other areas of tourism, to also obtain insights on the dimensions of experience, facets of co-creation and data collection methodologies used in these studies. Table 3.5 illustrates a list of some of most influential studies of co-creation in museums or in other areas of tourism, that specifically analysed the co-creation in museums (Antón et al., 2018; Falk & Dierking, 2016b; Farsani, 2019; H.

M. Lee & Smith, 2015; Minkiewicz et al., 2016; Simon, 2010; Taheri, 2011), in attractions (Campos et al., 2016; Kempiaik et al., 2017; Minkiewicz et al., 2014), hospitality and tourism (Busser & Shulga, 2018), and tourism destinations and sites (Buonincontri et al., 2017; H. Chen & Rahman, 2018; Tan et al., 2014).

Table 3.5. Selected studies on co-creation in museums or in other areas of tourism – aim, methodology, dimensions of experiences and facets of co-creation (continues)

Author(s)	Country	Area of focus	Aim	Type of Research	Data Collection Methods	Dimensions of experiences	Facets of Co-creation
Antón et al. (2018)	Spain	Museums	Exploring the role of the visitor as co-creator of experiences	Empiric	Qualitative (Self-administered survey) & Quantitative	Behavioural, emotional and cognitive	Active participation and social interaction
Falk and Dierking (2016b)	USA	Museums	Experience in museums	Conceptual	_____	Behavioural, emotional, cognitive and sensorial	Active participation and engagement
Farsani (2019)	Iran	Museums	Identifying the key components of education and learning. Investigating the tendency of audiences towards learning activities	Empiric	Qualitative research: Focus groups, in-depth structured interviews Quantitative research: Axial coding	Behavioural and cognitive	Active participation and social interaction
H. M. Lee and Smith (2016)	Macau Canada	Historic sites and museums	Developing a multiple-item scale to gain knowledge of the experiential features of tourist activities	Empiric	Qualitative (in-depth interviews, survey, observation) Quantitative	Emotional	Social interaction
Minkiewicz et al. (2016)	Australia	Cultural sector Art Gallery, a science and history museum and zoological garden	Exploring the way organisations collaborate with customers to facilitate consumption of cultural experiences through the lens of co-production	Empiric	Qualitative (in-depth interviews)	Behavioural, emotional and cognitive	Active participation
Simon (2010)	USA	Museums	Participatory museum	Conceptual	Qualitative (in-depth interviews, observation)	Behavioural, emotional and cognitive	Active participation and engagement
Taheri (2011)	UK	Museums	Investigating the effects of pre-visit attributes on visitor engagement with the museum experience	Empiric	Qualitative (in-depth interviews, observation, and photographic data). Quantitative	Cognitive	Engagement

Table 3.5. Selected studies on co-creation in museums or in other areas of tourism – aim, methodology, dimensions of experiences and facets of co-creation (continuation)

Author(s)	Country	Area of focus	Aim	Type of Research	Data Collection Methods	Dimensions of experiences	Facets of Co-creation
Campos et al. (2016)	Portugal	Attractions	Examining the on-site co-creation experience from a tourist perspective	Empiric	Questionnaire (in-depth interviews and a pilot survey)	Behavioural, emotional, and cognitive	Active participation and social interaction
Kempiak et al. (2017)	UK	Attractions	Exploring the visitor experience at heritage sites pre, during and post visit	Empiric	Qualitative (Self-administered survey) & Quantitative (Exploratory factor analysis)	Behavioural, emotional, sensorial, and cognitive	Active participation and engagement
Minkiewicz et al. (2014)	Australia	Attractions	Moving beyond value to experiences and exploring co-creation of the consumption	Empiric	Qualitative	Behavioural, emotional, cognitive, and sensorial	Co-production Engagement (emotional and cognitive) and personalisation
Busser and Shulga (2018)	USA	Hospitality and tourism service	Developing a new co-created value scale	Empiric	Quantitative - multistage design psychometrics approach	Behavioural and emotional	Social interaction
Buonincontri et al. (2017)	Italy	Tourism destinations	Investigating the main antecedents and consequences of experience co-creation	Empiric	Quantitative approach-survey	Behavioural, emotional, cognitive, and spiritual	Active participation and social interaction
H. Chen and Rahman (2018)	USA	Tourism destinations	Examining the interplay of visitor engagement, cultural contact, and memorable experience	Empiric	Self-report survey (Qualtrics)	Behavioural	Engagement
Tan, Luh and Kung (2014)	Taiwan	Tourism sites	Characterizing creative tourism and their perception of creative experiences at tourism sites	Empiric	Qualitative (in-depth interviews, observation). Quantitative	Behavioural, emotional, and cognitive	Active participation

Source: Own Elaboration.

In the next sections it will be discussed how visitors co-create experiences in the four contexts previously identified - physical, social, virtual context, as well as multiple contexts – that will be the focus of this thesis. This discussion is mainly based on an analysis of empirical studies related to museums and cultural tourism attractions and is complemented by an analysis of conceptual research on the same kind of tourism attractions – museums and other cultural attractions. It is important to note that, while some researchers explicitly refer to the term “co-creation”, others address to this issue not using this expression, which is quite recent.

3.5.1. Physical context

In this section, the co-creation that takes place in the physical environment is discussed. Table 3.6 presents dimensions of co-creation in the physical context identified in the literature. This table and the tables presented in the following sections (Sections 3.5.1 to 3.5.4) were created based on publications concerning co-creation in museums and other cultural attractions, in order to obtain insights on different forms of co-creation that may take place in museums in the four contexts under analysis. They were created by grouping some references made in publications to different types of co-creation. Both references to how the visitor co-creates the experience or to strategies used by suppliers that will induce co-creation were considered and presented in the tables. The analysis of the literature presented in tables is also complemented by the analysis of other literature in this scope. The importance, to PwSI, of forms of co-creation identified, is also discussed.

Recent research on co-creation emphasizes the importance of the physical context in the co-creation process in cultural attractions, since all the publications analysed focus this context (Table 3.6). In this scope, they remark the relevance of the **interaction with different settings and interpretative means**.

Table 3.6. Co-creation in the physical context

Context of co-creation	Co-creation character	Original scale items	Chen & Rahman (2018)	Falk & Dierking (2016)	Kemplak et al. (2017)	Minkiewicz et al.(2014)	Minkiewicz et al.(2016)	Mirghadr et al.(2018)	Taheri (2011)	
CO-CREATION IN THE PHYSICAL CONTEXT	Interaction with settings	Interaction with the exhibits				X	X			
		Interaction with the exhibits				X	X			
		Holding exhibitions and thematic programmes					X			
		Using specific spaces of the museum	X	X			X	X		
		Using social interaction space	X					X		
		Construction of an information office at the museum						X		
		Offering family concerns (e.g. dressing up and kids' zones)			X					
		Paying attention to the museum spaces and design							X	
		Paying attention to the museum spaces including signs, theatre halls, lighting etc.							X	
		Using the experience space in one's own way					X			
		Using the experience space in their own way					X			
		Other					X	X		
		Connecting with the objects on display					X	X		
		INTERPRETATIVE MEANS	Having a sensory experience		X	X	X	X		
			Touching objects		X	X	X	X		
	The organizations emphasize the tactile and sensory aspects of the experience (e.g. consumers are provided with opportunities to interact with exhibits)						X			
	Touching objects			X				X		
	Paying attention to the objects and touching and interacting with the artworks			X				X	X	
	Seeking for tactile opportunities throughout the experience space						X			
	Providing tactile stimulation.			X				X		
	Tactile opportunities throughout					X				
	Manipulating machines							X		
	Having a visually stimulating experience			X				X		
	Providing visual stimulation.			X				X		
	Having an auditory stimulating experience			X	X			X		
	Providing auditory stimulation.			X	X			X		
	Hearing sounds			X						
	Having a smelling stimulating experience			X						
	Smelling an environment			X						
	Reading printed material			X			X	X	X	
	Reading guidebooks			X				X	X	
	Using my own guide book and literature			X					X	
	Museum guidebook (attractive books or brochures)							X	X	
	Reading information panels/labels						X	X	X	
	Information panels						X			
	Didactic panels prompted visitors to search for specific features in artwork and thereby enabled critics to play a more active role in their art consumption.						X			
	Interpretive panels at the museum								X	
	Children's labels - children have something to go to, read and interact with							X		
	Written information provided inside the museum						X			
	Using signage						X			
	Using signage as a functional opportunity for engaging consumers (e.g. children's labels in exhibitions so that the children have something to go to, read and interact with)						X			
	Playing with objects/games			X	X				X	
	Playing with materials such as toys, jigsaw puzzle and quizzes			X					X	
	Playing with materials								X	
	Holding entertaining competitions and games related to the topics discussed in the museum								X	
	Providing educational games				X					
	Taking photographs						X			
	Photography during the experience						X			
	Creating something tangible					X				
	Opportunities to create something tangible (workshops)					X				

Source: Own elaboration.

In the scope of interaction with different settings, co-creation may occur due to visitors' interaction with the exhibits in a personal way, sometimes even involving a tactile experience, in order to have a different experience (Minkiewicz et al., 2014). This later aspect was supported by Minkiewicz et al. (2014), who argue that visitors actively participate in the experience in numerous ways. For example, the authors refer to tactile experiences throughout the experience space and argue that the active component of the experience may include physically interacting with the exhibition as part of the experience. It is especially relevant that museums provide tactile programs to people with visual impairments so that they can explore the objects and not being dependent only on oral communications. Minkiewicz et al. (2016) mentioned the importance of museums to change toward a more consumers' centricity attitude, allowing visitors to have a more accessible experience and appealing to a wider audience by fostering visitors' higher connection with the objects on display. In the same line, Black (2005) states that museums need to constantly update a real knowledge and understanding of visitors and for that they must take into account the personal context of the visitor and the holistic nature of the visit.

Falk and Dierking (2016b) suggest that it is important to know who visitors are and which are their motivations for visiting or participating in a specific program. Visitors actively engage in the exhibition, throughout the museum, choosing which aspects they will focus on. Exhibitions, as pointed by the authors, allow people to see, and at best touch, taste, feel and hear.

Some authors highlight the importance of visitors deciding to use specific spaces of the museum for social interaction, for getting information or for developing specific activities or tasks with kids (e.g. dressing up and kid's zones being used to satisfy some needs of children) (H. Chen & Rahman, 2018; Kempniak et al., 2017; Mirghadr et al., 2018; Taheri, 2011). If well designed, the museum space can facilitate engagement and experience for a large audience. Still regarding the interaction with settings, Mirghadr et al. (2018) claim that it is important to pay attention to some museum's spaces including light, sounds or to some of their elements such as signs to improve orientation and the museums' education and learning functions (Mirghadr et al., 2018). Signs are crucial to enable visitors to use the experience space in their own way (Minkiewicz et al., 2014), what allows visitor to experience the exhibits in their preferred way.

This is important for PwSI, whose experience in museums is dependent on the interaction with different settings such as different areas of the museum, including the main entrance and the rooms of the exhibition (Falk & Dierking, 2016b; Mesquita &

Carneiro, 2016). Concerning PwSI, several studies highlight the importance of signs and lights to differentiate spaces and to improve the visit conditions (Direction des Musées de France, 1997; Instituto Português de Museus, 2004; Mesquita & Carneiro, 2016; Salmen, 1998). Lights are especially important to people with visual impairments, not only to recognize spaces, but also to ensure good vision conditions. Visitors often referred their difficulty in getting close to interpretative signage to read the information (Mesquita & Carneiro, 2016; Poria et al., 2009). The logical arrangement of places (e.g., toilets near the reception, reception near the entrance) together with the differentiation of spaces is also extremely important for PwD to be able to walk for themselves and explore the exhibition on their own. Co-creation can also occur when visitors take photographs (Minkewicz et al., 2014).

As far as the physical context is concerned, co-creation can also take place when consumers **interact with interpretative means**. Co-creation can be facilitated through interpretation. For example, the museum managers can persuade visitors to have a sensory experience that includes a tactile experience like touching objects or manipulating machines (Falk & Dierking, 2016b; Minkewicz et al., 2014, 2016; Mirghadr et al., 2018), a visually stimulating experience (Falk & Dierking, 2016b; Mirghadr et al., 2018) an auditory stimulating experience (i.e. having a sensory experience that includes auditory stimulation, hearing sounds) (H. Chen & Rahman, 2018; Falk & Dierking, 2016b; Mirghadr et al., 2018), or a smelling stimulating experience like smelling an environment or a specific element of that environment (H. Chen & Rahman, 2018). Falk and Dierking (2016b) highlight the importance of having sensory experiences where the senses are used to improve the experiences. The possibility to touch objects and the use of tactile stimulation together with auditory stimulation can potentially be a facilitator of the experience for a wide range of visitors. However, co-creation can also take place through other approaches, by interacting with interpretative means in several ways, namely when visitors read printed material like personal or museum guidebooks (H. Chen & Rahman, 2018; Mirghadr et al., 2018), read information panels and labels (Minkewicz et al., 2014, 2016; Mirghadr et al., 2018), use signage (Minkewicz, 2014), play with objects (H. Chen & Rahman, 2018; Taheri, 2011) or games (Kempiak et al., 2017; Mirghadr et al., 2018) or create something tangible like participating in an art activity to produce a self-portrait or paint a tile (Minkewicz et al., 2016).

Vom Lehn (2010) refers the importance of providing interpretation resources to make the visit to the museum more inclusive. There are many ways to make collections accessible for PwD who experience many constraints when visiting sites through interpretation

(Ambrose & Paine, 2018; Mesquita & Carneiro, 2016; Poria et al., 2009; Rnib et Vocaleyes, 2003; vom Lehn, 2010). For example, nowadays, museums provide some ways of engagement for this market segment, like multisensory experiences. Some museums provide tactile reproductions of artworks, accessible tours, and accessible visits (Asakawa et al., 2018) in order to encourage people with sensory impairments (visual and hearing impairments) to attend exhibitions. Audio descriptions and tactile exploration have become the most popular accessible resources used to improve sensory visitors' access to museum experiences (Gallego & Olalla, 2018; Mesquita & Carneiro, 2016; Udo & Fels, 2010). Some museums create special collections that can be handled and develop description sessions to people with visual impairments (Mesquita & Carneiro, 2016; Udo & Fels, 2010; Von Lehn, 2010).

Kempiak et al. (2017) and Taheri et al. (2014) suggest that visitors want to participate in on site activities and interact with heritage. Developing museum experiences that are enjoyable and entertaining like playing with materials such as toys, jigsaw, puzzles and quizzes can actively engage visitors intellectually, physically and emotionally. Taheri et al. (2014) also highlight the importance of using the on-site online facilities and using guidebooks and literature to improve the experiences in museums as later reinforced by Han Chen and Rahman (2018).

Han Chen and Rahman (2018) found that memorable tourism experiences are positively influenced by visitors' engagement with elements of the physical context by holding exhibitions and thematic programs at the museum and by using social interaction space. According to the authors the use of guidebooks and literature, on-site online facilities and having multisensory stimulating experiences (visual, auditory and smell) may increase the tourists' intention to revisit and recommend the cultural destination.

Minkiewicz et al. (2014) remark the importance of interaction with exhibits and with the space. According to the authors, spaces are designed to promote visitors' participation and incentive the visitors' freedom to explore the exhibits in their own way. The authors consider the importance of tactile interaction with the exhibits for consumers to access to the experience. These aspects may change the way visitors co-create their experiences.

In 2016, the same authors (Minkiewicz et al., 2014, 2016) reinforced the importance of interaction with the exhibition for the creation of memorable experiences, in several ways: (i) offering the possibility to connect with the objects on display by handling items during the tours; (ii) letting consumers becoming their own guides in producing their

experience and using the experience space in their own way; (iii) allowing sensory and tactile interaction; (iv) promoting feelings of relevance and encouraging consumers to engage through the overall design of the spaces which are designed to let consumers feel comfortable and linked to the place; (v) offering elements of servicescape such as signage, information panels and written information inside the museum; and (vi) giving visitors the opportunity of photographing during the visit to the museum or to create something tangible.

Mirghadr et al. (2018) highlight the importance of the museums' spaces and design, of the interaction with the exhibits, of the construction of an information office at the museum and of interpretation. The authors consider the importance of offering a museum guidebook and brochure to visitors paying attention to the objects and touching and interacting with the artworks.

The social context of co-creation will be analysed in the next section.

3.5.2. Social context

The role of social context in museums and in cultural attractions has been highlighted by several authors (Antón et al., 2018; H. Chen & Rahman, 2018; Falk & Dierking, 2016b; Kempniak et al., 2017; Minkiewicz et al., 2014, 2016; Mirghadr et al., 2018; Pekarik et al., 1999; Taheri, 2011) (Table 3.7).

Table 3.7. Co-creation in the social context

Context of co-creation	Scale items	Anton et al. (2018)	Chen & Rahman	Falk & Dierking (2016)	Kempiak et al. (2017)	Minkiewicz et al. (2014)	Minkiewicz et al. (2016)	Mirghadr et al. (2018)	Taheri (2011)
CO-CREATION IN THE SOCIAL CONTEXT	Interacting with staff	X	X	X		X	X	X	X
	Seeking help from staff		X						X
	Getting help and asking questions to the guides and experts in the museum's educational service							X	
	Questioning staff in the museum								X
	Sharing personal stories with staff						X		
	The facilitation of opportunities for consumers to interact with employees and other consumers in the experience space						X		
	Interaction with museum staff or expert staff	X		X		X			
	Interacting with experts	X			X				
	Having experts giving informations	X							
	Critics listen to stories and share personal stories with others				X				
	Interacting with the local community						X		
	Involving the community in co-curating and presenting the exhibition together with organization						X		
	Interacting with relatives/friends					X			X
	Interaction with family members					X			X
	Company of a knowledgeable person such as a friend								X
	Interacting with other visitors (not specified if from the same travel group or not)	X					X		
	Interaction with other visitors	X							
	The facilitation of opportunities for consumers to interact with employees and other consumers in the experience space						X		
	Casual conversation with other visitors			X					X
	Others (not specified the people with whom one interacts)		X	X		X	X	X	X
	Company of person								X
	Relations between people that take place during the experience		X						
	The museum provides a safe and beautiful space to talk to others, complete strangers about their interpretations						X		
Interact with others					X				
Posing questions and discussions generated by looking at exhibitions and reading labels, as well as the conversations, glances, and touches			X						
Interaction with others in the form of general discussions about the exhibitions					X				
Storytelling on the topics discussed in the museum							X		

Source: Own elaboration

Museums are social places that can provide a large number of benefits for visitors, locations and destinations in which they are set (Ambrose & Paine, 2018). Falk and Dierking (1999) highlighted the importance of early childhood museum visits, normally performed as part of a **family group or as part of school field trips**. Studies on what visitors remember from their museum experiences indicate that the social aspect of a visit is never forgotten and sometimes it is the most important aspect recalled.

Already, Pekarik et al. (1999) mentioned that for some people, the most important aspect of the visit was the **interaction with others, family or friends**. Other times, watching, for example, children learning and interacting with the exhibition, is of main importance.

Although traditionally the focus of the social context research was on families, this fact is changing as an environment for all types of groups is provided by museums nowadays (Falk & Dierking, 2016b).

The **interaction with staff** is referred by some authors as contributing to a higher interaction between participants and the museum and to improve knowledge and obtain positive outcomes of the experience (H. Chen & Rahman, 2018; Falk & Dierking, 2016b; Minkiewicz et al., 2014, 2016; Mirghadr et al., 2018; Taheri, 2011). Antón et al., (2018) and Kempniak et al. (2017) mention the importance of interacting with experts. According to Gurian (2006), museums become places where visitors can, together, with staff, validate personal knowledge and purchase authority. The opportunity for visitors to **interact with employees and other consumers** is of great importance in the creation of memorable experiences (Baron et al., 1996; Minkiewicz et al., 2016).

PwD have to deal with a number of issues not felt by people without disabilities. McKercher and Darcy (2018) identified major constraints experienced by this group that can affect social interaction: ignorance, attitude and trustworthiness of information. Most of the times, people fear disability (Ralph, 2017). Many people have few or no knowledge about disability issues. Ignorance is one of the biggest barriers of staff when leading with PwD (Darcy & Pegg, 2011; McKercher & Darcy, 2018). On the other hand, ignorance leads to a series of negative attitudes towards this group including discrimination and other attitudes, leading this group to feel differently treated and ignored by the society (Darcy & Taylor, 2009; McKercher & Darcy, 2018). Lack and trustworthiness of information create some difficulties to PwD when travelling and enjoying tourism activities (McKercher & Darcy, 2018). These major constraints highlight the importance of training staff so that they gain knowledge about the best way to deal with these groups. When visiting museums people with visual impairments are most of the time accompanied and so, the other person is his/her eyes (Poria et al., 2009).

Throughout their museums' visits, **PwSI interact with staff and experts** (Antón et al., 2018; Kempniak et al., 2017; Levent & Reich, 2013; Mesquita & Carneiro, 2016; vom Lehn, 2010). Staff may significantly support PwD and improve their experience during the visit, either by orienting, guiding, doing descriptions, or answering questions (Dos Santos & De Carvalho, 2012; Levent & Reich, 2013; Small et al., 2012; vom Lehn, 2010).

Victoria Richards et al. (2010) argues that PwSI, including people with visual impairments and deaf and hard hearing people, experience many challenges while travelling. Museums' experience is based on the sense of sight, and this is one of the main reasons

why blind people have little interest in visiting art museums (Poria et al., 2009). Deaf and hard hearing people are two different groups. The first uses sign language as the primary form of communication and the second may not necessarily use sign language or identify with Deaf culture and communities. Both groups experience some special needs concerning communication (Cock et al., 2018).

When asked about staff training, PwD mention the need of training tourism and hospitality staff and even for family and friends regarding disabilities (V. Richards et al., 2010). Teaching practical skills and promote understanding on how PwD are experiencing the world must be a concern for museums. Some staff may have never contacted PwD in their personal or professional life.

Although some visitors **visit museums by their own**, even in these cases social interactions play a critical role in shaping the museum visit as they may include questions, as well as discussions with staff and other visitors that are rarely, if ever, forgotten by the visitors. The importance of involving the community in co-curating and presenting the exhibition together with organisation is referred by Minkiewicz et al. (2016). A museum that doesn't provide an outcome to its community is socially irresponsible (Weil, 2003).

The collective aspect of the visit and the **connection with relatives and friends or with other visitors** is referred by most of the authors, since people usually visit museums in a group (Antón et al., 2018; Campos et al., 2017; Falk & Dierking, 2016b; Minkiewicz et al., 2014, 2016; Mirghadr et al., 2018; Taheri, 2011).

The interaction visitors have during their visits to museums and other cultural attractions generates important outcomes which should be further studied in order to provide a better visit experience to PwD. Depending on the type of disability of the visitors, the interaction with the public is more or less important. People with visual disabilities and deaf and hard hearing people are one group that needs more attention and studies devote little attention to this group (Accentuate & History Place, 2018; Poria et al., 2009).

3.5.3. Digital context

Historically, the main element of the museum experience were objects. Nowadays, museums communicate with visitors through a large number of different elements beyond objects (Falk & Dierking, 2016b). The use of **technology** represents one of the most obvious changes in museums and the uses of these technologies depend on the

approach wanted to the exhibition and on the budget available. Screen based exhibits invite visitors to interact using devices, touchscreen, or trackball (Ambrose & Paine, 2018). Technological tools are helping improve experiences in museums (Soren, 2009). Various forms of interactive experiences are currently offered to visitors “such as flip labels, buttons to push, handles to pull, holes to peep through, digital tools, including audio guides, different forms of audio and video, computer games, and handheld devices” (Falk & Dierking, 2016b, p. 109).

Over the last decades, the adoption of information and communication technologies to enhance customer experience became a major concern in tourism destinations and cultural heritage attractions (Buhalis & Law, 2008; Errichielle et al., 2018; Neuhofer et al., 2013). According to Internet World Stats (2021), more than seven billion eight hundred and seventy five million people (7.875.765.584) had access to devices that connect to internet.

Museums began to use technology in the late 1960s when the systems were mostly used for documentation and management of museum collections (Cheng et al., 2019). However, in the following years, a new paradigm arose in the museums' agenda that evolved from being “object centeredness” to being focused on visitor experience (H. Hein, 2000). Serious changes in the use of technology by museums have occurred due to innovations in Information and Communication Technology (ICT), which are of great importance for the general public, and even more to PwD (Pühretmair & Nussbaum, 2011).

A substantial body of literature on this subject has resulted, due to the increase of the importance of the digital context to communicate with visitors (e.g. virtual reality simulators, augmented reality, interactive 3D, mobile and handhelds, multitouch screens, online tools such as websites and the cloud) (Table 3.8) (H. Chen & Rahman, 2018; Cheng et al., 2019; Falk & Dierking, 2016b; Kempniak et al., 2017; Minkiewicz et al., 2014, 2016; Mirghadr et al., 2018; Simon, 2010; Soren, 2009; Taheri, 2011). Technology can be a facilitator of interactions and connections between visitors and museums can lead to fun, knowledge and engagement (Andre, Durksen, et al., 2017; Moorhouse et al., 2019; Piccialli & Chianese, 2017).

In their studies, Falk and Dierking (2016b) included the digital tools in the physical context, making reference to the increasing relevance of these tools in exhibitions, galleries and museum buildings, as well as in the surroundings of exhibitions and in the

museums' programs. In the present thesis, precisely because of the relevance of the digital context mentioned above, it was decided to approach this context independently.

Table 3.8. Co-creation in the digital context

Context of co-creation	Scale items	Chen & Rahman (2018)	Falk & Dierking (2016)	Kempiak et al. (2017)	Minkiewicz et al. (2014)	Minkiewicz et al. (2016)	Mirghadr et al. (2018)	Simon (2010)	Soren(2009)	Taheri (2011)
CO-CREATION IN THE DIGITAL CONTEXT	Using technologies in general						X			
	Use of new technologies						X			
	Using internet	X								X
	Using provided internet inside the museum (study center)									X
	Using the on-site online facilities	X								X
	Taking advantage of interactive displays			X						
	Interactive displays utilizing technology, music and sounds within the experience space			X						
	Using technology and interactive displays to tailor their experiences.			X						
	Using websites				X		X			X
	Using technology such as websites, blogs and social networking sites to interact with consumers supports (e.g. keep consumers informed of events, running discussion blogs and forums in which consumers participate and share experiences)				X					
	Using the museum website									X
	Providing information and digital experiences on the museum website						X			
	Engaging online experiences for users of museum websites.								X	
	Participating in online activities						X			
	Providing online educational programmes						X			
	Using interactive panels		X		X					X
	Using interactive panels	X								X
	Using technology (interactive panels) to support consumers in co-producing a tailored, customized experience				X					
	Using audioguides									X
	Using a audio guide and watching short movies with cultural places									X
	Using multimedia		X	X						X
	Using multimedia and multisensory approach		X							
	Using of multimedia (e.g. there is an interactive panel where you can put your head in and the skeleton that you see suddenly develops skin and muscles and starts running around doing what dinosaurs do)				X					
	Multimedia displays in the exhibitions				X					
	Using a audio guide and watching short movies with cultural places									X
	Using mobile applications				X	X				
	Holding mobile exhibitions				X	X				
Producing contents, uploading videos, writing blogs/critics using technologie						X				
Producing contents, uploading videos, writing blogs/ critics						X				

Source: Own elaboration.

The use of **technologies** to provide information and digital experiences on the museum website is referred as being one of the strategies to improve education and learning in the museum (Mirghadr et al., 2018).

More and more, museums attempt to create **interactive exhibitions** where visitors can participate and interact with the contents. Some authors found that memorable tourism experiences can be created by visitor engagement with **on-site online** facilities (H. Chen

& Rahman, 2018; Taheri, 2011) or through the use of **specific spaces** inside the museum (e.g. study centers) where internet is provided to visitors (Taheri, 2011).

Today, museums present a huge number of tools to communicate with the public. The use of **websites** (Minkiewicz et al., 2014; Mirghadr et al., 2018; Taheri, 2011), **blogs and social networking sites** allows museums to become more accessible to new audiences (Minkiewicz et al., 2014). The social media, in the last two decades, profoundly influenced museum spaces and art galleries (Fletcher & Lee, 2012; Waller & Waller, 2019). Museums have been using social media (e.g., social networking, podcasting and video/photo sharing websites, as well as blogs, wikis, and question-answer databases) to connect with visitors and non-visitors. On one hand, **social media and digital technologies** are recommended to communicate with the public (Drotner & Schrøder, 2014; Waller & Waller, 2019) and, on another hand, they allow the public to express their emotions, also contributing to the visitors' positive experience and satisfaction (Azmat et al., 2018). Social networks' platforms include Facebook, Twitter, Hi5, Reddit and LinkedIn. Youtube, Tumblr, Instagram, Flickr and Pinterest are examples of social photo and video sharing sites where photos and videos can be shared and commented (Waller & Waller, 2019). The era of digital devices has arrived and the use of multimedia displays in the exhibitions (Minkiewicz et al., 2014), like audio guides or short movies has a very strong influence in involving visitors physically, intellectually, and emotionally in an engaging experience (Taheri, 2011).

The existence of a broad range of tools like interactive panels which allow the involvement with specific objects play an important role in museums nowadays (H. Chen & Rahman, 2018; Minkiewicz et al., 2014; Taheri, 2011). The existence of mobile applications allows consumers to have freedom to co-produce the experience (Minkiewicz et al., 2014; Mirghadr et al., 2018). Another important tool in museums is the virtual reality (VR) technology. The VR technology came up in 1980s and after some years of development, entered in people's daily life, bringing people a new way to have an audio-visual experience. VR is the "use of a computer-generated 3D environment where one can navigate and possibly interact with, resulting in real-time simulation of one or more of the user's five senses" (Guttentag, 2010, p. 638). If well used, virtual reality technology will be of great importance to museum's future development (B. Wang & Liu, 2019). This immersive and interactive tool can engage visitors during the visit avoiding boredom sometimes felt in traditional museum product displays. Visitors can be connected to the museum through the network searching for the theme they are interested in or which they want to learn about. Bo Wang and Liu (2019) state that by

applying VR, museums can give a higher degree of display and real-time interactivity together with a better display of image and better assignment of meaning of the exhibit. Augmented reality (AR) can impose layers of virtual content including 3D digital models and 2D graphics, text, audio, and video on top of real-world objects and artifacts, providing access to normally hidden data (Tesoriero et al., 2014; B. Yoon & Wang, 2014). Nowadays, scanning an AR object with the mobile device is easy as people are used to mobile devices (Ding, 2017) which means that AR can be a powerful tool to be used by museums.

Museums aim to be **accessible to all members of society** and the use of new technologies will approximate users from the museum and make both content and participation more accessible (Black, 2012). The independent access to information is essential for people with special needs caused by several impairments (physical, sensory, mental) (Kerkmann & Lewandowski, 2012). Search engines and their accessibility for PwD is of high relevance as these tools are one of the ways that enable this public to be independent in daily tasks (Kerkmann & Lawandowski, 2012). Due to their constraints, when planning their visits, PwD search more reliable information in order to avoid dangerous situations (Pühretmair, 2004; Puhretmair & Nussbaum, 2011). PwD mainly use internet as the preferred information source for travel planning and, to access the computer, PwD must use Assistive Technologies (AT) which are selected according to their abilities, needs or desires. People with physical disabilities must replace traditional devices as keyboard or pointing devices by alternative keyboards or alternative pointing devices as joysticks, trackballs and head or eye trackers combined with on-screen keyboards (Puhretmair & Nussbaum, 2011).

Blind visitors or people with other visual impairments often use Braille displays and audio outputs supported by screen reader software. The software verbalizes the content of the image or graphic, making it readable for this group. AT can be either “low tech like eating devices, mouth sticks, communication boards with pictures or big button phones or high tech like environmental controls, computer control by eye motion, head or lip movement, devices with voice recognition and screen readers” (Puhretmair & Nussbaum, 2011, p. 278).

Deaf and hard hearing people can benefit from the use of audio guides with volume enhancement and transcripts (recommended for people wearing hearing aid devices and those with Cochlear implant devices), hearing induction loops with inbuilt Bluetooth transmitters or dual Bluetooth/infrared options. Modern hearing aid devices can connect via Bluetooth with mobile phone and tablet devices (Cock et al., 2018).

3.5.4. Multiple contexts

Co-creation in museums can also take place involving multiple contexts. That is, for example, the case of several activities and programs presented at table 3.9, which occur in the physical context, but have also a clearly social dimension.

One of the ways to improve the quality of the visitor experience is by using interpretation. The traditional definition of “interpretation” describes the process as “an educational activity that seeks to reveal meanings and interrelationships through the use of original objects, direct contact with the resource, or illustrative means; merely transmitting factual information” (Tilden, 1977, p. 8). Ambrose and Paine (2018) state that interpretation, in an extended notion, usually, in a general way, means translating something to another language. However, in heritage and museums it means much more, interpretation is the act of explaining an object and its meaning. Choosing the right interpretation technique is of main importance for the success of the visit.

The involvement and participation of visitors in museums’ activities are essential to co-create experiences (Antón et al., 2017; Minkiewicz et al., 2014). In order to present their collections to visitors, museums can use several different techniques. Some of the techniques are very simple, while others are much more sophisticated.

Museums’ visitors are expecting more involvement and a more active participation during their experiences and contact with the museum (Antón et al., 2018; Minkiewicz et al., 2014). This active participation and involvement may happen due to several strategies. Changes in presentation and interpretation techniques, such as the increasing use of live interpretation, storytelling, guided talks and walks, participation in workshops like “hands on” activities and role play activities, among others, are leading to greater interest in dynamic interpretation techniques.

Most of the interpretation techniques use people in the interpretation process. Staff and volunteers must engage interest through active involvement and interaction with visitors.

Many museums use performances to interact with audience. For example, “**living history**”, “**re-enactment**” or “**storytelling**” are important tools to ensure a large number of visitors (Falk & Dierking, 2016b; Kempniak et al., 2017; Mirghadr et al., 2018). According to Ambrose and Paine (2018, p. 150), in museums “people spend a great deal of their spare time dressing up in historic costume and re-enacting scenes from the past”.

Demonstrations enhance the attractiveness of the museum (Falk & Dierking, 2016b). If museums provide extra activities, demonstrations of replicas or any kind of activity, they are showing to their customers that added value is being provided for their service (Ambrose & Paine, 2016). Museums use demonstrators to bring exhibitions to life. However, it is important to ensure that the information provided is accurate and interesting (Ambrose & Paine, 2016).

Families were always an important audience in museums as they perceived the museum as being an important place to spend quality time and learn together (Falk & Dierking, 2016b). Falk and Dierking (2016b) point out that providing **programs focused on families** and youth has several advantages, helping to increase visitors' loyalty towards the institution. According to these authors, after participating in these engaging programs, visitors' interest and attitude towards museums improve.

The **guided tour** is a classic interpretation technique, but a very skillful guide is required (Ambrose & Paine, 2018). A tour guide must be at once a performer, an entertainer, and an interpreter (Overend, 2012). Some authors highlight the importance of participating in guided tours (H. Chen & Rahman, 2018; Mirghadr et al., 2018) or in **workshops** where participants can create something tangible or engaging in interactive or "hands on" activities (Kempiak et al., 2017; Minkiewicz et al., 2014, 2016; Mirghadr et al., 2018), since both can provide an impressive experience to visitors. In fact, visitors' **participation in activities in general** (educational, recreational or role play activities) increase their experience co-creation in museums (Mirghadr et al., 2018; Taheri, 2011; Tan et al., 2014).

Table 3.9. Co-creation in multiple contexts

Context of co-creation	Scale items	Anton et al. (2018)	Chen & Rahman (20178)	Falk & Dierking (2016)	Kempiak et al. (2017)	Minkiewicz et al. (2014)	Minkiewicz et al. (2016)	Mirghadr et al. (2018)	Taheri (2011)	Tan, Luh, & Kung (2014)
		Actively participating in the visit	X				X			
CO-CREATION IN MULTIPLE CONTEXTS	Participating actively in the visit	X								
	Involvement and participation of visitor in the activities of the museum and making sense of the experience					X				
	Attending performances			X	X			X		
	Offering performances (e.g. living history and re-enactment)				X					
	Holding events and performance art activities at the museum							X		
	Listening to storytelling							X		
	Storytelling on the topics discussed in the museum							X		
	Attending demonstrations			X						
	Using of theatre, performance, demonstrations			X						
	Attending programs			X			X	X		
	Providing programs focused on families and youth			X						
	Conducting programs that involve consumers taking on significant roles in their experience, such as an acting role in a demonstration						X			
	Holding exhibitions and thematic programmes at the museum							X		
	Participating in guided tours		X					X		
	Guided tour		X					X		
	Organized and guided tours with an expert		X					X		
	Organized visits							X		
	Participating in workshops	X			X	X	X			
	Opportunities to create something tangible (workshops)						X			
	Engaging in interactive and "hands on" workshops				X					
	Offering participatory activities (e.g. workshops)	X					X			
	Interactive workshops						X	X		
	Participating in recreational and educational activities								X	
	Creating combined educational and recreational activities								X	
	Participating in role play activities									X
	Role play activities									X
Participating in events			X	X						
Offering special events (e.g. Open Arms Program and the Play for All Program)			X	X						
Participating in activities (activities not specified)	X					X	X		X	
Participating in activities						X				
Involvement and participation of visitor in the activities of the museum and making sense of the experience							X			
Offering new activities in order to attract people to participate	X								X	

Source: Own elaboration.

Providing **special events** (Falk & Dierking, 2016b; Kempia et al., 2017) enhances the visitor experience and is an increasingly used museum practice over the last years. Special events can take all sorts of forms: an activity like “watercolour painting”, or a class of object such as “pottery”, or a historical period. These events can last half a day, a day, an overnight (a “sleepover”), a weekend or eventually more.

Concerning co-creation in multiple contexts, and with regards to PwD, there are many ways to make collections more accessible. According to Hillis (2005) and Rnib et Vocaley (2003), there are numerous approaches to help PwD to experience museums. Some examples mentioned are guided tours where touch tours, trails and handling sessions, practical art workshops and other hands-on sessions are allowed, or sign language tours. Additionally, especially in heritage sites, sensory gardens and trails are also mentioned.

As previously mentioned, there is a lack of empirical studies concerning co-creation in museums and its contexts. Nowadays, museums are ideal places to improve accessibilities due to the rise of people with special needs to these places. Different models that are central to the creation of experiences were presented (Falk & Dierking, 2016b; Mossberg, 2007; Rahimi, 2014; Tarssanen & Kylanen, 2005).

In the present thesis two contexts of Falk and Dierking’s contextual Model were used - the physical and social context. The mentioned contexts, together with the digital context and multiple contexts are used as a basis in this thesis.

3.6. Conclusion

The literature reviewed in this chapter provides valuable insights into museums, PwSI and co-creation in museums in different contexts. Several researchers reported that although inclusion and accessibility in museums is evolving as an important topic in the academic field, studies that discuss antecedents, co-creation of experiences and the outcomes of PwSI in museum activities are still scarce. In this sense it is essential to undertake research in this scope.

Museums, in an ample meaning are as old as history and since their earlier times there have been big changes in the role they hold to the society. In the 21st century, museums seek to be inclusive by increasing their physical, communicational, or attitudinal access. Museums are institutions with social responsibilities operating “in the service of society

and its development". In that sense, museums play an important role in decreasing discrimination and other human rights' abuses by generating satisfaction and positive outcomes for their visitors. Social inclusion is essential for museums as these are social spaces for visitors.

Many people with disabilities do not have access to some Human issues: health care, education, and employment opportunities. Thus, PwD experience worse socioeconomic conditions and poverty than people without disabilities. The literature suggested that they have poor esteem, if society doesn't include and support them.

Disability is a complex and dynamic concept which is a part of the human condition. There is an extensive literature related to disability and the way most lives are affected by disabilities in some way, even if someone was not born with an impairment. During life anyone can develop a disease or have an accident that can affect him/her, temporarily or permanently. Depending on the age that the person has when affected by such disabilities, the experiences they go through, and the way they deal with it will be completely different.

Researchers have various perspectives on disability. Therefore, they have proposed various models regarding views on disability: the medical model (focusing on impairment); the social model (focusing on the social construction of disability); and the last approach, the biopsychosocial model (which recognizes that disability is an interaction of biological, social, environmental, cultural, and economic factors). These different ways of presenting disabilities include different points of view about how to include PwD. Disabilities were also categorized into various broad types, with sensory impairments being already recognised as an important type of impairment.

One way to increase the active participation of these groups is co-creating a process where all players are engaged. Studies on the value of co-creation appeared in 2004, by Prahalad and Ramaswamy, and the concept emerged in tourism in 2006, by Binkhorst, in his study "the co-creation of tourism experience", where the aim was to explore what the co-creation of experiences in tourism meant.

The literature reveals that co-creation can happen in different contexts (physical, social, digital, and multiple context) and some strategies are mentioned in order to increase the way people engage and interact with the space. Considering the notorious gap in literature regarding empirical studies identifying the way co-creation can occur in museums, one of the main aims of this chapter was to analyse the role of museums in

the 21st century, the related concepts of disability and the way co-creation can be stimulated in different contexts of the museums in order to promote co-creation of experiences.

4. Antecedents and outcomes of co-creation of experiences in museums by PwSI

“Not everything that is faced can be changed,
but nothing can be changed until it is faced”

James Baldwin

4.1. Introduction

In the previous chapter, co-creation of experiences in museums in different contexts, for PwSI were analysed. Nevertheless, to better understand co-creation, it is relevant to examine the antecedents and outcomes of this process, that is, the factors that stimulate or prevent co-creation of experiences in museums.

This chapter comprises a literature review on main antecedents and outcomes of co-creation of experiences in museums by PwSI. Although a great part of the literature reviewed is related to visitors in general, due to the scarce research on the segment under analysis in this thesis, there was a progressive focus towards PwD and PwSI. First, the antecedents in the tourism domain are presented and afterwards, specifically, antecedents in the museum context are identified. Antecedents of co-creation in museums will be discussed from the visitors' perspective. Then, the literature about outcomes of co-creation of experiences in museums is presented. Throughout the section, various potential outcomes of co-creation in museums will be discussed, namely perceived value – emotional, learning, and social value -, satisfaction and loyalty.

4.2. Antecedents of co-creation of experiences in museums by PwSI

4.2.1. Antecedents of co-creation

Antecedents are a general concept and, according to Lewin (1943), they could work as **facilitators** (driving visitors towards a goal) or as **constraints** of activities (blocking the activity). According to the author any event is a result of a multitude of factors. In tourism, research on leisure **constraints** has been developing quickly, emerging within leisure studies at the beginning of the 1980s (Alexandris et al., 2017; Devile & Kastenzholz, 2018; Jun et al., 2008; Mullens & Glorieux, 2019; Tuan et al., 2019) with researchers focusing

on aspects that inhibit people from participating in leisure tourism. Later, in 1990s, the concept of constraints emerged, corresponding to insurmountable barriers with no possibility of being negotiated which prevent participation in leisure activities (Carneiro, 2007). However, this idea was replaced by a new perspective of constraint introduced by Jackson et al. (1993) and supported by other researchers (e.g. Crawford et al., 1991; Crawford & Godbey, 1987; Jackson & Scott, 1999), which highlighted the difference between constraints and barriers. These researchers suggested that the term “barriers to recreation participation” should be replaced by a broader concept of “constraint”. In this context, the term “barrier” referred to any factor that affected leisure participation in a negative way (limiting participation, reducing the frequency or intensity of participation, reducing the quality of the experience or satisfaction) (Goodale & Witt, 1989; E. L. Jackson, 1989), while “constraints” was more encompassing and included barriers before a preference was made (Crawford & Godbey, 1987). However, the major change in the perspective of constraints was that researchers began arguing that the constraints could be negotiated and were surmountable. According to the Oxford English Dictionary (2021), “barrier” is defined as an object like a fence or other obstacle that prevents movement or access. Merriam-Webster (2021a) evidences the physical dimension of barrier, stating that a barrier is something material that blocks or intends to block passage. In contrast, Jackson (2000) proposes a definition of constraints where they are seen as negotiable. Then, Jackson (2000, p. 66) defines **constraints** as “factors that are assumed by researchers and perceived or experienced by individuals to limit the formation of leisure preferences and/or to inhibit or prohibit participation and enjoyment in leisure”.

In the scope of the research on disability in tourism, the term barrier was replaced, by some authors, by the term constraints (Daniels et al., 2005; Darcy et al., 2017; Goodall et al., 2004; Kastenholz et al., 2015; Michopoulou et al., 2015; Small et al., 2012), as most of the aspects that were considered barriers can be overcome. In the context of PwD in tourism, the concept of “barriers” or “constraints” has been studied by several authors (Buhalis & Darcy, 2011; Burnett & Baker, 2001; Darcy, 2002; Darcy et al., 2017; Devile & Kastenholz, 2018; Israeli, 2002; McKercher & Darcy, 2018; Poria et al., 2009; Ray & Ryder, 2003). Mai and Lantai (2018) state that constraints influence the type of tourism activities, frequency and destination choices. Concerning museums, Jun et al. (2008) argue that several constraints experienced by visitors may decrease the public’s interest in attending museums.

In the present thesis, the word **constraint** will be adopted, as well as the definition of constraint proposed by Jackson (2000) previously presented, since “constraints” are more comprehensive (including barriers before a preference is made) and are negotiable. The term “constraints” may encompass a huge number of different aspects. Different classifications of factors which hinder or inhibit participation have been proposed. Despite the diversity that prevails in this scope, some authors in the leisure literature identified similar categories of constraints or barriers that influence leisure behaviour (Crawford et al., 1991; Crawford & Godbey, 1987; Daniels et al., 2005; Devile & Kastenholz, 2018; Lehto et al., 2018; Lyu, 2017; Lyu et al., 2013; Michopoulou et al., 2015; Smith, 1987).

Many of past studies identified three types of constraints – **intrapersonal**, **interpersonal** and **structural** (Crawford & Godbey, 1987; Daniels et al., 2005; Lehto et al., 2018; Lyu et al., 2013; Mei & Lantai, 2018; Michopoulou et al., 2015) – that may influence preferences or participation in leisure (Crawford et al., 1991; Crawford & Godbey, 1987):

- **Intrapersonal constraints** – individual’s psychological state, physical functioning level or cognitive ability (e.g., lack of knowledge, health condition, age, personal fears, stress, anxiety, social ineffectiveness, personality and personal interest in travel);
- **Interpersonal constraints** – associated with difficulties in existing social relationships and can occur during interactions with different kinds of people – an individual’s social network, service providers or strangers –, or due to lack of partner with whom to engage in leisure activities, or to service providers’ and other tourists’ unpleasant attitudes;
- **Structural constraints** – intervene between preferences and participation (e.g., financial difficulties, lack of time, unsuitable travel products or programs, or constraints due to accommodation, facilities, and restaurants).

This classification has been used, largely, in tourism literature (Alexandris et al., 2017; Jackson & Scott, 1999; Jun et al., 2011; Michopoulou et al., 2015; Nyaupane et al., 2004). The intrapersonal constraints are, according to Crawford et al. (1991), the most powerful factors and the most difficult to be overcome, followed by structural constraints and by interpersonal constraints. Mei and Lantai (2018) also state that, only after overcoming intrapersonal constraints, individuals face the next levels of constraints – interpersonal and structural constraints.

Several studies (Batra & Ahtola, 1990; H. Chen & Rahman, 2018; Malhotra, 1981; Naylor & Kleiser, 2002; Prebensen et al., 2018; Prebensen, Chen, et al., 2014; Sirgy, 1982; Zuckerman, 2009) show that a range of variables can work as antecedents, i.e. facilitators or constraints, in co-creation of experiences such as tourists' demographic characteristics (e.g. gender, age, social class), psychographic variables (variety seeking, hedonism, arousal/sensation seeking, search for emotions, self-congruency mechanism), personality, life cycle or lifestyles, reference groups, previous knowledge and experiences, culture, engagement history, information sources, interests, self-perceptions and identity.

Some literature suggests that PwSI face many constraints in various contexts and, therefore, aspects associated with disabilities, namely their nature and degree, may be analysed as potential antecedents of tourism in general, and of the co-creation of experiences in museums in particular (Goss et al., 2015; Hillis, 2005; Mesquita & Carneiro, 2016; Poria et al., 2009; V. Richards et al., 2010). However, it is important to consider that there has been a big change in the way society views disabilities over time, although there is still no agreement over the correct way to approach disabilities. The different “models of disability”, which have been used to determine who is disabled and who is not disabled among the population, reflect this change and have shaped the language and the behaviours that are acceptable.

Considering the **social model** regarding PwD, new strategies of social transformation of removing constraints to promote inclusion and to replace the negative connotation of the condition felt by this group, became a priority (Shakespeare, 2018). The social model, indeed, postulates that people are disabled by society, rather than by their bodies (Ralph, 2017; Shakespeare, 2018). Darcy and Buhalis (2011) recognized that the medical model identifies disability as an illness or condition affecting an individual. The onus is on the individual to deal with consequences, locating blame or responsibility around the person with the disability, leaving him/her to manage solutions, whereas the social model identifies barriers within society which create disability for individuals. According to Ralph (2017) disability is created by having barriers built by the society that can be physical, organisational, and attitudinal. There is also the biopsychosocial model, where disability is regarded as an outcome of the interaction of impairment, activity limitations, and participation restrictions in a certain environment (Balakrishnan et al., 2019; WHO & The World Bank, 2011). Although according to the Wellcome Collection and the Research Centre for Museums and Galleries (RCMG) (2020) medicalised ways of seeing disabilities are dominant, not only in museums but in all areas of public life, it is important

to consider that those who are disabled may experience constraints towards co-creation in museums, because of the problems they hold, but also because the society and the environment are not appropriately adapted to satisfy their requirements.

According to article 1 of the Convention on the Rights of Persons with Disabilities and Optional Protocol (United Nations, 2006), “Persons with disabilities include those who have long-term physical, mental, intellectual or sensory impairments which in interaction with various barriers may hinder their full and effective participation in society on an equal basis with others”. This means that there are barriers which prevent individuals with disabilities to live their daily life. According to the World Health Organization and World Bank (2011), personal and environmental factors are recognized to have a high influence in the life of PwD. Personal factors, like motivation and self-esteem, can work as facilitators, influencing individual participation in society, with the lack of these factors corresponding to an inhibitor. Also promoting or restraining participation, environmental factors make up the physical, social, and attitudinal environment in which people live and conduct their lives.

The current ongoing interest in PwD increased the branch of tourism research related to reasons for PwD not traveling. One of the pioneers in the subject of disability and tourism, was Smith (1987), who categorized the constraints experienced by PwD in the scope of tourism in three main types: **intrinsic constraints** (relating to physical, psychological or cognitive functioning level of each person, parental over-protection or inadequate educational opportunities); **environmental** (externally imposed limitations including attitudinal, architectural, ecological, transportation, rules and regulation barriers) and **interactive constraints** (skill-challenge incongruities and communication barriers). This classification has been supported by other authors such as Knudson et al. (1995) who recognise **intrinsic, environmental, and communication barriers** with reference to people with disabilities: (i) intrinsic barriers result from an individual personal limitation such as physical, psychological, or cognitive disabilities (e.g. health problems or skill gaps); (ii) environmental barriers involve external forces that constrain the individual (e.g. architectural structure, natural and topographical obstacles); and (iii) communication barriers derive from the lack of interconnection.

Although museums are part of tourism and leisure repertoire, very little is known about constraints regarding cultural participation (Jun et al., 2008; Mullens & Glorieux, 2019) and about the factors that facilitate or constrain the co-creation of public in general or PwD and, more specifically, PwSI, when visiting a museum. In the following section the antecedents of co-creation in museums will be analysed and discussed.

4.2.2. Antecedents of co-creation in museums

Studying antecedents of co-creation in museums is important to understand why people do not participate in activities during their visits to museums and how to facilitate their participation. Nevertheless, only a few articles were published specifically concerning **museums**, presenting some of the facilitators and constraints felt by visitors during their visits (Blume-Kohout et al., 2015; A. Davies & Prentice, 2017; Jun et al., 2008; Luckerhoff et al., 2008; Mesquita & Carneiro, 2016; Mullens & Glorieux, 2019; Nowacki, 2011; Poria et al., 2009) and that may also be antecedents influencing co-creation.

In general, the categorization used by Crawford and Godbey (1987) and Crawford et al. (1991) also remains the most used in the museums' domain. Luckerhoff et al. (2008) mentioned that the categorizations of leisure constraints proposed by Crawford et al. (1991) seems ideally suited to help better understand what can lead people not to visit museums. Jun et al. (2008) studied the intrapersonal, interpersonal, and structural barriers to museums attendance for interested non-visitors. Concerning PwD, Poria et al. (2009) adopted the same categorization of constraints as Crawford and Godbey (1987) and Crawford et al. (1991) – intrapersonal, interpersonal and structural barriers - to the visit to art museums, and Knudson et al. (1995) classified the constraints similarly to Smith (1987) as intrinsic, environmental and communication barriers. Intrinsic barriers were related to an individual personal limitation (physical, psychological, or cognitive disabilities such as health problems or skill gaps), while environmental barriers involve external factors that constrain the individual (e.g., architectural structure and natural and topographical obstacles) and communication barriers result from the lack of ability to interconnect (Knudson et al. 1995).

Research on constraints for visiting museums provides some insights concerning potential constraints to co-creation in museums to the general public and to PwSI in particular, although there is still not a deep discussion nor a comprehensive empirical study on this subject. An in-depth discussion on this kind of factors will be made in the following sections and, in the empirical study of the present thesis, the influence of many constraints to co-creation in museums will be analysed.

Since there is not a classification of antecedents to co-creation in museums, because a comprehensive set of these antecedents has not been identified yet, considering the literature related to PwD and to the general public of museums (Allan & Altal, 2016; Belver et al., 2018; Candlin, 2008; Dincer et al., 2019; Ding, 2017; Falk & Dierking,

2016b; Gallego & Olalla, 2018; Kinsley, 2016; Migliaccio, 2018; Poria et al., 2009; Prentice et al., 1997; Rahimi, 2014; B. Wang & Liu, 2019), as well as the categorisations of constraints presented above, a categorisation of antecedents to co-creation in museums is proposed in this thesis. In this categorisation, the antecedents are divided in two main categories - visitors' antecedents (those related to the visitors) and museums' antecedents (those related to the museums). This partially resembles the categorisations proposed by Smith (1987) and Knudson et al. (1995), who distinguish intrinsic constraints from the other kind of constraints. However, two different types of antecedents related to visitors will be considered in the present thesis - individual antecedents and visit context variables, given that, as will be discussed later, literature suggests that they may influence visits to museums (some of them having a special impact in the visit of PwD). Individual antecedents, specifically the disability, including the type and level of disability, will be considered, given the specific approaches needed to cope with the needs of PwD in museums, as will be discussed in the next section. Visit context variables, such as prior experience with museums and the visit group (the group with which the visitor visits the museum), are also considered in this scope since, as will be discussed in the next section, on one hand, previous visits to museums can provide ability to cope with some issues in museums (even with constraints), as well as shape expectations. Moreover, some people with whom visitors visit the museum can perform a significant role in the co-creation process. In the case of the antecedents related to museums, it was decided to identify three categories of antecedents: (i) communication aspects (e.g. written or oral information) due to the important role that communication performs in facilitating co-creation, as will be discussed later, and to the relevance the communicational constraints seem to have, being autonomised as a category of constraints in the classification of Smith (1987) and Knudson et al. (1995); (ii) physical aspects, associated with the physical context of the museum already identified by Falk and Dierking (2016a), which may also greatly affect co-creation as will be analysed next; and (iii) attitudinal aspects, interpersonal features that may also have an important effect either on facilitating or hindering co-creation, especially regarding PwD, due to the knowledge and sensitivity needed to cope with their disabilities, which will be addressed next.

In summary, the classification of antecedents proposed in this thesis holds the following categories of antecedents (Figure 4.1):

- Visitor's antecedents – associated with the characteristics of visitors or with visit context variables (such as prior experience with museums and the visit group);

- Museums' antecedents – related to the museum the person is visiting, encompassing physical, communicational, and attitudinal factors.

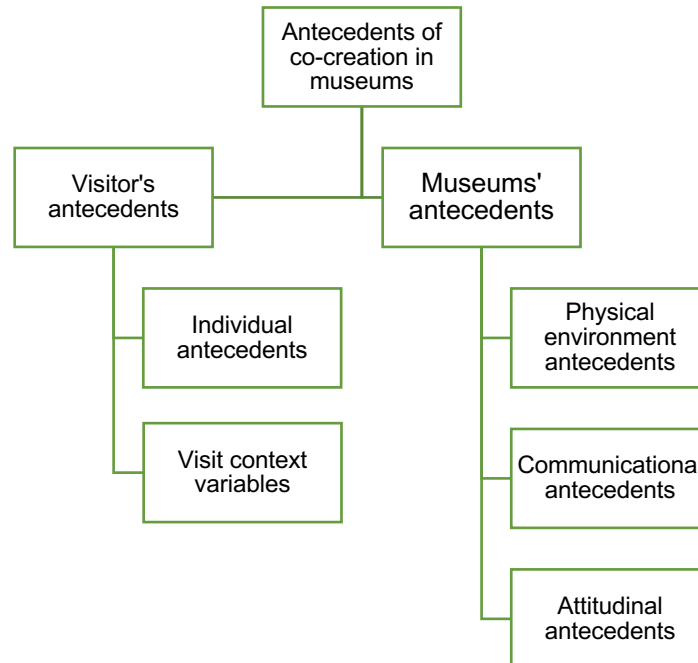


Figure 4.1. Antecedents of co-creation in museums

Source: Own elaboration.

4.2.2.1. Visitors' antecedents

4.2.2.1.1. Individual antecedents

Visitors' individual antecedents, according to Knudson et al. (1995), are referred as intrinsic barriers and can be related to individual's physical, psychological, or cognitive disabilities (e.g. health problems or skill gaps). These antecedents can inhibit or block participation in a certain activity, as will be discussed later. Understanding these intrinsic aspects can greatly help people overcome the constraints as these are the first constraints people, including PwD, face, and they affect preferences regarding an activity (Mullens & Glorieux, 2019).

In the present thesis, concerning individual antecedents, the focus will be on specific antecedents, namely the different types and levels of disabilities, since people with sensory impairments will be the main target of the study developed in this thesis. As presented in section 3.2, and according to the World Health Organization and The World Bank (2011), people may have very **different degrees of disability**, which can be

classified according to the level of difficulty as mild, moderate, severe or extreme. Besides that, people with **different types of disabilities** can experience distinct constraints. Considering this reality, it is important to understand the constraints felt by different groups of PwSI – segment in analysis in this thesis. In the **sensory impairments' category**, the author of this thesis includes people with visual impairments (PwVI), for whom the ability to see is limited or absent, and people with hearing impairments (PwHI), who are completely deaf or are hard of hearing. The first group (PwVI) refers to people who present reduced performance in tasks requiring vision, orientation, who have difficulties in written communication and/or difficulties in understanding information presented visually. The second group (PwHI) refers to people that can hear nothing or to those that have a partial hearing capability in one or both ears, requiring the use of a special aid. PwHI have difficulties with oral communication and/or difficulties in understanding audio presented information (Darcy & Buhalis, 2011; WHO, 2021; WHO & The World Bank, 2011).

It has been noted that PwD still experience significant limitations in everyday activities due to factors that also prevent PwD from participation and enjoyment in leisure (Daniels et al., 2005; Devile & Kastenholz, 2018; McKercher et al., 2003; T. L. Packer et al., 2007; Yau et al., 2004). According to some leisure research, important constraints to **co-creation** can be intrinsic constraints that are related to personal limitations due to the society not being able to cope with a person's physical functioning, psychological or cognitive disabilities (Devile & Kastenholz, 2018; Knudson et al., 1995; Nyaupane & Andereck, 2008). Visitors' experiences can be analysed considering the nature of the impairment – physical, sensory, communication, intellectual/mental health or hidden health conditions with disabilities (Darcy & Buhalis, 2011) -, with different impairment types leading to different patterns of behaviour and special needs during a visit. Distinct types of disabilities usually lead to different constraints due to the different access requirements associated with different types of disabilities (Lehto et al., 2018). Previous research discussed in this thesis suggests that disabilities, according to their nature and degree, may bring constraints to the co-creation of experiences.

As privileged learning environments, museums are of great value to PwD (Metatla et al., 2018). However, a lot of work still needs to be done (Cachia, 2013; Krivec et al., 2014; Mesquita & Carneiro, 2016; Small et al., 2012; S. A. Yoon et al., 2012). Museums, as places for education and social encounters, have a prime importance in the **inclusion** of PwD (vom Lehn, 2010; Walters, 2009). Several authors point out that museums have been seeking to enlarge their audience and claim to a wider social mix (Ambrose &

Paine, 2018; Merriman, 2000). Black (2005) already argued that museums were becoming agents of social inclusion and, therefore, working practices to promote that inclusion were required.

According to Cock et al. (2018) in the State of Museum Access, museums can therefore help increase the participation of PwD simply by providing useful information. Due to specific requirements related to the needs of PwD museums might have to adapt the environment and the exhibitions so that they are accessible for all.

In the case of PwVI and PwHI, the request for access to the exhibits of museums is one of the most important tasks of many museums. Some authors referred factors that hindered accessibility of PwSI such as touch unavailability, unawareness of staff to deal with specific individual requirements, limited or incomprehensible oral and written information, the architecture of the museums and inaccessible museum websites (Argyropoulos & Kanari, 2015; Hetherington, 2015; Poria et al., 2009; Rodgers, 2005).

The literature reviewed in this section indicates that intrinsic constraints may highly influence intention to visit museums and to participate in activities. It specifically suggests that co-creative experiences can be affected, in different degrees, by the diverse types and levels of disabilities. However, due to the scarce research in this field, specifically on individual antecedents that affect the visits of museums made by PwD, it is important to conduct further investigation in this context.

4.2.2.1.2. Visit context variables

Within the museum context, several authors have highlighted the role of **prior experience** (familiarity with museums), as a determinant of the likelihood of visiting museums, of the participation in activities, as well as of benefits felt because of these visits and activities (Falk & Dierking, 2016b; Falk & Storksdieck, 2010; Taheri, 2011) (Table 4.1). Prior experience is an important determinant of behaviour, referred by researchers over the time (Ajzen & Fishbein, 1980; Bagozzi, 1981; Falk & Dierking, 2016b; Fishbein & Ajzen, 1975; Taheri, 2011). Prior experience plays an important role in shaping not only the reason why people visit museums, but also what they like to interact with when visiting this kind of attractions. Literature (Carù & Cova, 2005; Falk & Dierking, 1997; Falk & Storksdieck, 2005) also suggests that prior experience positively influences participation and interaction in museums' visit as well as the intention to revisit and recommend the space. The museums' proposal is increased with value and certain

familiarity is created leading the visitors to play an active role in the co-creation process (Antón et al., 2018) with other subjects and environment (Campos et al., 2018)

Prior experience shapes expectations as these are influenced by previous visits to the same or comparable places, as pointed by Falk and Dierking (2016b). The prior experiences allow people to know what to expect, how to behave, how to find something and to better shape expectations and behaviours.

According to Taheri (2011), prior experience is the most important influential factor in visiting museums. The more a person knows a place, the more a person is comfortable in it (Taheri, 2011; Taheri et al., 2014). According to Lehto et al. (2004) and Taheri (2014), the more experience a person possesses about a place or an activity, the more a person tends to be involved in experience co-creation. Some visitors arrive at the museum with an idea of what they will find inside it and what they will do. This prior experience influences the decision to visit a certain place and affects the way the museum will be experienced. The more one visits museums, the more one gets used to them. This gives the visitor the background knowledge necessary to participate in activities and interact during the visit much more at ease (Falk & Dierking, 2016b). Black (2005) states that regular visitors to museums seek deeper levels of engagement and active participation in activities. A frequent visitor's pathway is considerably different from an inexperienced visitor: the frequent visitor uses knowledge to better respond to his/her needs (Falk & Dierking, 2016b).

Concerning PwD, Devile and Kastenholz (2018) suggest that the more they travel, the more they acquire experience and confidence in their tourism consumption decisions. This self-confidence allows them to deal with obstacles in a better way.

Table 4.1. Visitors' antecedents of co-creation in museums

Individual antecedents	Authors/Year
Prior experience	Antón et al. (2018); Argyropoulos & Kanari, (2015); Bagozzi (1981); Carù & Cova (2005), Chang (2006); Devile & Kastenholz (2018); Falk & Dierking (2000, 2016b); Falk & Storksdieck (2005); Minkiewicz et al. (2014); Mirghadr et al. (2018); Prebensen & Foss (2011); Sheng & Chen (2012); Taheri et al. (2014).
Visit travel group	Asakawa et al. (2018); Bitgood (2010); Chang (2006); Daniels et al. (2005); Debenedetti (2003); Devile & Kastenholz (2018); Falk & Dierking (2016b); Patel et al. (2016); vom Lehn (2010)

Source: Own elaboration.

Another important variable in the visit context is the **travel or visit group** (Table 4.1). According to leisure constraints' studies, one of the main factors that can prevent people participation in tourism activities is also the lack of a companion during the travel experience (Daniels et al., 2005; Devile & Kastenholz, 2018; Nyaupane et al., 2004) (Table 4.1). Museums are usually associated with social experiences. Most people visit museums with a partner, friend, or family group and the presence of such companions can help breaking barriers and improve the experience (Daniels et al., 2005; J. Packer & Ballantyne, 2005). According to Falk and Dierking (2016b), museums are social places where people interact with each other in many ways. Visitors, together with staff and volunteers, play an important role in facilitating the visitor experience (Kusayama, 2005).

Social theories refer the importance of observing the behaviour of others (Cheng et al., 2019; J. Packer & Ballantyne, 2005). People stimulate each other in several ways with questions, comments and new ideas that arouse curiosity (Cheng et al., 2019; Paris, 1997). This interaction encourages discussion and promotes teamwork and cooperation. People get more motivated when working with others and, as a result, they work harder.

There is no doubt that, for PwD and their families, social interaction is an important aspect of the museum visit (Falk & Dierking, 2016b). One possible explanation for this conclusion is that visitors with companions perceive a minimum amount of social risk arising from the interaction with the museum environment.

For PwD, it is important to have an individual's social network, in which the interaction with staff, travel companions and the positive attitudes of others work as facilitators. Positive and attentive attitudes both from professionals and from travel companions can help to overcome some barriers (T. L. Packer et al., 2007) and, according to some

authors, assume an important role in the travel decision process (Devile & Kastenholz, 2018; T. L. Packer et al., 2007; Yau et al., 2004). The support of family and other people play an important role, assisting the decision-making process and helping these groups to overcome some barriers, for example finding access information, understanding the contents presented in the exhibitions and finding the way (Asakawa et al., 2018; vom Lehn, 2010). Some authors referred the importance of customer-to-customer social practices to provide positive tourism experiences (Chiscano & Darcy, 2020; Pandey & Kumar, 2020; Wu, 2007). Bitgood (2010) considered talking with group members about the exhibit content and the demand for special attention from group members as important steps in the engagement process. The importance of staff to stimulate the active participation with the exhibition will be discussed more deeply in section 4.2.2.2.

4.2.2.2. Museums' antecedents

In the present section, museums' antecedents, that is, the antecedents related to museums, will be analysed. As previously explained, antecedents associated with the physical, communicational, and attitudinal contexts of museums will be analysed (Table 4.2).

Table 4.2. Museums' antecedents of co-creation in museums (continues)

Physical environment factors	Authors
Logical organisation of the venue (e.g., reception at the entrance)	Falk & Dierking (2016b); Goulding (2000); Mesquita & Carneiro (2016); Poria et al.(2009); V.Richards et al. (2010); Small et al.(2012)
3D models or relief maps representing the museum	Lancioni et al.(2010)
Clear signage	Durão (2009); Goulding,(2000)
Physical guidance to help identify pathways (e.g., handrails, labelling)	Chick (2017); Mesquita & Carneiro (2016); Poria et al.(2009); V.Richards et al. (2010); Salmen et al.(1998)
Systems to help identify directions and objects (e.g., sound or digital systems)	Asakawa et al. (2018); Duckett & Pratt (2001)
Floor without steps or accentuated unevenness	Darcy (2010); Figueiredo et al. (2012); McKercher & Darcy (2018); Mesquita & Carneiro (2016); V.Richards et al. (2010)
Floor without other physical barriers	Mesquita & Carneiro (2016); V.Richards et al. (2010)

Table 4.2. Museums' antecedents of co-creation in museums (continuation)

Communicational factors	Authors
Suitable lighting in the venue and in the exhibitions	Chick (2017); Kempiaik et al. (2017); Mesquita & Carneiro (2016); Richards et al. (2010)
Guided tours	Antón (2018); Falk & Dierking (2016b); Grandi & Gomes (2017); Hillis (2005); Kempiaik et al. (2017); Meliones & Sampson (2018); Minkiewicz et al. (2014); Pattison & Dierking (2013); Udo & Fels (2010)
Flyers, brochures or guides	Ambrose & Paine (2018)
Information board and panels	Ambrose & Paine (2018)
Relief figures	Grandi & Gomes (2017); Mesquita & Carneiro (2016); V.Richards et al. (2010); Rnib et Vocaleyes (2003)
Chance to touch/hold objects, models or replicas	Antón (2018); Cachia (2013); Candlin (2008); Cho & Jolley (2016); Grandi & Gomes (2017); Krivec et al. (2014); Mesquita & Carneiro (2016); Minkiewicz et al. (2014); Mirghadr et al. (2018); Poria et al (2009); Rnib et Vocaleyes (2003); Taheri (2011); Udo & Fels (2010); vom Lehn (2010)
Electronic devices for obtaining further information	Antón et al. (2018)
Electronic devices for entertainment (e.g., games)	Mirghadr et al. (2018); Taheri (2011)
Interactive equipment	Antón (2018); Falk & Dierking (2016b); Grandi & Gomes (2017); Minkiewicz et al. (2014); Mirghadr et al. (2018)
Experiences that appeal/stimulate multiple senses (e.g., sight and smell)	Antón (2018); Cachia (2013); Falk & Dierking (2016b); Mesquita & Carneiro (2016); Minkiewicz et al.(2014); Rnib et Vocaleyes (2003)
Representations (e.g., plays, historical recreations)	Falk & Dierking (2016b); Kempiaik et al. (2017); Mirghadr et al. (2018)
Workshops or seminars	Falk & Dierking (2016b); Kempiaik et al. (2017); Mirghadr et al. (2018); Rnib et Vocaleyes (2003)
Storytelling (appealing stories on themes from the museum are presented)	Falk & Dierking (2016b); Kempiaik et al. (2017); Mirghadr et al. (2018)
Easy access to means of interpretation such as information panels, leaflets, guided tours or audio guides	Cheng et al. (2019); Mesquita & Carneiro (2016); Mirghadr et al. (2018)
Information in different languages	Kempiaik et al. (2017)
Easy reading texts	Rnib et Vocaleyes (2003)
Images with good contrast and definition	Grandi & Gomes (2017); Mesquita & Carneiro (2016); Mirghadr et al. (2018)
Text with appropriately sized letters	Cheng et al. (2019); Mesquita & Carneiro (2016); Rnib et Vocaleyes (2003)
Information boards and panels with good colour contrasts	Cheng et al. (2019)
Information in different formats (e.g. Braille, sign language, audio / sound information) adapted to the needs of the visitor	Ambrose & Paine (2018); Black (2005); Cheng et al. (2019); Falk & Dierking (2016b); Goss et al. (2015); Grandi & Gomes (2017); Hayhoe (2017); Hetherington (2002); Kempiaik et al. (2017); Mesquita & Carneiro (2016); Minkiewicz et al. (2014); Naniopoulos et al. (2015); V.Richards et al.(2010); Rnib et Vocaleyes(2003); Salmen et al. (1998); Taheri (2011); Walters (2009)
Information in different languages	Kempiaik et al. (2017)

Table 4.2. Museums' antecedents of co-creation in museums (continuation)

Attitudinal antecedents	Authors
Staff encourages the participation in activities	Antón et al. (2018); Kotler & Kotler (2000); V.Richards et al. (2010)
Staff encourages you to explore the objects of the exhibition	Antón et al. (2018); Kotler and Kotler (2000)
Staff provides clarifications regarding the exhibition	Kotler and Kotler (2000); Pattison & Dierking (2013)
Staff is kind	Cheng et al. (2019)
Staff provides reliable answers	Cheng et al. (2019)
Staff understand individual needs	Cheng et al. (2019)
Staff communicates in several languages	Cheng et al. (2019)
Staff is aware of how to deal with every type of visitor and had an inclusive approach (giving attention to everyone)	Black (2005); Hillis (2005); McKercher et al. (2003); Pattison & Dierking (2013); Poria et al. (2009); Small et al. (2012)
Staff promotes a safe visit	Cheng et al. (2019)

Source: Own elaboration.

As previously mentioned, besides intrinsic features, the co-creation of visitors inside the museum may also be influenced by aspects of the external environment, that is, in this case, aspects of the museums. **Constraints of the physical environment** have been mentioned in several studies as a major problem to the potential visitors of museums (Chang, 2006; Falk & Dierking, 2016b; Taheri, 2011) and to PwD visiting museums (Daniels et al., 2005; Darcy, 1998; Eichhorn & Buhalis, 2011). These constraints involve external factors that may even prevent or hinder people from travelling (Crawford et al., 1991; Crawford & Godbey, 1987). For example, the more severe is a mobility impairment, the bigger are the individual's needs in terms of accessibilities (Burnett & Baker, 2001; Darcy & Buhalis, 2011; Eichhorn & Buhalis, 2011).

Inaccessible transportation, accommodation facilities and attractions are a special concern for PwD during their tourist experiences (Eichhorn & Buhalis, 2011; Shaw & Coles, 2004), even though some progress has been made in removing environmental obstacles in the last decades (Devile & Kastenholz, 2018).

Museums are facing several challenges, requiring new approaches to their management, to rethink their purposes and goals in order to become effective agents for social inclusion (Argyropoulos & Kanari, 2015; Barnes & McPherson, 2019; Migliaccio, 2018; Sandell, 2003) and to encourage visits where the visitors have a more active role interacting with the exhibitions and with the whole museum environment (Falk & Dierking, 2016b; Poria et al., 2009; Sweet, 2007; Taheri, 2011). One way to attract and retain

visitors is co-creation, where the customer is considered an active agent in the consumption and production of value (Prebensen et al., 2016) and interaction is viewed as essential to have a good experience (Ramkissoon & Uysal, 2008). The level of interaction is partially associated to the environmental context in which the visit happens.

Environmental constraints are associated, among other aspects, with aspects of the physical environment or context, in which the experience is developed and created. As remarked by Falk and Dierking (2016b), the physical environment can shape the experience of museum visitors. Some important aspects related to this context will be mentioned according to the literature review. Regarding architectural and design issues, some common constraints that cause difficulties, mainly to PwD and older people, but also to the general public, inhibiting full participation in daily life, and that also extend to museums, are the existence of an incoherent “scene setter”, a non-logical arrangement of the venue (reception far from the entrance) (Falk & Dierking, 2016b; Goulding, 2000; Mesquita & Carneiro, 2016; Poria et al., 2009; V. Richards et al., 2010; Small et al., 2012), a non-existence of 3D models or relief maps representing the museum (Lancioni et al., 2010), no physical guidance to help identify pathways (Chick, 2017; Mesquita & Carneiro, 2016; Poria et al., 2009; V. Richards et al., 2010), floor with physical barriers, uneven ground surfaces, splash barriers and toilets, as well as unsuitable lighting (Darcy, 2010; Falk & Dierking, 2016b; Figueiredo et al., 2012; Goulding, 2000; McKercher & Darcy, 2018; Mesquita & Carneiro, 2016; Poria et al., 2009; V. Richards et al., 2010). Anything that can affect the customer displacement can be considered as a main constraint for PwD and, in the case of PwSI, especially for PwVI. Depending on the type of disabilities, some of the aspects that need to be checked before visiting a museum are: parking areas, the route to and from the building, sidewalks, distance from the main entrance, paths, the height of the counters at the information desk, the location of the washrooms, stairs, schedules for transportation and the height of the exhibits displayed (Chiscano & Darcy, 2020; Mesquita & Carneiro, 2016; Migliaccio, 2018; A. Newman & McLean, 2002; Poria et al., 2009; Sandell, 1998, 2003). Even if some of them are not directly related to co-creation of experiences, mostly hindering people from visiting these cultural spaces, others can prevent co-creation in the museums, making it difficult to find objects, to appreciate them, and to get information, among others.

PwSI may bear the perception that, because they don't see or hear, they cannot appreciate the travel experience (McKercher & Darcy, 2018; Small et al., 2012). PwVI feel, in some way, even major constraints in participating in activities than some people with physical disabilities, due to physical constraints, since they face difficulties in

orientation, wayfinding, in visualizing the entrance or identifying how the places are distributed (Mesquita & Carneiro, 2016; Poria et al., 2010; Small et al., 2012). The solutions provided in the physical context for people with physical impairments are not so relevant for PwVI and PwHI. Instead, PwVI have some needs concerning the detection of obstacles in the travel path, landmark location, identification of information and mental mapping of the environment (Wiener et al. 2010).

According to Asakawa et al. (2018), an important solution to increase the independence of PwVI in museums is the use of an indoor navigation system. Navigation apps can help PwVI during their experience. The importance of an indoor navigation system to enable an independent museum experience is highlighted by the authors. Being able to find the location of accessible collections and artworks is an important aspect for PwVI to become satisfied with the visit (Asakawa et al., 2018) and to enable value co-creation in the museum.

The physical environment constraints are of little impediment to PwHI (McKercher & Darcy, 2018). This group needs, especially, more personalized communication when travelling, as will be discussed next.

Concerning **communication**, the literature suggests that, to ensure a good accessibility to information, important to general public and to PwD, museums must provide accessible websites (Walters, 2009) and guided tours with trained staff, among other strategies (Antón et al., 2018; Falk & Dierking, 2016b; Grandi & Gomes, 2017; Kempiak et al., 2017; Minkiewicz et al., 2014). With speech adjusted and updated to the audience's needs, guided tours are essential (Binks et al., 1988), as are audio guides (C. F. Chen & Chou, 2019; Cho & Jolley, 2016; Cock et al., 2018; Hetherington, 2002; Mesquita & Carneiro, 2016), and help to interpret the exhibitions with a high level of description. The literature also suggests that sensory experiences, such as touching and handling museums objects, can facilitate the access of visitors to the exhibition, especially of those with blindness and visual impairments, when visiting museums (Antón et al., 2019; Cho & Jolley, 2016; Udo & Fels, 2010; vom Lehn, 2010). Museums should also stage hands-on sessions (Kempiak et al., 2017; Rnib et Vocaleyes, 2003), trails (Rnib et Vocaleyes, 2003), representations (e.g. plays, historical recreations), workshops and seminars (Falk & Dierking, 2016b; Kempiak et al., 2017; Rnib et Vocaleyes, 2003). The use of technologies and onsite interactive facilities, such as digital screens and 3D games, can also help visitors engage with the museum exhibition (Antón et al., 2018; Falk & Dierking, 2016b; Grandi & Gomes, 2017; Mirghadr et al., 2018). This kind of

facilities helps to improve the accessibility of PwD, especially of PwVI, and even of older people.

Communication for PwD is even more important than for the general public, since PwD need more details to plan their trips and visits, including reliable information about the accessibility of the places they intend to visit (Darcy & Buhalis, 2011; Migliaccio, 2019; V. Richards et al., 2021). The lack of information is one of the major constraints for PwD most of the times. Overcoming communicational constraints for PwD requires the participation of a huge number of stakeholders: PwD, service providers and social networks (Daniels et al., 2005). For these groups, communication in every stage of the visit requires planning time and attention to details.

During the visit to museums a lot of communicational barriers are experienced by PwD. Those who experience more constraints concerning communication seem to be people with sensory and intellectual impairments (Caton & Chapman, 2017; Domínguez et al., 2015; Duckett & Pratt, 2001; Lussenhop et al., 2016; Mesquita & Carneiro, 2021).

Concerning museums, the three main stages in the consumption experiences - the pre-visit, the on-site visit and the post visit - must be analysed to better understand how to improve these groups experience through better communication strategies. The pre-visit stage is of main importance, since during this stage visitors' plan their visit and access to museums' information and museums' contents (Vaz, 2020). The existence of accessible websites with relevant contents as well as reliable, accurate and up-to-date information are a way to avoid anxiety and dissatisfaction (Poria et al., 2009; Puhretmair & Nussbaum, 2011).

Since the focus of the present thesis is on co-creation during the museum visit, issues regarding communicational aspects in museum visits will be discussed in further detail. In this context, the relevance of panels and identification labels easily identifiable, with good contrast between the background and the text or figures, an adequate size of lettering and colouring of the signs is referred by researchers (Cheng et al., 2019; Grandi & Gomes, 2017; Mesquita & Carneiro, 2016; V. Richards et al., 2010; Rnib et Vocaley, 2003). The existence of interpretation techniques providing audio explanations about museum objects with high level of description or the use of audiovisuals, can also enhance the experience (Cheng et al., 2019; Hetherington, 2002; Kempniak et al., 2017; Mesquita & Carneiro, 2016; Rnib et Vocaley, 2003). Other ways to make collections accessible and to improve the active participation of visitors include:

touch tours, performances, handling sessions, workshops and storytelling (Falk & Dierking, 2016b; Kempniak et al., 2017; Rnib et Vocaleyes, 2003)

When visiting museums, sensory experiences such as touching, smelling, tasting and handling museums objects, may be essential to visitors with visual impairments (Cho & Jolley, 2016; Udo & Fels, 2010; vom Lehn, 2010). PwVI have a limited or no capacity to see, which reduces performance in tasks requiring clear vision and written communication, and hinders access to information presented visually (Darcy & Buhalis, 2011).

Deaf or hard of hearing people have a reduced performance in tasks requiring sharp hearing, oral communication or have difficulties in understanding auditorily presented information (Darcy & Buhalis, 2011). Some variety of languages and communication resources such as sign language, lipreading, visual graphics, and written text can be used by a member of deaf culture (Goss et al., 2015). So, with regard to communication, the lack of accurate and updated information and of assistive technologies, the inaccessibility of the interpretative text and figures of the exhibition or the inexistence of sensory experiences can bring important constraints to the enjoyment of the museum experience by PwHI (Cachia, 2013; Mesquita & Carneiro, 2016; Poria et al., 2009; Reichinger et al., 2011).

People with cognitive and learning disabilities face a large number of constraints during their museum visits (McKercher & Darcy, 2018). People with intellectual/mental disabilities usually reveal a slower rate of learning, a disorganized pattern of learning, difficulties with adaptive behaviour, difficulties in understanding abstract concepts, limited control of cognitive functioning, problems with sensory, motor and speech skills and restricted basic life functions. This kind of disability poses a lot of difficulties to work with as there are a huge number of different behaviours resulting from this kind of lifelong condition (Darcy & Buhalis, 2011). Some of the most common barriers encountered by this group are related to communication with other visitors and even within their own visiting group. According to Lussenhop et al. (2016), there are some features that facilitate social participation of this group, like multi-sensory interactive exhibits, hands-on exhibits and specific engagement options, interaction with staff and volunteers or other family strategies used to create successful museum visits (e.g., taking pictures to engage the group, identifying quiet times and spaces).

All the literature reviewed regarding communication with visitors in museums suggests that co-creation may be enhanced in museums through the use of several means of

interpretation from the more traditional ones (e.g., panels, leaflets) to others using technologies (e.g., digital devices), including both personal means of interpretation that imply the provision of information by a person, and the impersonal ones, where this doesn't happen. However, it also highlights that the existence of some interpretation means is not enough, but that they have to be accessible for PwD and, therefore, special care must be taken with many issues that ensure this aspect, such as appropriate size of letters and contrast between background and the text. Moreover, it also reveals the heterogeneity of needs of PwD due to many issues such as the type and level of disability, with multiple interpretation approaches, encompassing multiformat information provision, including multisensory experiences, being appreciated.

Other set of aspects that seems to potentially influence visits in museums are **attitudes** of other people, mainly of staff, towards the visitors (Falk & Dierking, 2016b; López Sintas et al., 2014; Minkiewicz et al., 2014). Attitudes, according to Passafaro (2020, p. 579), are “personal evaluative reactions to socially relevant issues concerning specific objects, events, people, contexts and/or behaviours. One of the main important psychological factors taken into account by researchers that study the determinants of environmentally behaviours are attitudes”.

Staff works as a facilitator in the tourism experience for PwD when well-trained, attentive, and helpful (Devile & Kastenholz, 2018).

Concerning PwD, Barr and Bracchitta (2012) state that the more we contact with individuals with disabilities the more we have positive attitudes toward them. This is of main importance to try to change mentalities, since in our society there are still a lot of negative attitudes concerning PwD. Although public awareness toward PwD has changed (Cavinato & Cuckovich, 1992; Patterson et al., 2012), negative attitudes represent a constraint toward participation of these groups since early times (Devile & Kastenholz, 2018; Gillovic & McIntosh, 2015; WHO & The World Bank, 2011).

Daruwalla and Darcy (2005) made a distinction between personal and social attitudes. Personal attitudes correspond to beliefs that people possess regarding some subjects while social attitudes are related to attitudes the society possess. Attitudinal barriers exist on the side of museums, often due to lack of knowledge, understanding or training among staff (Black, 2005). Daruwalla and Darcy (2005) mentioned that negative attitudes are a result of lack of information, knowledge and fear felt by society. Lack of knowledge has already been pointed as one of the biggest causes of bad care practices (McKercher et al., 2003; Poria et al., 2009).

The role of staff during the visits is essential in engaging visitors to co-create and to have a good experience (Antón et al., 2018; Pattison & Dierking, 2013). Inappropriate staff attitudes are emphasized by some researchers (Argyropoulos & Kanari, 2015; Candlin, 2003; Dimitrova-Radojichikj, 2017; R. McMillen, 2012; Poria et al., 2009), such as the provision of unsuitable information, which can prevent people to have a good museum experience but, in some cases, can even be dangerous to visitors, for example if the location of an obstacle is not correctly described to PwVI. The way staff approach PwD, avoiding to talk to them directly or talking as they were “mentally retarded”, or fear to deal with this group have already been mentioned as main constraints to museum visits (Poria et al., 2009). The role of the staff in co-creation is of main importance and the importance of the staff encouragement in the visitors’ museum participation is highlighted by some authors (Antón et al., 2018; Kotler & Kotler, 2000; V. Richards et al., 2010). Encouraging visitors to explore the objects of the exhibitions and providing clarifications regarding the exhibitions are also main task for museum staff (Antón et al., 2018; Kotler & Kotler, 2000; Pattison & Dierking, 2013). In their work, Cheng et al. (2019) mentioned some aspects directly related to museums staff, designated in the study as interpreters. Aspects like the way staff speak to the public, the information they provide and the ability to ensure visitor safety during museum tours, are essential to the success of the experience. The ability to adjust interpretation according to tourists, to be patient and friendly, to understand the individual needs and being able to communicate in different languages, are also of main importance in co-creation. Providing a safe visit is also referred by the authors as a need.

4.3. Outcomes of co-creation of experiences in museums by PwSI

Antecedents of co-creation were presented in the previous section. The present section seeks to introduce the **outcomes** and effects of co-creation of experiences in museums. Although the number of studies exploring the concept of co-creation is increasing (Mohammadi et al., 2021; Zizka et al., 2018), researchers focus especially on antecedents as inputs to the process of co-creation. However, the outcomes are of high importance as they reflect the results of co-creation that can increase value, both for the customer and the firm. Poll and Payne (2006) define outcomes as consequences of an event or activity which tend to be associated with immediate effects. Positive outcomes for customers in consumer behaviour include, according to some authors, perceived value, satisfaction, customer trust, loyalty, interaction, joy, pride, commitment and, surprise (Chathoth et al., 2016; Gadsby, 2011; Izard, 1977; Plutchik, 1980; Prebensen &

Xie, 2017). Concerning museums, few authors give insights about active participation for the general public (Ambrose & Paine, 2018; Antón et al., 2018; Azmat et al., 2018; Black, 2005; Dirsehan, 2012; Falk & Dierking, 2016b; Gadsby, 2011; Hooper-Greenhill, 2002; Kinghorn & Willis, 2008; J. Packer, 2008) and for people with sensory impairments (Asakawa et al., 2018; Mesquita & Carneiro, 2016; Vaz, 2020).

In the literature of co-creation many researchers refer to **value co-creation**, with this value being one of the major outcomes of co-creation (Mohammadi et al., 2021; Nambisan & Baron, 2009; Zizka et al., 2018). There are a large number of value definitions. However, in the tourism market we have, “on one hand, the utility of value as a strategic tool for the management of tourism services and on the other hand, on its importance as a key variable for analysing consumer behaviour” (Gallarza & Gil, 2008, p. 5) Thus, it is of utmost importance to analyse, in this section, value co-creation as an outcome of the co-creation in a museum experience. The concept of value was made popular by Porter (1985) and, since then, it has been redefined by other researchers (Gallarza & Gil, 2008; Sfandla & Björk, 2013). **Value** can be also the price customers are willing to pay based on the perceptions of what is received and what is given (Gadsby, 2011; Grönroos & Voima, 2012; Hyun & Park, 2016; Zeithaml, 1988). Zeithaml (1988, p. 14) defines perceived value as being “the consumer’s overall assessment of the utility of a product based on perceptions of what is received and what is given”. The consumption of service must provide value to consumers in a way that the potential benefits overcome the necessary investments made.

The values people can get in from museum visits may be highly related to the **motivations** that lead them to visit these tourism attractions. Tourist intentions to visit attractions are influenced by multiple and complex contexts and, therefore, by a wide range of motivations, ranging from **push factors**, which represent internal aspects of the visitor (social and psychological) to **pull factors**, which are external forces, including attributes of the attractions (Dann, 1977; Hsieh et al., 2015).

The word “motivation” derives from the Latin *movēre*, which means to move, and has a variety of meanings (Dann, 2014). Generally, motivations are considered an important element when analysing tourism experiences and are seen as personal factors that influence the choices made and the experiences sought (Cutler & Carmichael, 2010; Ryan, 2002). There is a consensus that motivation leads to action and action leads to outcomes. Campbell and Pritchard (1976) and Kanfer (1990), defined motivation as what leads people to act and choose an activity in which to engage, establishing the level of effort to put into it, and determining the degree of persistence over time indicating a

cognitive approach. The motives induce the engagement in co-creation and, according to Mook, (1996), are also the cause of the action. During tourist experiences, the tourist is expected to be motivated and, consequently, to participate in value creation (Prebensen et al., 2013).

Gadsby (2011) argues that, when visiting museums, visitors seek numerous outcomes to justify their investment of time, money, and effort. There is a growing literature on what motivates people to visit museums (Brucks, 1985; Dierking & Falk, 1998; Falk et al., 1998; Hood, 1992; McManus, 1987; Merriman, 2000; Tsaur et al., 2010). Despite museum-led literature on general **motivations for visiting a museum** emphasizes the importance of learning (Dierking & Falk, 1998; Hood, 1992; Kelly, 2004; Prentice et al., 1997), there is a consensus that people visit museums for **different reasons** (Brucks, 1985; Dierking & Falk, 1998; Falk et al., 1998; Gadsby, 2011; McManus, 1987; J. Packer & Ballantyne, 2004; Tsaur et al., 2010). According existent literature, visitors want to learn, be entertained, improve skills and have memorable family days, among other aspects (Gadsby, 2011). This already shows that socialisation and the desire to experience some emotions, can be important motivations to visit museums, along with the desire to learn. In this line, Jan Packer (2008) explored the outcomes, apart from cognitive value, that visitors seek and get from a museum visit, arguing that learning outcomes may not be enough to explain the museum experience and highlighting the importance of “restoration”, an emotional outcome. According to the author, when visiting a museum, visitors can relax and recover from the stress of their life.

Hood (1992) referred to six **main motivations** to visit museums: being with people, or social interaction; doing something worthwhile for oneself or others; having the challenge of new experiences; having an opportunity to learn; participating actively and feeling comfortable in the surrounding. Another research held by the Australian Museum, between 1999 and 2001, identified five main motivations for visiting a museum: experiencing something new; entertainment; learning; the interests of children/family; and doing something worthwhile in leisure (Kelly, 2001, p. 9). On the other hand, Falk et al. (1998) identified six types of motivations: place, education, life cycle (visits seen as repeated activities achieved at certain phases in one’s life, e.g. childhood, school visits), social event, entertainment and practical issues. According to the three types of strategies adopted by visitors, we find – (i) the unfocused, those who are open to any museum contents; (ii) the moderately focused, who know which are the museum contents; and (iii) the focused, who plan the visit and have goals to achieve. Hsieh et al. (2015), in their study, identified five push and six pull motivations for visitors to visit a

museum. The internal motivations are to relax, to expand knowledge, to enjoy new experiences, to spend quality time with family and friends and to enjoy exhibits in different settings. The external motivations are mainly related with museum service quality, related with the service quality and communication factors. Another study is this from Phelan et al. (2018), where six theoretically important motivation categories were identified: (i) factor one included items related to individual learning and pursuing interests; (ii) factor two encompasses items related to relation and recuperation; (iii) factor three included items related with social learning, mainly together with family; (iv) factor four presented items related to social enjoyment; (v) factor five items are associated with establishing or enjoying social contact; and (vi) factor six items related to the popularity of the site. The main motivations referred, based in different studies, to visit museums were those of education, socialization, and entertainment, although the importance given to each other differs.

Black (2005, p.286) stated that museums “exist to enhance the quality of people’s lives, to satisfy their needs in every sense – physically, socially, intellectually, emotionally, spiritually”. Pekarik et al. (1999) developed a list of **satisfying experiences in museums** and categorized these experiences into four clusters (Figure 4.2): (i) object experiences (being moved by beauty); (ii) cognitive experiences (gaining information or knowledge and enriching the understanding); (iii) introspective experiences (feeling a spiritual connection, feeling a sense of belonging or connectedness); and (iv) social experiences (spending time with friends, family or other people). These four groups correspond to the physical, cognitive, emotional, and social **outcomes of museum visits**. Depending on the type of museum and exhibitions, the categories of the satisfying experiences that visitors seek can differ. According to their study, visitors can: (i) see rare or valuable objects (object experiences); (ii) gain information, knowledge, or enriching understanding (cognitive experiences); (iii) have private feelings and experiences (introspective experiences); or (iv) focus on interactions with friends, family, other visitors, or museum staff (social experiences). Later, another study was done by the same authors, Pekarik and Schreiber (2012) and, from the previous study, a number of outcomes were overlapped, dropped or added. Thus, outcomes like gaining information or knowledge, enriching the understanding, seeing rare/valuable/uncommon things, being moved by beauty, reflecting on the meaning of what we see, and imaging other times or places, were identified.

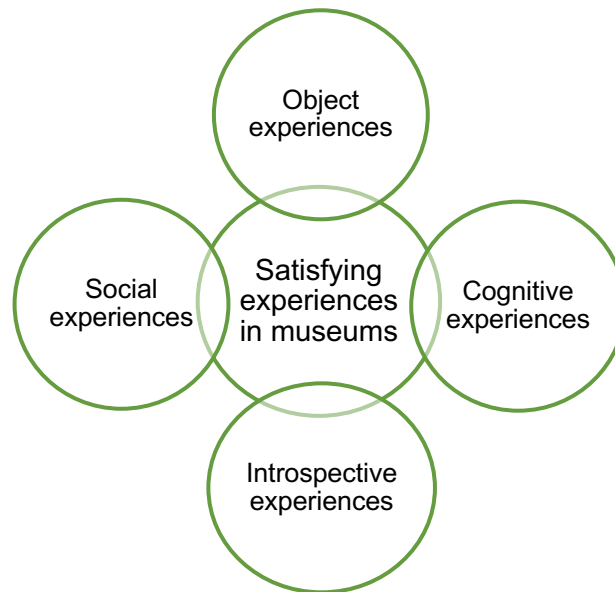


Figure 4.2. Categories of satisfying experiences that visitors seek in museums

Source: Pekarik et al. (1999).

Despite the importance of outcomes and of mentions to outcomes of museum visits, several researchers simply refer to benefits of museum visits. It is important to distinguish the **benefits** and **outcomes**. The concept of outcome is a general one that, according to Merriam-Webster (2019), is something that follows as a result or a consequence. A determinant/ antecedent leads to an outcome. Most of the times, it is the outcome that motivates action. There are both positive and negative outcomes resulting from a certain action. In turn, “benefits are something that produces good or helpful results or effects, or what promotes well-being” (Merriam - Webster, 2019).

According to Jan Packer (2008), two theoretical approaches can then help to understand the **benefits of visiting museums**: (i) the psychological wellbeing (e.g., autonomy, personal growth, self-acceptance, happiness), and (ii) the mental restoration (e.g., relaxation, peace and tranquillity, as well as thoughtfulness).

PwD have several constraints during their daily lives and accessibility can work as a vehicle to promote individual and social well-being (Devile & Kastenholz, 2018; Mesquita & Carneiro, 2016, 2021). It is well known that PwD participate less in social activities like visiting museums (Little et al., 2014; Lussenhop et al., 2016; Mesquita & Carneiro, 2016, 2021; Poria et al., 2009) and when visiting these cultural spaces most of time they are accompanied (Poria et al., 2009) by friends, family who support the decision process and help to overcome constraints experienced before, during and after de visit (J. Packer, 2008). However, to date, few research has been done in terms of understanding the

outcomes and value that visits to accessible museums hold for visitors in general and specially for PwD. This research will be examined in the next sections.

Despite the lack of research on outcomes of the museum visits for PwD, and although primary outcomes which visitors seek from museums are diverse (Björk, 2014; Black, 2005; Dann, 2014; Dierking & Falk, 1998; Falk & Dierking, 2016b; Gadsby, 2011; Hsieh et al., 2015; Kelly, 2004; Tung & Ritchie, 2011), those of emotional, intellectual/learning and social nature outstand as the most common and important in the domain of these tourism attractions. These outcomes were previously identified as a motivation for the visit by some authors in the present section (Black, 2005; Cutler & Carmichael, 2010; Falk & Dierking, 2016b; Pine & Gilmore, 1999) and as outcomes themselves by other researchers (Black, 2005; Pekarik et al., 1999). Therefore, the **emotional, learning and social outcomes** will be discussed in a more detailed way in the next sections. Visitors may seek and perceive more than one type of value at the same time (Falk & Dierking, 2016b). For example, as pointed by some authors, learning occurs, frequently, driven by emotion (Falk & Dierking, 2016b).

As it was previously mentioned in this section and discussed more in detail in the next section, other potential outcomes of consumer behaviour and of co-creation are satisfaction and loyalty.

Thus, in the next sections, various potential outcomes of co-creation in museums will be discussed, namely perceived value - emotional, learning, and social value -, satisfaction and loyalty (Figure 4.3).

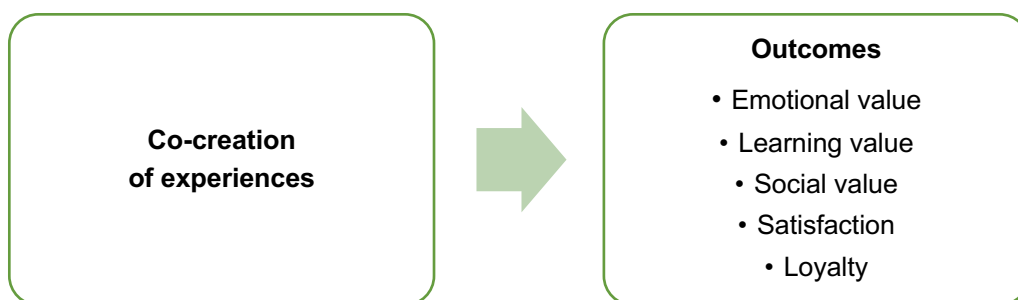


Figure 4.3. Outcomes of co-creation of experiences in museums

Source: Own elaboration.

4.3.1. Emotional value

Barlow and Maul (2010) state that the role of emotion is extremely important in the new concept of the experience economy. **Emotions** are present in most domains of life, as we experience and we feel them, both actions affecting and moving us (Trampe et al., 2015). Therefore, emotions are directly related to customer satisfaction and are motivators for action. Nevertheless, emotions are not easy to define as there are, probably, as many definitions as there are different feelings (Barlow & Maul, 2010). Pointed long ago as an essential part of the visitor experience, emotions involve expressions of feelings, attitudes, and beliefs, strongly influencing the success of the visit (Falk & Dierking, 2016b).

Emotions can be defined as “positive or negative reactions or mental stages of readiness that arise as a consequence of specific events or circumstances” (Bagozzi et al., 1999, p. 1). The **basic emotions** that people feel were identified by Izard (1977), which developed the taxonomy of affective experience approach. He identified ten different categories of emotions that can lead either to positive or negative feelings: interest, joy, surprise, sadness, anger, disgust, contempt, fear, shame, and guilt. Excitement, energy, commitment, joy, interest, and pride may arise from positive emotions while revenge, disgust, desire to never return, anger, and fear are a consequence of negative emotions (Figure 4.4). The challenge is to keep positive emotions as much as it is possible (Barlow & Maul, 2010).

The **emotional value** may be simply described as the affective responses visitors have (Gadsby, 2011). According to Sheth et al. (1991, p. 161), emotional value refers to “the perceived utility acquired from an alternative’s capacity to arouse feelings or affective states”. Jan Packer (2008) highlights that audiences often describe museums as being a place that provides visitors with a sense of positive psychological wellbeing, a place where they can escape from the outside and find calm and may relax. Self-realization, personal growth, wellbeing, and mental restoration are the outcomes highlighted by the author. During the experience, the visitor turns inward to feelings (Pekarik et al., 1999).

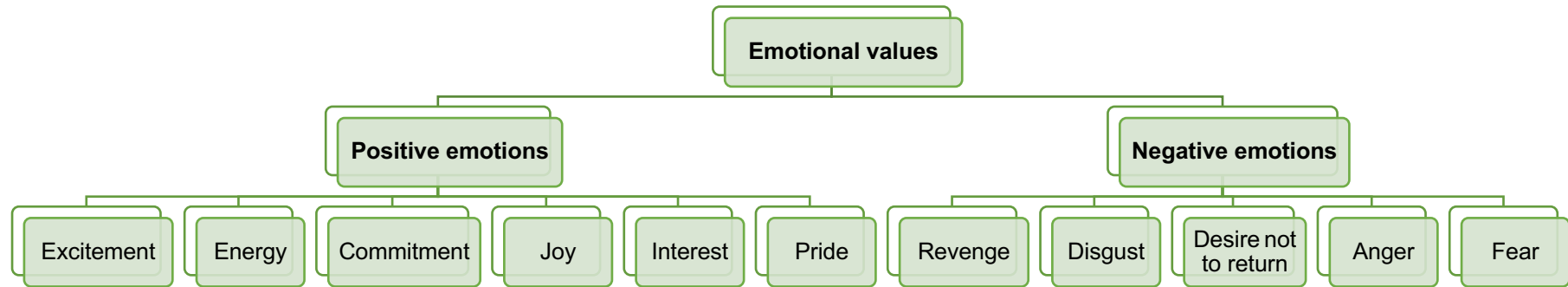


Figure 4.4. Emotional value

Source: Adapted from Gadsby (2011) and Izard (1977).

There is a growing literature on emotions in museums and on tourism experiences (Chang, 2006; De Rojas & Camarero, 2008; Falk & Dierking, 2000, 2016b; Nowacki & Kruczek, 2021; J. Packer, 2008; Suchy, 2006). According to Gadsby (2011), the **emotional values** attained by visitors in museums are diverse, namely: awe, joy, wonder, excitement, nostalgia, pride and empathy.

Based on the characterisation of museums' visitor profile, Black (2012) identified a segment that does not want to learn but seeks a more **emotional experience**. Creating environments in which everyone can engage with exhibitions and activities in a full and meaningful way is one of the main concerns of museums (Accentuate & History Place, 2018). These visitors want to feel engaged with the exhibition contents, to be involved in programs' development and delivery, and to find modern modes of information exchange. Thus, for some visitors, the emotional value will be what matters most during their visit. The way to create accessible exhibitions and activities has been analysed by some authors in the last decades (Antón et al., 2018; H. Chen & Rahman, 2018; Falk & Dierking, 2016b; Kempniak et al., 2017; Minkiewicz et al., 2014, 2016; Mirghadr et al., 2018; Taheri, 2011). Some examples referred by the authors incorporate tactile experiences to make objects more accessible to everyone, and particularly for blind and other visually impaired visitors, create a multi-sensory experience (smell pots to provide an experience which engage different senses), use accessible formats like Braille, audio contents to provide further information, provide audio-described tours, sign languages tours, among others. All these different ways to communicate with visitors may have positive outcomes and impacts in the visitor's experience.

Museum experiences actively engage visitors emotionally, stimulating their senses, encouraging them to participate in activities and to become involved by touching objects, posing questions, manipulating machines, smelling, hearing sounds, among others (Falk & Dierking, 2016b). **Multi-sensory approaches**, of special interest to PwSI, seek to increase emotions (Accentuate et al., 2018; Falk & Dierking, 2016b; Rnib et Vocaleyes, 2003).

Different studies, in different contexts, state that co-creation, through sensory engagement, namely tactile, audio and visual experiences among others, leads to happiness and other emotional outcomes (Campos, 2016; C.-F. Chen & Chen, 2010). In museums, experience design usually focuses on visual cues. Jelinčić et al. (2021) state that visual and acoustic stimuli can produce different experiences that provoke joy, the most researched emotion related with visual cues. Visual cues are, according to

Baumgartner et al. (2006), more easily remembered; thus, multisensory experiences stimulation should be encouraged in the museums' context. The effect of colours and sounds in designing sensory museum experiences is well known, creating visitors' emotional responses such as joy, sadness, fear, anger, disgust and surprise (Jelinčić et al., 2021).

Technologies (e.g. interactive displays) can also be of great value to educate museums' visitors by co-creation with fun and joy (Hashim et al., 2014), bringing learning and emotional outcomes simultaneously. The use of interactive media in museums can provide pleasant experiences, giving access to everyone, including freedom and independence to PwD (Constantinou et al., 2016). Performances are actively viewed as an alternative to traditional communication that encourage visitors to engage and to emotionally invest in the subject that is being presented (Benjamin & Alderman, 2018).

PwD are one of the most ignored and marginalized group of consumers (Cachia, 2013; Kosmas et al., 2020), as already stated. Researchers need to study particular problems experienced by these consumers, emotionally challenged due to the constraints they may face. PwD tend to be poorer than people without disabilities, they face extra costs relating to their impairment and face discrimination and prejudice (Shaw & Veitch, 2011; World Health Organization & The World Bank, 2011). These intrinsic problems that PwD hold, conjointly with other extrinsic aspects, can lead to negative experiences. PwD can be emotionally affected during the visit if more inclusive tourism products are not designed and supplied to them (Shaw & Veitch, 2011). In contrast, if these products are offered, they will most probably have a rewarding and meaningful experience, feel particularly grateful, and recommended the museum to their friends.

As the above discussions indicate, emotions are an important construct in the provision of tourism experiences, but, due to their subjectivity, difficult to define. They are also influenced by a huge number of personal and environmental factors. Museums are considered places which provide emotional benefits to visitors, leading to psychological wellbeing and mental restoration (Carneiro et al., 2019; Dodd & Jones, 2014; Evans et al., 2013; Kinsey et al., 2019; C. Scott et al., 2006; Sweet, 2007). For PwD, emotional value is paramount as these people may feel marginalized when visiting a museum or, in contrast, gratefully experience personalised and meaningful experiences. Museums should thus continue to broaden their supply of services and experiences to engage all participants, despite their condition.

Exhibitions should “captivate, intrigue, interest, excite, or entice visitors to engage” through the existence of tools that enable visitors to take part in co-creative activities (Antón et al., 2018, p. 1422).

4.3.2. Learning value

Museums are important centres of knowledge and, in recent years, their focus is to provide, among others, **educational services** for visitors (Andre, Durksen, et al., 2017; Csikszentmihalyi & Hermanson, 1995; H. Hein, 2000; Mirghadr et al., 2018). Some researchers investigated learning in a variety of museums (Csikszentmihalyi & Hermanson, 1995; Falk & Dierking, 2016b; Hooper-Greenhill, 2004; López Sintas et al., 2014; Prentice et al., 1997; Sandell, 2003; Taheri & Jafari, 2012; vom Lehn, 2006) and emphasized that visitors come to museums with learning purposes. People who visit museums tend to possess a higher educational level comparing with the general population (Beeho & Prentice, 1997; Calver & Page, 2013; Le Roux et al., 2008). As so, gaining information or knowledge are pointed as visitors’ primary satisfaction during their visit (Falk & Dierking, 2016a; Hooper-Greenhill, 2004; Kempiak et al., 2017; Paris, 1997; Pekarik et al., 1999; Pekarik & Schreiber, 2012; Prentice et al., 1997).

Museums seek to offer visitors a wide range of sensorial, aesthetic, recreational, social, educational, and amusement experiences (Antón et al., 2018; Mirghadr et al., 2018), which will result in increasing and multidimensional positive outcomes to visitors.

According to Ambrose and Paine (2018), in recent years, museums have to take into account the fact that they attract people of all ages. Since museums are cultural institutions, **lifelong learning experiences** are one of the museums’ main concerns. Learning includes not just facts, but experiences and emotions (Ambrose & Paine, 2018), being now seen as a result of active participation of the visitor within the environment (H. Hein, 2000). Co-creation is especially important in learning, since learning is a process and an outcome of engagement with the experience, and every experience in a museum can be a learning opportunity (Black, 2005).

Yet, learning in museums can be a complex phenomenon (Falk & Dierking, 2000; H. Hein, 2000; Hooper-Greenhill, 2004; Schauble et al., 2002). Falk and Dierking (2000) argue that learning is an active process of collecting information and of building complex, internal knowledge structures called schemata. These researchers conceptualised the **process of learning** as involving seven factors: (i) prior knowledge and experience; (ii)

subsequent, reinforcing experiences; (iii) motivation and attitudes; (iv) culture and background; (v) social mediation; (vi) design and presentation; and the (vii) physical setting.

Kelly (2007) states that learning is a positive process that happens during a person's life, suggesting that learning in the context of a museum can be presented under a model with six categories (Table 4.3): person, purpose, process, people, place, and product. According to this author (Kelly, 2007, p. 55), the first category, **person** is related to the "individual learner, including prior knowledge, experience and lived history; cultural background and gender, as well as roles played at different times in person's everyday life". The exhibition is structured according to each one own experiences and most of the times visitors make connections with their life (Leinhardt & Gregg, 2011; Paris & Mercer, 2011; Stainton, 2011). **Purpose** refers to the motivation visitors' have behind learning such as general interests, enjoyment, and fun. The fact that people learn in different ways (Dierking, 1989; Jeffery-Clay, 1998; J. Packer & Ballantyne, 2004; Rennie & Johnston, 2004) is named as **process** by Kelly (2007). This category allows visitors to reach their conclusions and provide physical, active, and lively hands-on experiences that engage body and mind during the exhibition, which highlights the important role that co-creation may have in this context. The category of **people** is related to the social context of learning and, beyond Kelly (2007), several researchers have stated that the social dimension of a museum visit is of major importance (Falk & Dierking, 2000; Leinhardt et al., 2011; Paris, 1997; Paris & Mercer, 2011). A wide range of people such as family, friends, colleagues, and work peers, as well as professionals such as teachers, university lecturers and museum staff, provide opportunities for visitors to share their experiences facilitating learning. Museums are important **places** used when people want to acquire knowledge. Museums are important places to learn together with both formal and informal places like school, universities, and libraries. Lastly, **product** means that learning is associated with change - products, such as new ideas and facts, that derive from the museum experience.

Table 4.3. 6P model of museum learning

Person	Prior knowledge, experience, role, gender, cultural background, lived history, personal interest, personal change, meaning making, seeing differently.
Purpose	Motivation, interests, enjoyment, change and choice.
Process	Doing something, hands-on, objects & tools, cognitive & physical and surface & deep.
People	Family, friends, colleagues, accompanying adults, work peers, community, professionals (staff and teachers).
Place	School, museums, galleries, cultural institutions, libraries, internet, environment, and life.
Product	Facts and ideas, short and long-term, linking, outcomes, meaning making and change.

Source: Kelly (2007).

Despite some differences in the way the authors approach the subject, there are some **common aspects in the models** of Kelly (2007) and Falk and Dierking (2016b). Both models refer, among other aspects, to the importance of personal aspects in the construction of the experience together with the social component and the external aspects of the visit. Learning is also presented as a **cycle**): one does something and learns with the experience, one does something new and applies the experience, producing a learning cycle (Dennison & Kirk, 1990).

Motivation plays an important role in behaviour and in obtaining learning outcomes in a museum (J. Packer & Ballantyne, 2005). Museums appear as places where visitors learn new things from the visit at their speed due to the fact they want to. Develop the knowledge can be an **outcome** of co-creation since it is the result of an active role of the visitor (Ambrose & Paine, 2018; Black, 2005; H. Hein, 2000). As stated by Minkiewicz et al. (2014), in museums cognitive immersion is present since consumers desire to learn and know more about the museum context and reflect on their attitudes and

preconceptions. The need to learn and to understand the exhibition add relevance to the experience.

Museums have long held an important role in supporting cultural, learning, and social values for PwD. According to the Department for Culture, Media and Sport (1999), not all **museums are accessible** to learners who have disabilities. As said before, depending on the type and degree of disability, the learning experience can be more or less accessible. PwD often develop different skills and abilities that can help them deal with different constraints, such as lack of information (Darcy & Buhalis, 2011). People with visual impairments are the most often referred disability group when discussing communication access (Paciello, 2000). Yet, if those citizens benefit from accessible design facilities, the learning experience will be enhanced. Another important aspect referred is that, most of the time, staff perceives these people as having also cognitive disabilities (Poria et al., 2010). Darcy (1998) highlighted the importance of providing information with detail and accuracy, as well as information in different formats that allow both people with hearing and visual impairments to acquire knowledge in museums.

In sum, some museums are increasingly trying to enhance interaction with visitors and expand learning opportunities since visitors' main benefit sought when visiting these attractions appears to be obtaining information and knowledge. Yet, intertwined with emotions and experience, learning is complex and a dynamic process involving various contexts (Falk & Dierking, 2000; Kelly, 2007). Nowadays museums must intensify the attention paid to PwD, as well as consider active participation of all visitors.

Learning outcomes are linked to different kinds of strategies related to the way visitors interact and engage with the exhibitions. Some of the most referred strategies that lead to learning outcomes are the possibility to touch, handle or talk about the activities and resources provided, developing practical skills such as using different tools (e.g. computers, devices, objects) to complete an activity and learning within a social context (Ambrose & Paine, 2018; Black, 2005, 2012; Falk & Dierking, 2016b; Moussouri, 2002). Multisensory approaches promote deeper emotions facilitating learning outcomes and emotional values (Agapito et al., 2012, 2013; Andre, Durksen, et al., 2017; Carneiro et al., 2019).

Another important issue in museums are digital technologies (e.g. computers, wall displays, interactive exhibition cases, tablets and mobile devices and augmented technologies) that can improve the way people co-create with the exhibitions, creating a

more engaging museum setting leading to learning outcomes (Hincapié-Ramos et al., 2015; Moorhouse et al., 2017; Othman, 2012; Othman et al., 2021).

Traditional exhibition methods must be complemented with new strategies (Othman et al., 2021), as those that have been presented along the present thesis to stimulate knowledge among all publics.

4.3.3. Social value

Humans are **social animals** which learn through different ways such as conversations, gestures, emotions, signs, symbol systems, values, and norms, among others (Falk & Dierking, 2000). In **tourism**, social interaction is paramount because tourism services are delivered during encounters. When travelling, interactions and relationships with other visitors (Carù & Cova, 2007; Falk & Dierking, 2016b; Prebensen & Foss, 2011; Rihova et al., 2013) and with staff (Slåtten et al., 2011) might influence positively the visit (Antón et al., 2018).

Museums are **social places** where visitors interact with other visitors and museum staff by discussing and posing questions about the exhibition (Falk & Dierking, 2016b; Goulding, 2000; Rihova et al., 2013). Even when visiting the museum alone, visitors come into contact with other people, learning socially (Antón et al., 2018; H. Chen & Rahman, 2018; Falk & Dierking, 2016b; Mirghadr et al., 2018).

The **social role** in museums is directly related to experiencing and learning (Falk & Dierking, 2000). Most of the studies on social value regarding museums highlight the importance of providing a social environment inclusive for all types of groups, including adults, children, families, student groups, staff and volunteers (Antón et al., 2018; H. Chen & Rahman, 2018; Falk & Dierking, 2016b; Kempniak et al., 2017; Minkiewicz et al., 2014, 2016; Mirghadr et al., 2018; Taheri, 2011). Some literature suggests that one of the main purposes when visiting a museum is to spend time with family and friends (Falk & Dierking, 2016b; Mirghadr et al., 2018). To some visitors, the social interaction with someone else during their visit is their most satisfying outcome in the museum (Pekarik et al., 1999). The stories and memories shared with both consumers and staff members bring, according to Minkiewicz et al. (2014), a sense of personal relevance and connection to the experience.

The social value is thus essential for all museums' visitors, and of particular importance for PwD and their families (Lussenhop et al., 2016), although some of these groups participate less in social activities (Little et al., 2014; Lussenhop, et al. 2016). According to Poria et al. (2009), visitors with visual impairments, when visiting museums, are most of the time accompanied. One of the major problems felt by PwD is related to negative attitudes experienced by these groups (Argyropoulos & Kanari, 2015; Darcy, 1998; Darcy & Buhalis, 2011; Daruwalla & Darcy, 2005; Reich et al., 2010). Negative attitudes represent the biggest constraints for accessing leisure opportunities (Darcy & Buhalis, 2011). The lack of information about these groups leads to the question of how can staff and volunteers provide correct and reliable information to PwD. Generally, the staff tend to be overly helpful and protective which may affect self-esteem (Poria et al., 2009). PwD need to trust others including strangers; however, PwD mention a lack of knowledge regarding disability, by the staff, as the main constraint during their visits (Small & Darcy, 2010).

When visiting a museum, visitors may learn through conversations with other people such as staff or other groups (Black, 2005). Discussions among visitors and staff advices about exhibitions can also allow visitors to experience the exhibitions in their own way (Minkiewicz et al., 2014). Overcrowding museums can, however, hamper social benefits, negatively affecting the ability of visitors to engage with exhibitions and co-creating experiences (Minkiewicz et al., 2014).

In brief, social value is of great importance as tourism depends upon encounters between different stakeholders. The social interaction among visitors, staff or volunteers, plays an essential role in shaping the museum visit as the social aspects of visits are rarely if ever forgotten by visitors (Falk & Dierking, 2016b). It is also important to notice that as people explore museums, they interact with others. Nowadays, there is an increasing interest on how museums may promote inclusion and active participation of PwD, as more and more information on how to relate with and include people with special needs is being generated and discussed.

4.3.4. Satisfaction

In a context of growing competition, museums, as well as tourist services in general, seek to provide high levels of visitor satisfaction. Satisfaction has been widely debated in the tourism literature in the last decades using various perspectives and theories in different fields (Ali et al., 2016; Antón et al., 2017; Baker & Crompton, 2000; Grisseemann

& Stokburger-Sauer, 2012; Y. H. Kim et al., 2014; Prebensen et al., 2016; Y. Yoon & Uysal, 2005). Studies suggested the importance of satisfaction in the intention to revisit a place as well as to recommend or express favourable comments about the place to others (C.-F. Chen & Chen, 2010; De Rojas & Camarero, 2008; Kempniak et al., 2017; Y. H. Kim et al., 2010; Y.-K. Lee et al., 2008; Y. Yoon & Uysal, 2005). According to De Rojas and Camarero (2008, p. 525) past literature described “satisfaction by the evaluation consumers make of perceived quality (confirmation/disconfirmation theories) from their expectations”.

One of the most quoted and accepted definitions of satisfaction says that satisfaction is an attitude assumed after a given experience or an emotional state that is the consequence of an experience (Pearce, 2005). In leisure, satisfaction is measured by how well leisure activities are perceived to fulfil the basic needs and motives that stimulated the desire to participate in an activity (Crompton & Love, 1995, p. 12).

De Rojas and Camarero (2008) refer that in the most recent definitions of satisfaction, both its cognitive and affective character have been recognized. Thus, regarding theories and models of satisfaction, the two approaches previously mentioned (cognitive and emotional) are used to explain satisfaction formation.

The literature (e.g. Mathis et al., 2016; Minkiewicz et al., 2014) suggests that co-creation leads to more “authentic”, unique and memorable experiences (Mathis et al., 2016; Minkiewicz et al., 2014), which are highly appreciated nowadays and contribute to visitors’ satisfaction (Kempniak et al., 2017).

Visitors’ satisfaction is important for the museums to be regarded as successful because it influences the choice of the museums and the decision to revisit or recommend the place. When a visitor is satisfied he/she tends to communicate the positive feeling to others (Kinghorn & Willis, 2007; Nowacki & Kruczek, 2021).

For Nowacki and Kruczek (2021), the essence of satisfaction achieved from a museum visit is completely different from satisfaction resulting from other consumptions. The emotional value of the product together with the subjective meaning ascribed by the visitors are the most important factors for satisfaction in the museum context (Nowacki & Kruczek, 2021). Perceived value and satisfaction have been referred as being good predictors of behavioural intentions, as stated by Petrick (2004).

4.3.5. Loyalty

Loyalty is an important aspect as is essential for the long-term viability or sustainability of organisations (C.-F. Chen & Chen, 2010). Loyalty is defined and assessed by both attitudinal and behavioural measures. Concerning the first approach it refers to the desire to keep the relationship with the service provider, while the second approach is related to the concept of repeat patronage (C.-F. Chen & Chen, 2010). Several positive experiences, including positive experiences of co-creation can lead to an intention to visit. Hyunae Lee et al. (2020) highlight the importance of technologies, which have a positive effect on museum visit intention.

Co-creation, the main topic of this thesis, has several outcomes that can be, as previously mentioned negative or positive. Nevertheless, the aim of offering co-creation opportunities in museums is generating positive outcomes among visitors. Creating shared value between the customer and the company is one of the aims of co-creation (Lusch & Vargo, 2006; Payne et al., 2008) and can lead to positive outcomes. Several authors referred co-creation outputs including customer trust, perceived value satisfaction and loyalty (Blazquez-Resino et al., 2015; Chathoth et al., 2016; Grisseemann & Stokburger-Sauer, 2012; Lu, 2009; Majboub, 2014; Prebensen & Xie, 2017; Zatori et al., 2018).

In the empirical study of the present thesis, the various outcomes of co-creation in museums before mentioned will be analysed, namely emotional, learning and social value, as well as satisfaction and loyalty.

4.4. Conceptual model on antecedents and outcomes of co-creation of experiences in museums by PwSI

Considering the importance of the museums, the changes that have been occurring in these cultural institutions and in the society, it is essential to understand how museums are responding to their audience's needs and are fostering **co-creation experiences** engaging visitors with collections and exhibitions. Furthermore, museums play an important role in inhibiting discrimination and other human rights abuses, generating satisfaction and positive outcomes for their visitors. They are even considered as important inclusive places. Therefore, and as previously seen in this thesis, it is therefore also important to examine and further understand PwSI' co-creation in museums and, in

this context, to analyse the factors that facilitate or prevent co-creation of experiences in museums.

After discussing about PwSI' co-creation in museums, as well as about potential antecedents and outcomes of that co-creation, in this section, a conceptual model on antecedents and outcomes of co-creation of experiences of visitors with sensory impairments in museums will be presented, and hypotheses will be defined. Chapters 2 to 4 consisted of a literature review of relevant concepts to the empirical study developed within the scope of this thesis and, specifically, for the conceptual model proposed and tested. The conceptual model proposed is based on three main components: (i) antecedents (visitors' antecedents and museum antecedents) of co-creation in museums by visitors with sensory impairments; (ii) co-creation in museums by these visitors; and (iii) outcomes of that co-creation. The aim of this section is to describe the **proposed conceptual model**, which includes the constructs already mentioned. The research hypotheses underlying the proposed model are identified and discussed, and support is presented for each of the hypotheses (Figure 4.5).

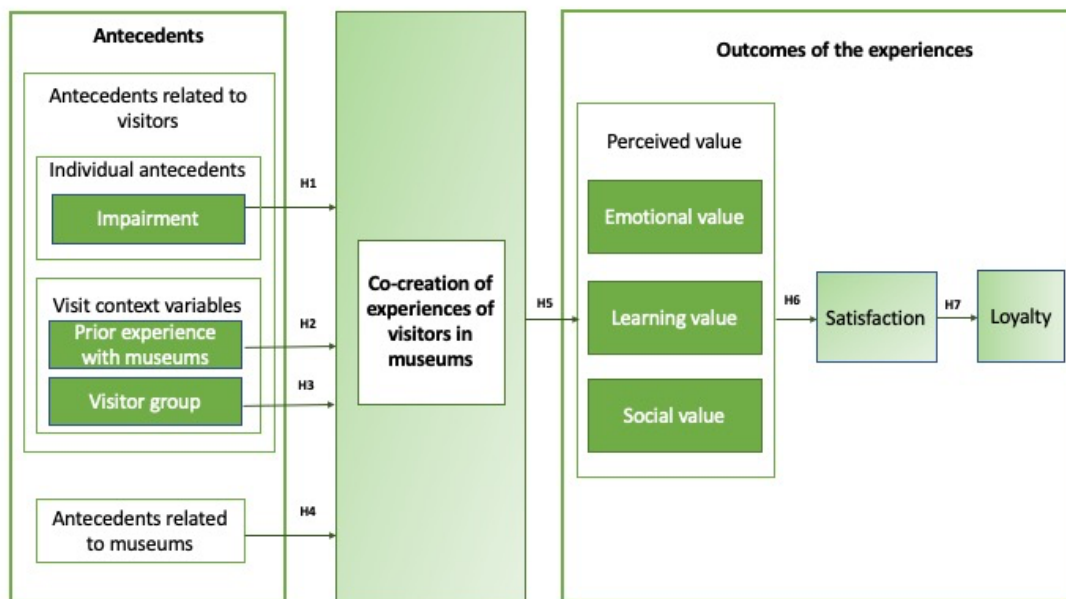


Figure 4.5. Conceptual model proposed - Hypotheses

Source: Own elaboration.

The focus of the research might be expressed as a question, a problem or an hypothesis (Veal, 2018). In the present study, and in the scope of the proposed model, various hypotheses are suggested (Figure 4.5). Next, the hypotheses to be tested in this thesis will be presented.

According to leisure constraints' studies, some of the main factors that can prevent people participation in tourism activities are related to intrinsic aspects such as the type and **level of impairment**. Darcy and Buhalis (2011) refer five major dimensions of disability important for accessible tourism, classified in three categories: physical/mobility, sensory and/or cognitive. The first one includes people with varying levels of physical mobility restrictions, affecting legs, feet, back, neck, arms or hands. The second is when the capacity to see is limited or absent, when people are completely deaf or are hard of hearing, or when people have limited, impaired or delayed capacities to use expressive and/or receptive language. Finally, the third includes lifelong illnesses with multiple aetiologies that result in a behavioural disorder (Domínguez, Fraiz, et al., 2013). It is, therefore, of utmost importance to consider sensory impairments when analysing co-creation in museums.

Different types of disabilities induce distinct constraints (Lehto et al., 2018) and have different impacts on visitors' experiences (Buhalis & Darcy, 2011). Despite that there has been a big change in the way society views disabilities over time (Ralph, 2017; Shakespeare, 2018) and although there is still no agreement over the correct way to approach disabilities, according to some studies (e.g. Dosono et al., 2018; Mesquita & Carneiro, 2016; Poria et al., 2009; WHO, 2016) PwD face more difficulties and require a much higher degree of accessibility than people without special needs. Moreover, literature suggests that, according to their nature and degree, disabilities may bring constraints in the context of tourism in general, and to the co-creation of experiences in museums in particular (Goss et al., 2015; Hillis, 2005; Mesquita & Carneiro, 2016; Poria et al., 2009; V. Richards et al., 2010). Consequently, the following hypothesis arises:

H1: The level of impairment influences the co-creation of PwSI in museums

Prior experience is an important antecedent of behaviour in museums as it includes frequent visits to museums during one's life (Carù & Cova, 2015). The better one knows a place, the more one feels familiar with it and tends to engage in co-creation experiences (Bryce et al., 2015; Lehto et al., 2004). According to Mirghadr et al. (2018), repeat visitors to the same museum know what to expect, how to locate it and which parts and activities of the museum they most enjoy.

According to Falk and Dierking (2016b), visitors' expectations for the visit and their behaviours during the visit are shaped by prior experiences. In museums, certain familiarity is created leading the visitors to play an active role in the co-creation process (Antón et al., 2018) with other subjects and the environment (Campos et al., 2018).

Experience seems to be even more important to PwD. People with sensory impairments include people to whom the capacity to see is limited or absent or who are completely deaf or hard of hearing so, as museums are mainly visual places it is important to provide new ways to improve the experiences rather than vision. The involvement and participation in different activities as well as the independent access to information by PwD is essential to better experienced visits (Accentuate et al., 2018; Accentuate & History Place, 2018; Rnib et Vocaleyes, 2003). Some of the ways to open access to exhibitions and improve experiences are, for example, by providing accessible information about space and objects in a range of accessible formats and by including guided tours that describe collections, handling sessions or even multi-sensory exhibits.

From the above, it appears, as observed in the previous literature review, that many authors consider prior experiences to be an influence in the co-creation of experiences. Considering the literature review done and the aspects mentioned above, as well as the gap that exists in the assessment of the influence of prior experiences in the co-creation of experiences for the general public and, especially for PwSI, the following hypothesis is raised:

H2. PwSI' prior experiences with museums influence their co-creation in museums

One important factor that can prevent people participation in tourism activities is also the lack of a companion during the travel experience (Daniels et al., 2005; Devile & Kastenholz, 2018; Nyaupane et al., 2004). Most people **visit museums in a group** ranging from families, school field trips or other visitors outside their own social group (Falk & Dierking, 2016b). Concerning PwD, one of the main constraints to participate in tourism activities, results from the lack of support from the family and friends (Devile & Kastenholz, 2018; T. L. Packer et al., 2007; Yau et al., 2004) and the lack of detailed information which gives PwSI the opportunity to make an autonomous visit (Cock et al., 2018). The impact of this factor can vary according to the type and level of impairment as people with more severe impairments often experience greater disadvantage (Devile & Kastenholz, 2018; Shakespeare, 2018). The support of family and other people plays an important role in assisting the decision-making process and helping PwD to overcome some structural barriers (finding access information, understanding the contents presented in the exhibitions, among other aspects) (Asakawa et al., 2018; vom Lehn, 2010). The literature suggests therefore, the importance of the **visitor group** in the co-creation of experiences for the general public and, especially, for PwSI. Consequently, although there is not empirical evidence on this influence in the broad context of co-creation in museums, the following hypothesis arises:

H3. The visitor group influences the PwSI' co-creation in museums

Literature suggests that a wide range of **factors related to museums** may affect the visitors' experiences in these cultural attractions and that some of these factors may affect co-creation in museums, being thus museums' **antecedents** of that co-creation. Among several authors, some of the most mentioned are Falk and Dierking (2016), who proposed the learning or interactive experience model. This model identifies relevant factors affecting the museum visit experience related to three overlapping contexts that influence interaction – the personal (already explored in section 4.2.2.1), and the sociocultural and physical (that encompass many features of the museum) (discussed in the scope of section 4.2.2.2) –, pointing out that the visitor dynamically and continuously creates experiences.

The museums' antecedents before mentioned are, according to some authors, of major importance for the general public and PwSI (Antón et al., 2018; Minkiewicz et al., 2014; Taheri et al., 2014; Vaz, 2020). Nevertheless, the research regarding factors that facilitate or constrain visits to museums for PwSI is still limited. However, some authors highlight the importance of museum features which facilitate the visit and make it more enjoyable (Accentuate & History Place, 2018; Falk & Dierking, 2016b; Mesquita & Carneiro, 2016). Physical and sociocultural constraints also impact experiences in museums, especially in the case of PwD, and specifically, PwSI (Chang, 2006; Falk & Storksdieck, 2005; Kempiak et al., 2017; López Sintas et al., 2014; Mirghadr et al., 2018). Although discussion on the influence of some of these factors usually presents them as constraints and assumes they have a negative, discouraging, or inhibiting impact, they may act in the opposite direction, as facilitators of experience co-creation, if managed appropriately.

Several antecedents are referred in the literature review as being important in co-creation of experiences (see section 4.2). Considering the literature review and the aspects mentioned above, the following hypothesis is raised.

H4. Museums' antecedents influence PwSI' co-creation in museums

People engage in activities to achieve a set of psychological **outcomes** which are known, expected and valued (Beeho & Prentice, 1997). Museums “exist to enhance the quality of people's lives and to satisfy their needs in every sense – physically, socially, intellectually, emotionally and spiritually” (Black, 2005, p. 286). More than meeting certain needs, museums want to provide an experience that exceeds visitors'

expectations (Beeho & Prentice, 1997). An outcome can be both positive and/or negative.

In tourism, positive outcomes may include feelings like satisfaction, trust, loyalty, joy, pride, commitment and surprise (Blazquez-Resino et al., 2015; Chathoth et al., 2016; Gadsby, 2011; Grisseemann & Stokburger-Sauer, 2012; Majboub, 2014; Prebensen & Xie, 2017). As important parts of the tourism experience, museums have the ability to inspire people and change lives and it is said that after visiting a museum one should feel better than before (Ambrose & Paine, 2018). The senses of belonging, self-esteem and self-actualisation are engendered by a set of facilities and services designed specifically to answer the diversity of people's expectations.

According to Packer (2008), even if learning outcomes are referred as one of the main important values that visitors want to achieve, they may not be enough to explain the value and benefits of the museum experience. During their visit, visitors "seek to be engaged, immersed, informed, enthused, and relax, to understand their local heritage, to be shocked, surprised, to spend time with their loved ones and simply to have fun" (Packer, 2008, p. 3) reaching, according to some authors, emotional, learning and social outcomes (Black, 2005; Dierking & Falk, 1998; Falk & Dierking, 2016; Hood, 1992; Packer, 2008). At a museum, visitors wish to have positive outcomes in order to justify their investment of time, money and effort (Gadsby, 2011; Mercier, 2017). Based on the literature review and the intention to better understand the outcomes arising from a museum visit, the following hypothesis came up:

H5. PwSI' co-creation of experiences in museums influence their perceived emotional, learning, and social value regarding those experiences

Satisfaction has been studied in the last decades in different fields (Ali et al., 2016; Antón et al., 2017; Baker & Crompton, 2000; Grisseemann & Stokburger-Sauer, 2012; Y. H. Kim et al., 2014; Prebensen et al., 2016; Y. Yoon & Uysal, 2005) due to its importance in evaluating how consumers perceive quality (De Rojas & Camarero, 2008). Visitors' satisfaction is of major importance in the context of museums as, when a visitor is satisfied, he/she tends to communicate the positive feeling to others (Kinghorn & Willis, 2007; Nowacki & Kruczek, 2021), to recommend a place as well as to revisit that same place (C.-F. Chen & Chen, 2010; De Rojas & Camarero, 2008; Kempniak et al., 2017; Y. H. Kim et al., 2010; Y.-K. Lee et al., 2008; Y. Yoon & Uysal, 2005).

Studies suggested the importance of satisfaction in the intention to revisit a place as well as to recommend or express favourable comments about the place to others (C.-F. Chen & Chen, 2010; De Rojas & Camarero, 2008; Kempniak et al., 2017; Kim et al., 2010; Y.-K. Lee et al., 2008; Yoon & Uysal, 2005).

Emotional and learning outcomes, together with the social outcome, are used by different authors to explain satisfaction. Concerning museums, and as mentioned by different researchers, emotional, learning and social values are the most common and important outcomes in the domain of these tourism attractions (Black, 2005; Dierking & Falk, 1998; Falk & Dierking, 2016; Hood, 1992; Packer, 2008) and may overlap one another at the same time (Falk & Dierking, 2016; Falk & Dierking, 1997). Some researchers even argue that museums must improve emotional involvement so that visitors feel satisfaction during their visit, as well as want to return and recommend the attraction to family and friends (Asakawa et al., 2019; H. Chen & Rahman, 2018; Mey & Mohamed, 2010). This involvement and satisfaction enhance memory formation (Falk & Dierking, 2016). This highlights that co-creation during museum visits can not only trigger positive emotions but may also result in more satisfying visitors.

Museum managers and other staff of these organisations have an important role in meeting the visitors' goals; museums seek to be more visitor oriented, focusing on visitors' needs and motivations, and in offering satisfying experiences so that visitors return and recommended their visit (Beeho & Prentice, 1997; Brida et al., 2016; De Rojas & Camarero, 2008; Nowacki & Kruczek, 2021).

Previous researchers state that customer **loyalty** is highly influenced by customers' satisfaction (Bitner, 1992; Y.-K. Lee et al., 2008) (as already discussed in section 4.3.4 and 4.3.5). Behavioural intentions usually represent visitors' loyalty. Consequently, and taking in account the literature review that suggests that emotional, learning and social value will influence satisfaction, which, in turn, will lead to a feeling of loyalty, the following hypotheses are proposed:

H6. Emotional, learning, and social value perceived by PwSI in a museum visit influence their satisfaction with that visit experience.

H7. The satisfaction PwSI get from visiting a museum influences their loyalty towards that museum.

4.5. Conclusion

This chapter focus on the literature review of antecedents and outcomes of co-creation of experiences in museums. Following the literature review a conceptual model on antecedents and outcomes of experiences for visitors with sensory impairments is presented. The literature review suggests that it is important to understand the antecedents of co-creation of experiences in general, and in museums. Several factors can be considered as antecedents of this co-creation, and they can work as facilitators or as constraints of co-creation of experiences. In this thesis antecedents of co-creation of experiences in museums were categorised as antecedents related to the visitor and antecedents related to the museums. Among the first, individual antecedents and visit context aspects were identified, which may affect co-creation. Regarding the antecedents related to the museums, a wide range of antecedents encompassing physical environment, communicational and attitudinal aspects were identified.

Concerning PwSI it is important to understand the way individual antecedents can help or block the co-creation. Constraints faced by PwD were presented in order to reflect how they can be mitigated in the tourism domain and specifically in the museum context. Concerning constraints in museums for PwSI, the research review indicates that studies on this matter must be intensified.

The literature suggests that different approaches are needed to foster co-creation among people with different needs. Even among PwSI, distinct approaches seem to be needed to boost co-creation in museums. People engage in activities to achieve a set of psychological outcomes as the literature review suggests. Museums, as cultural attractions, and privileged learning environments, implement several strategies that offer multiple benefits to visitors. Museums exist to enhance the quality of peoples' lives and a visit to a museum can generate several important outcomes ranging from emotional value, learning value and social value, to satisfaction, which may lead to positive future intentions, namely regarding loyalty towards museums.

Different strategies have been used to maximize these positive impacts of the visit. Literature suggests that co-creation plays an important role in this area and, interacting with staff, participation in activities such as workshops, interaction with technologies, touch tours, multi-sensory experiences and representations are some of the strategies used to increase the perceived value and satisfaction visitors may obtain with museum

visits. Moreover, the values achieved with co-creation are expected to lead satisfaction and to behavioural intentions like recommendation or the intention to revisit the place.

PART III – Empirical research

5. Methodology of the empirical research

“Without data, you’re just another person with an opinion”
W.Edwards Deming

5.1. Introduction

Due to the scarcity of research on co-creation of experiences for people with sensory impairments and general public in museums, as already mentioned in the introduction of this thesis, it was necessary to carry out, within the scope of this thesis, **a mix methodology approach**. The thesis adopts a **deductive approach moving towards hypothesis testing**, after which some principles can be confirmed, refuted, or modified. Both **qualitative and quantitative approaches** were adopted, with the aim, above all, of clarifying the antecedents, the co-creation and the outcomes of experiences for PwSI and general public, in museums. First, to collect the qualitative information, the research procedure adopted was a focus groups with people with visual impairments. Second, a questionnaire was elaborated and carried out with people with sensory impairments and the general public.

In this chapter, the methodology adopted in the qualitative and quantitative studies is specified.

This chapter is divided into five sections. The first section corresponds to the introduction. Then, in the second section, the research paradigm is identified. In the third section the methodology adopted for conducting the qualitative study is explained. In the fourth section, the data collection and data analysis methodologies adopted for carrying out the quantitative study are presented. Conclusions are presented in the last section.

5.2. Research paradigm

This section links **theory with a concrete empirical research proposal**. Research is an activity carried out with scientific rigour and academic awareness. A scientific research is based on logic and reason and an evaluation of evidence and it should contribute to a cumulative body of knowledge about a field or a topic (Veal, 2018). A scientific work always involves adopting a standpoint in terms of epistemology (the relationship between the knower and the known), ontology (the nature of the existence)

and methodology (the process of knowing) of the research (Vieira, 2010). A methodology is a set of guidelines for conducting research (Dwyer et al., 2012). The choice of the methods will be influenced by the research methodology which will be influenced by the theoretical perspectives adopted in the research, and by the researcher's epistemological stance (Gray, 2004). Some researchers provided a summarised perspective on the link between epistemology, theoretical perspectives, research approach, methodologies, and methods (Figure 5.1). **Epistemology** provides the insights for deciding what kinds of knowledge are adequate in the research (Gray, 2004). When conducting scientific research, the methodology and methods to be used and how to justify the choices are important aspects for the researcher.

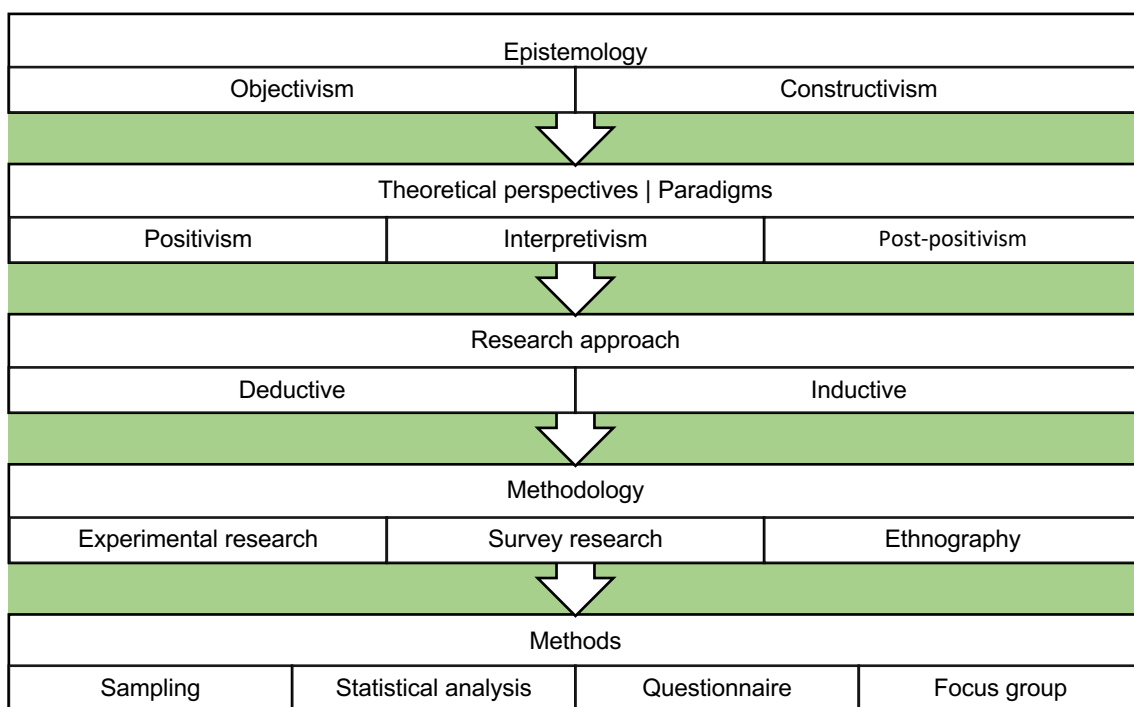


Figure 5.1. Relationship between epistemology, theoretical perspectives, research approach, methodology and research methods

Source: Adapted from Brunt et al. (2017) and Crotty (1998).

Social sciences research deals with the behaviour of people as social beings which highlights the unpredictable nature of the studies as people can change their behaviour accordingly to their desires (Veal, 2018). Within **social sciences**, two main epistemological views are present: **objectivism and constructivism**. These two different approaches offer different points of views of the world and knowledge. Objectivist epistemology holds that there is an objective out there and that the reality exists independently of consciousness, contrarily to constructivism. In constructivism

truth and meaning do not exist in external world as they are created by the interaction of the subject with the world (Gray, 2004).

When planning a study, researchers must understand the major philosophies underpinning their investigation (Creswell & Creswell, 2018). During the scientific research, the ways by which knowledge and understanding are established through research are one of the most important issues to achieve good results. **Paradigms** are theoretical perspectives that inspire, and guide a given science. Among the different theoretical perspectives, positivism and interpretivism were considered the most important (Gray, 2004). According to Dwyer et al. (2012) there are two clusters of paradigms: those associated with quantitative methodologies and those related with qualitative methodologies. **Positivism**, the dominant epistemological paradigm in social sciences from the 1930^s until the 1960^s, is a theoretical perspective closely linked to objectivism which means “that reality exists external to the researcher and must be investigated through the rigorous process of scientific inquiry” (Gray, 2004, p.20). Positivism has a realistic approach, facts are objective, and reality can be described from an impartial viewpoint. Phenomena are measurable and predictable. In this approach statistics are necessary, and the deductive nature of research is desirable (Brunt et al. 2017). In contrast, phenomenology holds that people’s experience of the social reality is essential to understand that reality. According to Gray (2004, p. 21) “the key is gaining the subjective experience of the subject, sometimes by trying to put oneself in the place of the subjects”.

In interpretivism the meaning of the social world is hidden, and only deep reflections can bring reality to the surface, the natural reality and social reality are different (Gray, 2004). Reality is constructed by social actors, and, in consequence, measures of reality are not observable as the reality is imperceptible from the outside (Gray, 2004; Jennings, 2010; Veal, 2018). Thus, the research is likely to be conducted in an inductive way (Corbetta, 2003).

There are other theoretical perspectives of research, besides positivism and interpretivism, which appeared more recently. One of these perspectives is **post-positivism**. Post-positivism is very similar to positivism as it acknowledges the belief system of positivism, modifying the objective assumptions (Brunt et al. 2017). In its epistemological approach, this paradigm stresses the importance of scientific methods arguing that even if you have an idea about reality, you still want to test it statistically. When studying the human behaviour or human actions one cannot be positive about

knowledge (Creswell & Creswell, 2018). In post-positivism philosophy the absolute truth of knowledge is questionable (Creswell & Creswell, 2018).

According to John Creswell and J. Davis Creswell (2018) post-positivism holds a philosophy in which causes lead to effects or outcomes. These causes need to be identified and for that it is important to reduce the ideas into a small, discrete set to test, such as the research questions and hypotheses. The objective reality that exists must be observed and measured. Researchers establish probable facts or laws which are useful until such time as they will be outdated, one day, by some new theories. The use of mixed methods is accepted in post-positivism and qualitative and quantitative methodological paradigms are used in order to improve accuracy, avoid biases, and a mean to build analyses (Henderson, 2011).

Taking post-positivism (“realist”) paradigm as a philosophical position, the study is based on a descriptive, applied, and explanatory research (Veal, 2018). Theory and practice allow acknowledgement (Henderson, 2011), helping to understand a problem more efficiently. The aim of the explanatory approach is “to explain why things are as they are, and how they might be” (Veal, 2018, p. 6). The researcher tries to find a cause to explain a specific pattern and behaviour described by descriptive research (Jennings, 2010)

Table 5.1. Positivism versus post-positivism

	Positivism	Post-positivism
Ontology (world view, perspective on the nature of reality)	Universal, realism (external, objective, independent) Truths and laws	Fallible, critical relativism (social conditioning, objective, independent) Truths are influenced by social and historical circumstances.
Epistemology (science of knowledge construction)	Objectivist assumption, observable phenomena only	Modified objectivist assumptions, observable phenomena only Ethic whilst recognizing potential biases inherent in researcher decision-making processes.
Methodology (research guidelines)	Quantitative, deductive, verification of hypotheses	Qualitative and quantitative (use of mixed methods), falsification of hypotheses
Axiology (study of values and ethics)	Value free Research projects’ purposes are extrinsic in nature	Essays to be value free, emphasizes albeit fallibility of researcher recognized. Knowledge is propositional and of intrinsic value. Extrinsic to research purpose.

Source: Brunt et al. (2017) and Jennings (2010).

Choosing appropriate research methods is vital. The empirical research underlying this thesis adopted the **mixed methodology**. As far as the mixed approach is concerned, different approaches including qualitative and quantitative formats are used by researchers in a single study. By adopting a mixed methodology more insights into a

problem are achieved and this approach provides a better understanding of the problem or question than one method by itself (Creswell & Creswell, 2018). This approach may be need when quantitative methods and qualitative methods, each one by itself, do not permit to understand a research problem and when the combination of quantitative and qualitative approaches can provide a better understanding of the issue under analysis (Table 5.2).

Some researchers (Creswell & Creswell, 2018; Dwyer et al., 2012; Neuman, 2007; Veal, 2018) identify the main differences between **qualitative and quantitative methods**, and the characteristics of **mixed methods**, also emphasizing the importance of the latter ones. According to John Creswell and J. Davis Creswell (2018, p. 162), “qualitative research is exploratory and the researchers use it to probe a topic when the variables and theory base are unknown”. Qualitative research is done usually when there is a lack of theory and previous research, there is a notion that the available theory may be inaccurate, inappropriate, incorrect, or biased, a need to explore and describe the phenomena and to develop theory and, finally, when it is considered that the nature of the study doesn’t suit a quantitative approach (Creswell & Creswell, 2018). In contrast, in a quantitative approach the problem is best addressed by understanding what factors or variables influence an outcome. Most quantitative research starts with the test of a theory and researchers establish the relationship between variables and pose this in terms of questions or hypotheses. A mixed methods study has the purpose to use both qualitative and quantitative data in the same study. The problem may need to be understand quantitatively (e.g. relationship between variables) and explored qualitatively in further depth (Creswell & Creswell, 2018). Qualitative researchers state that quantitative researchers, as they trust in empirical materials, may not capture the subject’s viewpoint (Denzin & Lincoln, 2018). On the other hand, quantitative researchers consider qualitative studies not objective and unreliable. Qualitative researchers seek for rich descriptions of the social world, whereas quantitative researchers don’t value those aspects (Table 5.2).

Table 5.2. Qualitative, quantitative, and mixed methods

Qualitative methods	Quantitative methods	Mixed methods
Emerging methods	Predetermined	Both predetermined and emerging methods
Open-ended questions	Instrument based questions	Both open- and closed ended questions
Interview data, observation data, document data, and audiovisual data	Performance data, attitude data, observational data, and census data	Multiple forms of data drawing on all possibilities
Text and image analysis	Statistical analysis	Statistical and text analysis
Themes, patterns interpretation	Statistical interpretation	Across databases interpretation

Source: John Creswell and J. Davis Creswell (2018).

Large support for the use of mixed methods has been rising in recent years (Creswell & Creswell, 2018; McKim, 2017; Veal, 2018). Considering the differences between qualitative and quantitative methods, the benefits of the adoption of mixed-methods, and also the nature of the topic under analysis in this thesis, in this thesis a mixed methods approach was adopted, with the quantitative research being based on an initial qualitative work. The research follows a hypothetic-deductive method, where rational reflection is combined with observation and empirical approach discussed under positivism approach resulting in hypotheses to be tested (Veal, 2018).

The methodologies of the qualitative study and of the quantitative study will be described in more detail in the next sections.

5.3. Qualitative study

Due to the scarcity of research on co-creation of experiences for PwSI and people without disabilities in museums, as already mentioned in the introduction of this thesis, it was considered necessary to carry out, within the scope of this thesis, a first qualitative, exploratory, empirical study, carrying out focus groups, with the aim, above all, of clarifying what facilitates or constraints co-creation in museums for PwSI. Nevertheless, due to the COVID-19 pandemic, which forced the focus groups to be carried out online, and to the difficulties to communicate with some people with hearing impairments (PwHI), which required the knowledge of sign language, the qualitative study of the thesis was restricted to people with visual impairments PwVI. This exploratory research intends to be the first stage of a sequence of studies. To collect this qualitative information, the research procedure adopted was, as already mentioned, a focus group. The results of the qualitative empirical study carried out were then used to better specify some aspects of the quantitative study. The results were used, above all, to better specify some questions of the questionnaire that constitutes the base research instrument of the aforementioned study. In the next sections, the methodology adopted in this qualitative study is specified.

5.3.1. Data collection method and sampling approach

This study, essentially exploratory and qualitative, was conducted using focus groups. This approach was adopted mainly because: (i) qualitative approaches are recommended for studies with minor groups such as PwVI; (ii) research about the subject is limited, which justifies carrying out an exploratory study; and (iii) focus groups are appropriate for a comprehensive exploration of perspectives and experiences, and to stimulate exchange between participants.

The study, carried out in Portugal, focused on PwVI, either with low vision or blind, who visited museums. As far as sampling approaches are concerned, a combination of convenience and snowball approaches was used. Based on the personal knowledge of the researcher, three participants were asked to participate in the study, with eight being recruited via snowball sampling, and six others being invited via a higher education institute and an organisation of PwVI – Iris Inclusive Association of the Blind and Partially Sighted (IRIS) [*Iris Inclusiva Associação de Cegos e Ambliopes (IRIS)*]. A total of 17 persons of different ages agreed to participate in the study.

Since the focus groups took place between May and July 2020, during the COVID-19 pandemic, and due to difficulties of setting up focus groups with PwVI in those challenging times, five groups were interviewed, via Zoom. Each focus group session lasted approximately one hour, and the moderator was the author of this thesis. All the participants allowed the focus group to be recorded at the beginning.

The questions asked, which were developed based on the aforementioned literature review, were ordered from the most general to the most specific. Therefore, visitors were first requested to report how many times did they visit museums in the last three years and what kind of museums they visited (Table 5.3) (Appendix 1). The majority of the other questions were related to the last visit they made to a museum. Concerning the museum they visited, the participants were first asked about the group of people with whom they made their visit. Then, focusing on experience co-creation in the museum, the participants were asked to describe activities and interactions with the physical environment of the museum (e.g., objects, games), with other people (e.g., group of visitors, staff) and with technical devices. To fully understand factors influencing co-creation, participants were explicitly requested to indicate the main barriers and facilitating factors experienced regarding the several kinds of interaction previously identified. The focus group ended by asking the age of the respondents. After the focus groups, each participant was individually contacted and requested to indicate his/her level of disability and to provide some information on when and how he/she acquired it. This approach was adopted to avoid constraining people by sharing this information in front of other participants.

Table 5.3. Focus group script

Question number	Question
Q1	How many times did you visit museums in the last three years? What kind of museums do you usually visit?
Q2	Describe your last visit to a museum. What have you done while you were visiting the museum?
Q3	How have you interacted with the physical aspects of the museum - displays, objects, games?
Q4	Have you interacted with people during your last visit(s) to museums – with your visitation group, with staff? Can you describe these interactions?
Q5	Have you got in touch with technological devices during your last visit(s) to museums? With which devices and which were the objectives of these interactions?
Q6	<p>What main barriers have you faced regarding the interactions before mentioned during your last visit to museums? What features facilitated these interactions?</p> <ul style="list-style-type: none"> • Physical features: Which ones? • Social/communicational features: Which ones? • Technological features: Which ones? • Other important features?

Source: Own elaboration.

5.3.2. Data analysis method

The focus group discussions, recorded with the due consent via Zoom, were fully transcribed. This process is essential as it gives a more precise record of the participants' testimonials (Veal, 2018). After checking the transcription, data were analysed using content analysis and coded, which allowed key themes and sub-themes to be identified. The categories used to analyse the results emerged from the literature review and were complemented with topics that emerged from the discussions. Two main topics were explored in this analysis: (i) the kind of co-creation experiences that took place in the museums; and (ii) the antecedents of that co-creation (visitor antecedents and museum antecedents). To guarantee the respondents' anonymity, participants were labelled with letters corresponding to their gender (M = male, F = female) and with numbers (e.g., 1, 2, 3). A complementary quantitative analysis was carried out to identify the most frequently referred modes of co-creation and factors that influenced co-creation.

Conducting these focus groups was essential to include a constructivist perspective on how the co-creation takes place in museums in the case of PwVI, and on the factors that influenced that co-creation, as well as to provide insights to carry out the quantitative study of this thesis.

5.4. Quantitative study

This section intends to describe the methods of the quantitative study carried out in this study. The logic of choosing the collection method and, consequently, the instrument to be used, is anchored in the need to produce all the adequate and necessary information to test the hypotheses of the conceptual model proposed in this thesis. The most used methodology is the questionnaire survey (Brunt et al., 2017).

The main objective of the quantitative study is to test the proposed model and, particularly, to analyse the co-creation in museums in different contexts for PwSI, to identify its antecedents and its outcomes for PwSI and people without disability. For this reason, a considerable number of visitors had to be surveyed. Therefore, the questionnaire survey was considered an appropriate data collection method for this study. The questionnaire was designed by the researcher based on the literature review presented in previous chapters (chapters 2, 3 and 4), so that the questions allowed to test the research hypotheses.

The second stage of the research was the administration of the questionnaires. Thus, the following sections describe the questionnaire development process, including the structure, the scales used, the theoretical foundation of the questionnaire and the pre-test phase. Subsequently, the sampling approach and the techniques for administering the questionnaire are detailed. Finally, the data analysis methods used is also described.

5.4.1. Data collection instrument

Considering the aims of this thesis, the data collection method selected for the quantitative study was, as already mentioned, the questionnaire survey. The questionnaire can be defined as a “written /printed or computer-based schedule of questions and a pro forma for recording answers to the questions” while the survey “is the process of designing and conducting a study involving the gathering of information from a number of subjects” (Veal, 2018, p. 311). This quantitative approach permits to obtain numerical data which enables to draw conclusions or test hypotheses, and is used when a specific type of information is required (Veal, 2018). The questionnaire is a low-cost technique that allows participants to answer at their own pace and in conditions of privacy, and also allows the quantification of multiple data and carrying out various analyses (Quivy & Van Campenhoudt, 2005). The questionnaire survey is one of the

most common used methods in descriptive studies and several authors highlight its main advantages and disadvantages (Jennings, 2010; Veal, 2018). However, it also facilitates the comparison of responses and the analysis of relationships between variables that are considered necessary for the study. Some other advantages and disadvantages may be found in table 5.4.

Table 5.4. Questionnaire advantages and disadvantages

Advantages	Disadvantages
Flexibility in choosing the data collection techniques	Depends on the ability of the participants to remember, on their honesty and on the format of the questions
Useful quantified information for a large number of publics	Usually involves only a proportion, or sample, of the population
Generalisation to the whole population or to similar population	
Low-cost technique	
Ability to collect large amounts of information	
Accuracy of results	
Remove interviewer bias when the interviewer is not present	
The participants can complete the questionnaire at his own pace, when is self-completed	

Source: Jennings (2010) and Veal (2018)

The design of the questionnaire is of utmost importance in order to ensure choosing the right model to adopt. The first step was to choose if the questionnaire might be composed of unstructured or structured questions. Unstructured questions are open-ended questions that participants answer freely. Structured questions present a set of alternatives and the response format (Malhotra, 2019). These two different types of question present advantages and disadvantages as presented in table 5.5.

Table 5.5. Type of questions

Type of question	Advantages	Disadvantages
Unstructured question	<ul style="list-style-type: none"> • Enable the participants to express general attitudes and opinions • Participants are free to express any views • Can provide rich insights • Useful in exploratory research • Have a much less biasing influence on response 	<ul style="list-style-type: none"> • Potential for interviewer bias is high • Coding of responses is costly and time-consuming
Structured question	<ul style="list-style-type: none"> • Easy to apply statistical tests to analyse the answers • Possible to analyse in a sophisticated way 	<ul style="list-style-type: none"> • Sometimes the information is not rich • Sometimes the answers lead to too much simple conclusions

Source: Adapted from Hill and Hill (2000) and Malhotra (2019)

M. Hill and A. Hill (2000) state that a questionnaire with both unstructured and structured is useful when the researcher wants to obtain qualitative information to complement and contextualize the quantitative information obtained by the other variables. Therefore, it was decided to design the questionnaire on the basis of closed questions, although open-ended questions were included to give respondents the freedom to express more and detailed information about the subject.

Another important issue in the design of the questionnaire is the type of scales used. There are different types of scales. In the present questionnaire, nominal ordinal and Likert type scales were used. The questionnaire of the present study was divided into three main sections. The questionnaire of the present study included questions about the co-creation of experiences in museums, as well as about its antecedents and outcomes (Table 5.6).

The questionnaire was designed to be carried out online and face-to-face. A pilot test was conducted for the purpose of testing the questionnaire “to identify and eliminate potential problems” (Malhotra, 2019, p. 338). The pilot test was conducted in Porto, Portugal, between September 20 and September 27, 2020 with a sample of 15 people. Based on the conclusions drawn from the pilot test some changes were done in the questionnaire, especially regarding some questions wording sequence and question difficulty.

The first section of the questionnaire was designed to characterize some aspects of the visitors’ prior experiences with museums, namely the number of museums visited in the

past 3 years, as well as to identify the last museum visited and its location (country and place where that museum was located).

The second section encompassed questions about the experience at the last museum visited. In the first question respondents were asked to report with whom he/she had visited the museum (alone, with friends, with social institutions that support the respondent, family members, school or other). Then, participants in the study were asked to answer a set of multiple questions concerning factors that can influence the co-creation of experiences in museums - related with the physical, communicational and attitudinal aspects -, using five-point Likert scales ranging from 1 “totally disagree” to “totally agree”. Subsequently, respondents had to answer questions regarding co-creation of experiences during the visit (in physical, digital, social, and multiple contexts). Afterwards, respondents were asked to answer questions regarding the potential consequences of the co-creation in the museum.

The third section integrates questions about personal aspects of the respondents. In this section respondents were asked to answer questions concerning their sociodemographic characteristics and about the disabilities they have.

The final version of the questionnaire can be found in appendixes 2 to 5. The questionnaire was administrated in four different languages (English, French, Portuguese, and Spanish).

Table 5.6. Questionnaire: Questions, codification, scale and literature review (continues)

Scope	Concept	Item/ Questions	Variables	Codification	Scale	Literature review
Section A – Identifying the last museum visited						
MUSEUMS AND MUSEUM VISITED	PRIOR EXPERIENCE	Museums (Q.1.1)	Number of museums visited in the past three years	Open question		Antón et al. (2018); Argyropoulos & Kanari, (2015); Bagozzi (1981); Caru & Cova (2005), Chang (2006);
		Museums name (Q.1.2)	Last museum visited	Open question		Deville & Kastenholz (2018); Falk & Dierking (2000, 2016); Falk & Storksdieck (2005); McCarthy & Ciolfi (2008); Minkiewicz et al. (2019); Mirghadr et al. (2018); Prebensen & Foss (2011); Sheng & Chen (2012); Taheri et al. (2014).
		Location	Country/Region	Open question		
Section B – Experience at the last museum visited (based on the last visit to the museum)						
MUSEUM VISIT	VISIT GROUP	Visit group (Q.2.1)	Alone, family members, friends, school, social institutions, other	1=Alone 2=Family members 3=Friends 4=School 5=Social 6=Institutions 7=Other	Nominal	Asakawa et al. (2018); Bitgood (2010); Chang (2006); Daniels et al. (2005); Debenedetti (2003); Devile & Kastenholz (2018); Falk & Dierking (2016); Packer et al. (2002); Patel et al.(2016); vom Lehn (2010)
ANTECEDENTS OF CO-CREATION	PHYSICAL	To which extent the physical environment of the museum incorporated the following elements? (Q.2.2)	Logical organisation of the venue (e.g., reception at the entrance) 3D models or relief maps representing the museum Clear signage Physical guidance to help identify pathways System to help identify directions and objects Floor without steps or accentuated unevenness Floor without physical barriers Suitable lighting in the venue and in the exhibition	From 1=Totally disagree to 5= Totally agree	Likert	Falk & Dierking (2016); Goulding (2000); Mesquita & Carneiro (2016); Poria et al.(2009); Richards et al. (2010); Small et al.(2012) Bizerra et al. (2009); Lancioni et al.(2010); Mesquita & Carneiro (2016) Durão (2009); Goulding,(2000); Mesquita & Carneiro (2016); Richards et al. (2010) Chick (2017); Mesquita & Carneiro (2016); Poria et al.(2010); Richards et al. (2010); Salmen et al.(1998) Asakawa et al. (2018); Duckett & Pratt (2001) Darcy (2010); Figueiredo et al. (2012); McKercher & Darcy (2018); Mesquita & Carneiro (2016); Richards et al. (2010) Mesquita & Carneiro (2016); Richards et al. (2010) Cheng et al. (2019); Chick (2017); Kempiak et al. (2017); Mesquita & Carneiro (2016); Richards et al. (2010)

Table 5.6. Questionnaire: questions, codification, scale and literature review (continuation)

Scope	Concept	Item/ Questions	Variables	Codification	Scale	Literature review
ANTECEDENTS OF CO-CREATION	COMMUNICATIONAL	To which extent the museum tried to transmit information to the visitors through the following methods? (Q.2.3)	Guided tour, Flyers, brochures or guides Information boards and panels Relief figures	From 1=Totally disagree to 5= Totally agree	Likert	Antón (2018); Falk & Dierking (2016); Grandi & Gomes (2017); Hillis (2005); Kempiak et al. (2017); Meliones & Sampson (2018); Minkiewicz et al. (2013); Pattison & Dierking (2013); Taheri (2011); Udo & Fels (2010); Walters (2009) Ambrose & Paine (2018); Kempiak et al. (2017) Ambrose & Paine (2018) Grandi & Gomes (2017); Mesquita & Carneiro (2016); Richards et al. (2010); Rnib et Vocaleyes (2003) Antón (2018); Cachia (2013); Candlin (2008); Cho & Jolley (2016); Grandi & Gomes (2017); Krivec et al. (2014); Levi (2005); Mesquita & Carneiro (2016); Minkiewicz et al. (2013); Mirghadr et al. (2018); Poria et al (2009); Rnib et Vocaleyes (2003); Taheri (2011); Udo & Fels (2010); vom Lehn (2010) Antón et al. (2018)
		Chance to touch/hold objects, models or replicas,				Mirghadr et al. (2018); Taheri (2011)
		Electronic devices for further information, Electronic devices for entertainment (e.g., Games), Interactive equipment				Antón (2018); Falk & Dierking (2016); Grandi & Gomes (2017); Minkiewicz et al. (2013); Mirghadr et al. (2018)
		Experience that stimulates multiple senses (e.g., Sight and smell) Representations (e.g., Plays, historical recreations) Workshops or seminars				Antón (2018); Cachia (2013); Falk & Dierking (2016); Mesquita & Carneiro (2016); Minkiewicz et al.(2013); Rnib et Vocaleyes (2003) Falk & Dierking (2016); Kempiak et al. (2017); Mirghadr et al. (2018) Falk & Dierking (2016); Kempiak et al. (2017); Mirghadr et al. (2018); Rnib et Vocaleyes (2003)
		Storytelling (appealing stories on themes from the museum were presented)				Falk & Dierking (2016); Kempiak et al. (2017); Mirghadr et al. (2018)

Table 5.6. Questionnaire: questions, codification, scale and literature review (continuation)

Scope	Concept	Item/ Questions	Variables	Codification	Scale	Literature review
ANTECEDENTS OF CO-CREATION	COMMUNICATIONAL	To what extent the information transmitted by the museum had in consideration the following aspects? (Q.2.4)	Easy access to means of interpretation such as information panels, leaflets, guided tours or audio guides Information in different languages Easy reading texts Images with good contrast and definition Properly sized texts Information boards and panels with good colour contrasts Information in different formats (ex. Braille, sign language, audio / sound information) adapted to your needs Information in different language	From 1=Totally disagree to 5= Totally agree	Likert	Cheng et al. (2019); Mesquita & Carneiro (2016); Mirghadr et al. (2018) Kempiak et al. (2017) Rnib et Vocaleyeyes (2003) Grandi & Gomes (2017); Mesquita & Carneiro (2016); Mirghadr et al. (2018) Cheng et al. (2019); Mesquita & Carneiro (2016); Rnib et Vocaleyeyes (2003) Cheng et al. (2019) Ambrose & Paine (2018); Black (2005); Cheng et al. (2019); Falk & Dierking (2016); Goss et al. (2015); Grandi & Gomes (2017); Hayhoe (2017); Hetherington (2002); Kempiak et al. (2017); Mesquita & Carneiro (2016); Minkiewicz et al. (2013); Naniopoulos et al. (2015); Richards et al.(2010); Rnib et Vocaleyeyes(2003); Salmen et al. (1998); Taheri (2011); Walters (2009) Kempiak et al. (2017)
		To what extent the staff had the following attitudes? (Q.2.5)	Encouraged the participation in activities Encouraged to explore the objects of the exhibition, Provided clarifications regarding the exhibition Were kind Provided reliable answers, Sought to understand individual needs, Communicated in several languages Were aware of how to deal with every type of visitor and had an inclusive approach Promoted a safe visit	From 1=Totally disagree to 5= Totally agree	Likert	Antón et al. (2018); Kotler & Kotler (2000); Richards et al. (2010) Antón et al. (2018); Kotler and Kotler (2000) Kotler and Kotler (2000); Pattison & Dierking (2013) Cheng et al. (2019) Cheng et al. (2019) Cheng et al. (2019) Cheng et al. (2019) Black (2005); Ginley (2013); Hillis (2005); McKercher et al. (2003); Pattison & Dierking (2013); Poria et al. (2009); Small et al. (2012) Cheng et al. (2019)

Table 5.6. Questionnaire: questions, codification, scale and literature review (continuation)

Scope	Concept	Item/ Questions	Variables	Codification	Scale	Literature review
Experience at the museum						
CO-CREATION	DURING THE VISIT (PHYSICAL CONTEXT)	To what extent the following aspects characterized your visit to the museum? (Q.3.1)	Saw the objects of the exhibition attentively	From 1= Totally disagree to 5= Totally agree	Likert	Falk & Dierking (2016), Mirghadr et al (2018), Taheri (2011)
			Read the information panels			Minkiewicz et al (2014, 2016), Mirghadr et al (2018)
			Read a printed leaflet, brochure or guide			Chen & Rahman (2017), Mirghadr et al (2018), Taheri (2011)
			Took pictures at the museum			Minkiewicz et al (2014)
			Chose the route followed in the museum			Minkiewicz et al (2014)
			Had experiences that appealed to multiple senses (ex. Sight and hearing)			Chen & Rahman (2018); Falk & Dierking (2016), Minkiewicz et al (2014, 2016), Mirghadr et al (2018)
			Used common areas of the museum apart from the exhibition rooms (ex. cafe / bar, store)			Chen & Rahman (2017), Kempiak et al (2017) Mirghadr et al (2018), Taheri (2011)
			Handled objects or replicas of the exhibition			Asakawa et al. (2018); Minkiewicz et al (2014); Mirghadr et al (2018)
			Created an object, piece or artwork to keep as a souvenir			Minkiewicz et al (2014)
CO-CREATION	DURING THE VISIT (DIGITAL CONTEXT)	To what extent the following aspects characterized your visit to the museum? (Q.3.1)	Used electronic devices from the museum (e.g., Computers)	From 1= Totally disagree to 5= Totally agree	Likert	Ambrose & Paine (2018); Falk & Dierking (2016)
			Carried out online activities related to the museum (e.g., Information search, games)			Mirghadr et al (2018)
			Used interactive panels			Chen & Rahman (2017), Minkiewicz et al (2014), Taheri (2011)
			Used audio guides			Taheri (2011)
			Watched videos			Falk & Dierking (2016), Minkiewicz et al (2016), Taheri (2011)
			Used mobile/digital apps			Minkiewicz et al (2016), Taheri (2011)
			Used social media			
			Used augmented reality or virtual reality			Mirghadr et al (2018)

Table 5.6. Questionnaire: questions, codification, scale and literature review (continuation)

Scope	Concept	Item/ Questions	Variables	Codification	Scale	Literature review
CO-CREATION	DURING THE VISIT (SOCIAL CONTEXT)	To what extent the following aspects characterized your visit to the museum? (Q.3.1)	Interacted with staff	From 1= Totally disagree To 5= Totally agree	Likert	Anton et al (2018), Chen & Rahman (2017), Falk & Dierking (2016), Minkiewicz et al (2014,2016), Minghadr et al (2018), Taheri (2011)
			Asked staff for help, Obtained information from the staff			Anton et al (2018), Kempiak et al (2017)
CO-CREATION	DURING THE VISIT (OTHERS)	To what extent the following aspects characterized your visit to the museum? (Q.3.1)	Interacted with specialists on a particular subject	From 1= Totally disagree to 5= Totally agree	Likert	Taheri (2011)
			Interacted with friends or family members who accompanied the visit			Anton et al (2018), Minkiewicz et al (2014) Minkiewicz et al (2014)
CO-CREATION	DURING THE VISIT (OTHERS)	To what extent the following aspects characterized your visit to the museum? (Q.3.1)	Interacted with other visitors	From 1= Totally disagree to 5= Totally agree	Likert	Anton et al (2018), Minkiewicz et al (2014) Falk & Dierking (2016), Kempiak et al (2017) Chen & Rahman (2017), Minghadr et al (2018) Kempiak et al (2017) Falk & Dierking (2016)
			Interacted with the local community.			Minghadr et al (2018) Falk & Dierking (2016), Kempiak et al (2017) Minghadr et al (2018)
		What do you consider to be the most positive aspect of your visit? (Q.3.2)		Open question		
		What do you consider to be the worst aspect of your visit? (Q.3.3)		Open question		

Table 5.6. Questionnaire: questions, codification, scale and literature review (continuation)

Scope	Concept	Item/ Questions	Variables	Codification	Scale	Literature review
CONSEQUENCES OF CO-CREATION	AFTER THE VISIT (EMOTIONAL BENEFITS)	To what extent the following benefits from visiting the museum were obtained? (Q.4.1)	Felt joy Felt admiration Felt proud Felt confidence Felt well-being Relieved stress and tension Had fun Felt more fulfilled	From 1= Totally disagree to 5= Totally agree	Likert	Barlow & Maul (1999); Black (2005,2012); Burnett & Bender-Baker (2001); Doering et al. (1999); Falk & Dierking (1998, 2013, 2016); Gadsby (2011); Izard (1977); Kelly (2001); Packer (2008); Pekarik et al. (1999); Sheth et al. (1991)
CONSEQUENCES OF CO-CREATION	AFTER THE VISIT (LEARNING BENEFITS)	To what extent the following benefits from visiting the museum were obtained? (Q.4.1)	Learnt new things from the visit Became more interested in certain topics Developed my knowledge,	From 1= Totally disagree to 5= Totally agree	Likert	Black (2005); Doering et al. (1999); Falk & Dierking (2013); Gadsby (2011); Hein (1998); Hood (1996); Hooper-Greenhill (1994); Kelly (2007); Litwak (1992); Mirghdr et al., (2018); Packer (2008); Paris (1997); Prentice et al. (1998); Pekarik et al. (1999); Roberts (1997)
CONSEQUENCES OF CO-CREATION	AFTER THE VISIT (SOCIAL BENEFITS)	To what extent the following benefits from visiting the museum were obtained? (Q.4.1)	Met other people Felt accompanied, Socialized with other people Felt more accepted by others Improved the way I was perceived by others Got more approval from other people Led to a better impression of me on other people	From 1= Totally disagree to 5= Totally agree	Likert	Antón et al (2018); Black (2005); Caru & Cova (2007); Chen & Rahman (2017); Doering et al. (1999); Falk & Dierking (2016); Gadsby (2011); Goulding (2000); Hood (1996); McLean (1999); Minghadr et al (2018); Minkiewicz et al (2014); Pekarik (1999); Poria et al (2010); Prebensen & Foss (2011), Rihova et al. (2013); Slatten et al. (2011)

Table 5.6. Questionnaire: questions, codification, scale and literature review (continuation)

Scope	Concept	Item/Questions	Variables	Codification	Scale	Literature review
CONSEQUENCES OF CO-CREATION	SATISFACTION	Please indicate to what extent you agree with the following statements (Q.4.2)	I am sure that visiting the museum was the right decision I am satisfied with the visit in general It was worth visiting the museum	From 1=Totally disagree to 5= Totally agree	Likert	Asakawa et al. (2018); Beeho & Prentice (1997); Blazquez-Resino et al.(2015); Chathoth et al.(2016); Grissemann & Stokburger-Sauer (2012); Packer (2008);Prebensen & Xie (2017); Kelly (2007); Kinghorn & Willis (2008); Williams & Soutar (2009)
	LOYALTY	How likely will you do the following in the future? (Q.4.3)	Recommend the museum to other people Encourage other people to visit the museum Returning to the museum	From 1=Totally disagree To 5= Totally agree	Likert	
Section C- Characterization of the respondent						
CHARACTERISATION OF THE RESPONDENT	SOCIODEMOGRAPHIC PROFILE		Country of residence		Nominal	
			Gender	1=Female 2=Male 3= Other	Nominal	
			Age		Scale	
			Qualifications	1= Has not completed secondary school 2= Secondary school 3= Graduate 4=Master's degree 5=PhD	Ordinal	
			Employment	1=Employed 2=Student 3=Housekeeper 4=Retired 5=Other	Nominal	

Table 5.6. Questionnaire: questions, codification, scale and literature review (continuation)

Scope	Concept	Item/ Questions	Variables	Codification	Scale	Literature review
CHARACTERISATION OF THE RESPONDENT	HEALTH CONDITION	Do you have any disability?	Disability	1=No 2=Yes	Nominal	
		What type of disability(ies)? (Q.5.6.1)	Type of disability	1=Hearing 2=Visual 3=Physical 4=Mental 5=Other	Nominal	Burnett and Baker, 2001; Poria et al., 2009; Shakespeare, 2018); ICF (2001); Sheakespeare, (2018); WHO (2011)
		What is your degree of disability (in percentage)? (Q.5.6.2)	Degree of disability	Open question	Scale	Argyropoulos & Kanari (2015); Cachia, 2013; Cho & Jolley (2016); Hayhoe, 2017; Hetherington, 2015; Knochel et al., 2018; Meliones & Sampson (2018); Naniopoulos et al. (2015); Poria et al. (2009); Vaz, (2020)
		Do you need any of the following supports? (Q.5.6.2.1)	Support	1= Personal assistant, family member, friend or caretaker 2= Mobility aid (e.g., walking stick) 3= Guide dog 4=Other	Nominal	

Source: Own elaboration

5.4.2. Sampling approach

According to John Creswell and J. Davis Creswell (2018), when selecting a data collection, researchers set the boundaries for the study by through the definition of a sampling approach. To accomplish the aims of the study it was necessary to carry out a questionnaire survey was carried out with PwSI and with people without a disability, who had visited museums in the last three years.

Due to the impossibility of identifying the whole population of the study – PwSI and people without disabilities who visited museums in the last three years – and to the difficulty of identifying and contacting members of the population in analysis, especially PwSI who visited museums in the last three years, and despite the disadvantage of not being able to ensure obtaining a representative sample of the population, non-random sampling approaches were used in this study, namely: convenience sampling and snowball sampling. Convenience sampling is a non-probability sample where the participants are selected based on the proximity to the researcher and the ease the researcher can access the participants (Jennings, 2010). In the snowball sampling, respondents are selected based on the information from the initial randomly selected respondents (Malhotra et al., 2017).

5.4.3. Administration of the questionnaires

Another important step in the questionnaire design is the way the questionnaire was going to be administered, if face-to-face or online. In the present thesis, due to the present pandemic situation and to the target population, both methods were used. Due to the pandemic situation, during the majority of the period of the study the museums were closed, preventing the face-to-face administration. The aim of extending the sample to people from other countries, especially in what concerned PwSI, also motivated the online administration of questionnaires. However, due to the specificities of the target population and to the difficulties of some people in filling the questionnaire, some questionnaires were conducted face-to-face either after museum visits (when the museums were open) or in places other than museums. Due to the specificity of the subject, some extra efforts had to be made. Many associations, both national and international were contacted in order to help in the questionnaire administration among

PwVI and PwHI. An interpreter of sign language was also contacted to help interpret the questionnaire for PwHI.

Questionnaires were administered face-to-face to PwSI living in Portugal, and online, to PwSI and others living in Portugal and other countries, from September 2020 to June 2021. Due to the COVID-19 pandemic most of the questionnaires were administered online. When the questionnaires were done face-to-face to PwSI, the majority were filled by the researcher, due to the difficulties of various respondents in completing a printed version of the questionnaire. Only questionnaires of people without disabilities, of people only having visual impairments and of people only having hearing impairments were considered in the empirical study, since the focus of the present research was to analyse co-creation in museums by PwSI, comparing, in some way, PwSI with people without disabilities, and distinguishing people with visual impairments from people with hearing impairments. A total of 675 complete questionnaires were obtained: 421 from people without disabilities and 254 from PwSI - 154 with visual impairments and 100 with hearing impairments.

5.4.4. Data analysis methods

In statistical data analysis the data analysis is the process used to interpret and analyse the previously statistical data collected. Data were entered, compiled, and analysed in SPSS (Statistical Package for the Social Sciences) version 27 and later exported in an Excel file to be analysed with SmartPLS software (Ringle et al., 2015) to test the hypotheses.

SPSS was used to undertake **univariate and multivariate statistical tests** to characterize the sample of the study, identify dimensions of the co-creation of experiences of PwSI in museums and to examine the impact of some antecedents on that co-creation. On the other hand, the **SmartPLS** software was used to test **structural equation models** which included causal relationships among co-creation of experiences in museums by both PwSI and people without disabilities and respective outcomes.

First, **statistical descriptive analyses** were carried out to characterize the respondents' sociodemographic profile and their behaviour concerning museum visits, with the construction of figures and tables with descriptive statistics. The SPSS also allowed for a univariate descriptive analysis centred on the main constructs under study – co-

creation, its antecedents, and outcomes –, through the use of location measures of central tendency (mean) and dispersion measures (standard deviation).

Multivariate analysis allows for the simultaneous analysis of more than two variables in order to find patterns and relationships between the various variables, as well as predicting effects and changes that some variables might have on others (Walliman, 2011). Three types of multivariate analysis were carried out: (i) factor analyses, (ii) multiple regression analyses and (iii) structural equation modelling.

Two exploratory **factor analyses** were carried out, specifically, **principal component analyses (PCA)** with varimax rotation. One of them was performed to identify, using the items corresponding to the corresponding to the potential antecedents of co-creation of museum experiences of PwSI, with the purpose of obtaining a reduced set of dimensions that represented those antecedents. The same process was carried out to identify the dimensions of the co-creation of the experiences before mentioned. The PCA is the most common used method of factor analysis because it is descriptive but provides relevant insights into the latent structure of data that can often be used for further analyses (e.g., in structural equation modelling). The aim is to reduce the number of original variables to a smaller set of components that describe the hidden structure within the data set, so that only the components with several variables with high simple structure loadings being the components that are named (Dwyer et al., 2012, p. 185). In this thesis the quality of the PCA solutions was assessed through the percentage of variance explained, communalities, the Kaiser-Meyer-Olkin (KMO) test, the Bartlett's test of Sphericity as well as Cronbach's alpha for the dimensions found.

Communalities indicate the amount of variance of each variable that is accounted by the other variables. The consequence of this analysis is to weight the importance of each variable by the strength of its correlation with all other variables. When the factors are extracted they are pulled closer to those variables with the highest communalities (Dwyer et al., 2012). The Cronbach-alpha test was used to measure “the internal consistency reliability, or the degree to which responses are consistent across the items to measure. If internal consistency is low, then the content of the items may be so heterogeneous that the total score is not the best possible unit of analysis” (Kline, 2015, p. 91). It varies between 0 and 1 and the greater it is the more correlated are the items that compose the scale, and, in this case, that form the dimensions that emerged from the PCAs. A Cronbach's alpha of 0.7 or more is recommended. A value of 0.6 or less generally indicates unsatisfactory internal consistency reliability (Hair et al., 2014, 2019).

Multiple linear regressions were undertaken to analyse the impact of antecedents related to the visitors and to the museums on the co-creation undertaken by PwSI in these cultural attractions. This kind of regressions is a statistical technique that can be used to analyse the influence of several independent variables on a single dependent variable. The aim is to use the independent variables whose values are known to predict the single dependent variable selected by the researcher. The weight of each independent variable estimated by the regression analysis, denotes the relative contribution of the independent variable to the overall prediction and facilitates the interpretation regarding the influence of each variable in making the prediction. According to Hair et al. (2019, p. 274) “correlation among the independent variables may make some variable redundant in the predictive effort”. The stepwise regression procedure was used to estimate the regression models. The **coefficient of determination (R^2)** was used to assess the predictive accuracy of the regression models. It represents the combined effects of the entire variate (one or more independent variables plus the intercept) in predicting the dependent variable. It varies from 0.0 (no prediction) to 1.0 (perfect prediction). As it is the squared correlation of actual and predicted values, it also represents the amount of variance in the dependent variable explained by the independent variable(s). All the assumptions of these analyses were analysed. The multicollinearity diagnosis was made through the tolerance Values and its inverse – the variance Inflation Factor (VIF). Multicollinearity refers to the correlation among three or more independent variables (Hair et al., 2019).

The **Partial Least Squares Structural Modelling (Smart PLS)**, a specific multivariate technique, was also used to analyse the outcomes that result from co-creation, more specifically, the impact that co-creation has on several outcomes. Hair et al. (2019, p. 764) define PLS-SEM as “a combination of interdependence and dependence techniques... that seek to explain the relationships among multiple variables simultaneously”. The Partial Least Squares Structural Modelling estimation was used to test the hypotheses regarding the outcomes of co-creation. When talking about Structural Equation Modelling (SEM) two models can be referred: (i) Covariance-based SEM (CBSEM – Covariance-based Structural Equation Modelling) (e.g., LISREL, AMOS) and (ii) Partial Least Square (PLS). According to Vinzi et al. (2010), the PLS objective, unlike that of covariance-based SEM (CBSEM), is latent variable prediction and the method is not covariance-based but variance-based. The latter, in turn, is subdivided into two types following the original work by Herman Wold (1982): PLS regression models (PLS-R) and PLS Path Modelling (PLS-PM). In the present study, the exploratory modelling through Structural Equation Modelling, with the PLS-PM method

was used, since the research model presents complex multivariate relationships between observed and latent variables and this technique is particularly appropriate to develop theories in exploratory research (Hair et al., 2017). According to Vinzi et al. (2010, p. 2), "(A)s an alternative to the classical covariance-based approach, PLS-PM is claimed to seek for optimal linear predictive relationships rather than for causal mechanisms thus privileging a prediction-relevance oriented discovery process to the statistical testing of causal hypotheses". PLS modelling is considered soft modelling as it has the ability to exhibit greater flexibility in handling different modelling problems in situations where it is difficult or impossible to meet the hard assumptions of more traditional multivariate statistics (Vinzi et al., 2010). Several considerations are important, as pointed by Hair et al. (2014), when deciding to apply PLS-SEM. PLS-SEM algorithms have important features associated with the characteristics of the data and model used. PLS-SEM works efficiently with complex models. Also, PLS-SEM can handle reflective and formative measurement models, as well as single-item constructs, with no identification problems and allows a higher efficiency in parameter estimation.

The first step when using a SEM is the preparation of a diagram that illustrates the research hypotheses and displays the variable relationships that will be examined. This path model diagram connects variables/constructs based on theory and logic to visually display the hypotheses that will be tested. Path models, as stated by Hair et al. (2017), are made up of two elements: (i) the structural model (inner model in PLS-SEM), where the relationships of the latent variables are presented, and (ii) the measurement models describe the relationships between the latent variables and their measures. In the structural model, the sequence of the constructs is displayed from left to right, with independent (predictor) constructs on left and dependent (outcome) variables on the right. Independent variables, usually referred as exogenous latent variables, are on the left side of the model, and only have arrows that point out of them, never having arrows pointing into them.

Two broad types of measurement specifications must be considered when developing constructs: (i) reflective and (ii) formative. The first represent the effects or manifestations of an underlying construct while the second are not interchangeable. In a reflective model the block of manifest variables related to a latent variable is assumed to measure a unique concept, so must be homogeneous and unidimensional. In a formative model the blocks are multidimensional but with fewer dimensions than the number of manifest variables (Hair et al., 2019; Vinzi et al., 2010). In the empirical study of this thesis, the constructs are reflective, as used in most cases in the social sciences. According to Hair

et al. (2019, p. 728) a reflective measurement theory “is based on the idea that latent constructs cause the measured variables and the error in measurement results in an inability of the construct to fully explain individual measured variables”.

To determine the statistical significance of the coefficients of the measurement model and the structural model, the resampling bootstrapping technique is used. Bootstrapping is used to test the statistical significance of estimated parameters, regardless of the characteristics of the underlying data distribution from which the parameter is being estimated. This technique assesses the stability of the estimates, based on which a t-statistic is produced allowing to test the individual significance of each coefficient. In bootstrapping, subsamples are randomly drawn from the original set of data and each sample is used to estimate the model. The process is repeated until a large number of random subsamples have been created (5,000 are recommended) and a bootstrap confidence interval is derived (Hair et al., 2017).

The **evaluation** of the structural equation model, in PLS-PM, is carried out in two phases: the evaluation of the measurement model and the assessment of the structural model. In the first phase, the evaluation of the measurement model quality must be determined, while in the second phase the structural theory that tests the proposed hypotheses is evaluated. In the present thesis the validation of the **measurement model** (the relation between latent variables and their associated items) was done determining the internal consistency, indicator reliability, convergent validity and discriminant validity of the constructs, mainly following the suggestion of Hair et al. (2019). Internal consistency reliability is assured when the composite reliability (CR) values are above 0.70. As for indicator reliability, outer loadings should exceed the cut-off of 0.70, even though loadings from 0.4 to 0.7 can be retained in exploratory research when its deletion do not significantly improve the CR (Hair et al., 2014). Convergent validity is established if the average variance extracted (AVE) values go beyond the reference of 0.50. The heterotrait-monotrait (HTMT) ratio of correlations, the more demanding criterion proposed by Henseler et al. (2015) is used to attest discriminant validity, considering the threshold values of 0.90 or the more stringent 0.85, revealing that the constructs are distinct and more strongly related to their own construct than to any other construct. Once checked the validity of the measurement model, the next step is to examine the structural model for collinearity, ensuring the variance inflation factors (VIF) are below 5.0.

Instead of applying measures of goodness of fit, the structural model in PLS-SEM is assessed on the basis of criteria that are determined by the model’s predicative capabilities (Hair et al., 2014). In the analysis of the **structural model** of the present

thesis, in order to test hypotheses concerning the impact of co-creation on the various outcomes considered, the significance and relevance of the structural model relationships (by looking at the path coefficients and their significance after bootstrapping procedure) and the level of R^2 (the amount of explained variance of endogenous latent variables in the structural model) were considered (Hair et al., 2019).

5.5. Conclusion

This chapter begins with the theories that support the different epistemological perspectives adopted in the present study. This thesis is informed by a post-positivism paradigm, adopting both qualitative and quantitative data collection and analysis methods.

The qualitative study involved focus-groups conducted with Portuguese people with a visual impairment - blinds or with low vision. The aims of the focus groups were to more deeply understand the way PwVI co-created experiences in museums and the antecedents of that co-creation, i.e., the factors that constrained or facilitated it. Therefore, the questions asked in the focus groups covered these topics and were developed based on the literature review. Respondents were asked about some of their demographic characteristics, number of visits made to museums in the last three years and were requested to describe the last visit made to a museum and highlight features related to interactions established in museum that could help to understand how cocreation took place. Moreover, they were also asked to indicate features that facilitated and constrained co-creation. The focus groups were carried out online, mainly due to constraints resulting from the COVID-19 pandemic. A total of 17 participants of varying ages with visual impairments agreed to share their experiences and were recruited for the study. Data were analysed through content analysis with the categorisation process being supported by categories created based on the literature review. Data were analysed using thematic analysis, which allowed key and sub-themes to be identified.

The quantitative study intends to complement the exploratory research conducted in the qualitative analysis, by adopting a quantitative research methodology in order to study the co-creation of experiences of PwSI in museums, as well as its antecedents and outcomes, analysing causal relationships. To accomplish this aim, a questionnaire survey was developed, mainly based on the literature review and on the focus group with PwVI. Convenience and snowball sampling approaches were adopted. Questionnaires were administered face-to-face to PwSI living in Portugal and online to PwSI and other

people living in Portugal and other countries, from September 2020 to June 2021. A total of 675 complete questionnaires were obtained. Various statistical analyses, including multiple linear regressions and Structural Equation Modelling (SEM), was used to analyse the impact of antecedents on co-creation and the influence of co-creation in the obtention some outcomes, namely: different kinds of value – emotional, learning and social -; satisfaction and loyalty.

6. Analysis of results of the qualitative exploratory study concerning co-creation of experiences in museums by PwVI

“The important thing is to never stop questioning”
Albert Einstein

6.1. Introduction

In this chapter, the results of the first study undertaken in the scope of this thesis, essentially exploratory and qualitative, conducted based on focus groups with PwVI, are presented. First the profile of the sample is presented. Then, the experiences of co-creation in museums by PwVI are examined. This is complemented by an analysis of the antecedents of this co-creation process among PwVI.

6.2. Profile of the sample

The empirical work sought to give active voice to 17 participants with visual impairments. Table 6.1 summarises important aspects of the participants' profile like age, type and degree of disability, congenital or acquired disability condition, as well as employment status. The fact of having visited a museum in the last three years or not is also considered. Among the participants, 10 had visited a museum in the last three years, while seven had not. Study participants included both men (n= 8) and women (n= 9), ranging from 15 to 65 years old. Eight participants were students, seven were employed, and two unemployed. All the participants were Portuguese, 7 from the north of Portugal, 6 from the centre, 3 from the south and 1 from Madeira, a Portuguese island located in the Atlantic Ocean.

Table 6.1. Participants' profile

Participants	Age	Visited a museum in the last 3 years	Type of disability	Degree of disability	Moment of acquisition of blindness	Employment status
M1	22	Yes	Blind	95%	Age of 2	Student
M2	22	No	Blind	95%	Born blind	Student
M3	52	Yes	Blind	95%	Age of 47	Employed
M4	28	Yes	Blind	95%	Born blind	Employed
M5	65	Yes	Blind	97%	Born blind	Student
M6	49	No	Blind	95%	Born blind	Employed
M7	40	No	Blind	96%	Born blind	Unemployed
M8	51	Yes	Blind	95%	Age of 45	Employed
F1	15	Yes	Low Vision	60%	Progressively (glaucoma)	Student
F2	43	No	Blind	95%	Age of 37	Employed
F3	43	Yes	Blind	95%	Age of 33	Unemployed
F4	39	Yes	Blind	95%	Age of 9	Employed
F5	26	No	Blind	96%	Born blind	Student
F6	39	No	Blind	97%	Age of 37	Employed
F7	23	No	Blind	80%	Age of 16	Student
F8	15	Yes	Blind	95%	Born blind	Student
F9	25	Yes	Low Vision	65%	Progressively (glaucoma)	Student

Notes: M= male, F= female

Source: Own elaboration

6.3. Co-creation of experiences at the museum by PwVI

The participants in the focus group referred to several aspects which clearly reveal experience co-creation, often specifically provided by the museums and their staff for PwD. Table 6.2 exhibits the various co-creation aspects mentioned and illustrative quotes. The customization of experiences by handling objects or replicas and participating in guided tours were the aspects most frequently mentioned by participants. Less stated were co-production activities, sensory activities other than tactile, adapted information, technology support and demonstrations.

Table 6.2. Co-creation of PwVI in museums, frequency and sample quotes

Co-creation features mentioned (references = 115, participants = 17)	Sample quotes
Opportunity to handle objects or replicas (references = 43, participants = 17)	<ul style="list-style-type: none"> As we were guided by someone who is used to PwVI, despite being a permanent exhibition, they let us touch some objects (F4) The guide sat us around a table where some objects were presented, we could participate actively touching tiles and the ceramics (F3)
Participation in guided tours (references = 38, participants = 17)	<ul style="list-style-type: none"> At the entrance there was a lady waiting for us, supposedly, to guide us because we had made an advance reservation (M1) The guided tour made all the difference. The professional was very well prepared concerning the specific needs of blind participants (F9)
Participation in a workshop to make a souvenir to take home (references = 8, participants = 3)	<ul style="list-style-type: none"> We were invited to make a souvenir to take home... with recycled papers, we made a frame to place a photo in. I was very proud (M2)
Use of electronic devices during the visit (references = 6, participants = 2)	<ul style="list-style-type: none"> At the entrance, the guide lent me a device with an app that provided me with some guidance when a QR code was detected (F3)
Ability to participate in sensory activities other than tactile (e.g., tasting, smelling) (references = 5, participants = 1)	<ul style="list-style-type: none"> We were invited to smell different flowers (F2) We were given boxes to smell [...] inside there were different flavours, cinnamon, cloves and saffron... (F3)
Watching task demonstrations (references = 5, participants = 2)	<ul style="list-style-type: none"> During the visit, we had the chance to watch some demonstrations (M3)
Use of an audio-guide, with audio description (references = 4, participants = 1)	<ul style="list-style-type: none"> The success of my visit was due to the audio guide. The audio description helped to understand the exhibition better (F9)
Possibility of reading information in different formats like Braille (references = 3, participants = 1)	<ul style="list-style-type: none"> One of the employees immediately handed me a Braille leaflet that I read during the visit (F9)
Use of interactive panels or games (references = 3, participants = 1)	<ul style="list-style-type: none"> A part of the exhibition was all about technologies, with videos and interactive games about the original use of the building (F3)

Source: Own elaboration

6.4. Antecedents of co-creation of experiences at the museum by PwVI

As presented above (Table 6.1), participants varied in the severity of their visual impairment, ranging from two participants with low vision, with a degree of 60% and 65% of incapacity, to 15 blind participants (from 80% to 97% incapacity). Blind participants included both people with congenital disabilities (n= 7) and acquired disabilities – acquired under ten years (n= 2) or later in life (n= 6). It seems that the participants'

disability, whether congenital or acquired, affects their perceptions, even if with a different degree of severity. For instance, M6 reported that the fact of being born blind makes a big difference. He perceives no benefits in visiting museums, in line with Shakespeare (2018), who argues that a person who is born blind does not have the same perception of spaces and objects as someone who becomes blind later (Table 6.3).

Those who visit museums regularly are more comfortable dealing with constraints. As stated previously, prior experience may help visitors in the co-creation process in museums. With time, people get familiar with the attraction (Mitchell & Dacin, 1996; Moore & Lehmann, 1980; Park & Lessig, 1981; Taheri et al., 2014) and acquire new skills and motivations. This idea was also mentioned by a born blind participant (F8) who is accustomed to travelling since she is a professional athlete. Concerning the group of people with whom the participants visited the museum, the situations vary widely (Table 6.3). As expressed by several participants, for PwVI, the support of family and others plays a vital role during a visit, helping them overcome constraints and feel more confident (Mesquita & Carneiro, 2016; Poria et al., 2009; vom Lehn, 2010).

Table 6.3 - Visitor antecedents of co-creation in museums, frequency and sample quotes

Visitor Antecedents (references = 99, participants = 17)	Sample quotes
Moment of acquisition of the disability (references = 25, participants = 17)	<ul style="list-style-type: none"> I just don't like to visit museums. It doesn't mean anything to me. As I was born blind, I don't have the same perception as someone that became blind later in life (M6) The organisation asked me to touch some brushes to feel how they were made... animal hair, feathers. It was funny because, as I am late blind, I know exactly what brushes look like, but I never had that sensation before (M3)
Frequency of visits to museums (references = 32, participants = 17)	<ul style="list-style-type: none"> I really like, after the championship, [...] to visit the destination and museums. It is an important part of my travel to relax after the challenge. I feel fulfilled and happy (F8, born blind athlete) I've been visiting museums for a few years [...] Each museum I visit is a new experience. Visiting museums has become normal for me. The more I visit, the more confident I get (F6)
Visitor's group (references = 42, participants = 17) Friends (references = 16, participants = 4) Family (references = 13, participants = 5) School (references = 6, participants = 4) Alone (references = 5, participants = 1) Associations (references = 4, participants = 3)	<ul style="list-style-type: none"> For me, it is difficult to visit a museum alone. I cannot do it by myself. I must be accompanied by someone who knows me well, and who can help me deal with the barriers I find all the time. I don't have a lot of autonomy, especially in unknown spaces. Usually, I visit museums with my family; my mum knows me quite well, and she knows how to explain the space and the objects to me (M2) I never thought I could come to appreciate painting [...] I thought it was impossible for someone like me. With this friend of mine, who works in accessibilities, I learned to like painting (F6)

Source: Own elaboration.

Various factors that influenced co-creation related to museums emerged from the participants' discourses. The factors most often mentioned are associated with the communicational environment (mentioned by all the participants, 81 times in total) and the attitudinal factors (referred to by 16 participants, 58 times in total), which highlights the relevance of those aspects, with the physical environment also being important (mentioned by 14 participants, 54 times) (Tables 6.4 to 6.6).

Concerning the physical factors present in the museums, four sub-themes emerged as more important across the participants' narrative (Table 6.4): (i) the logical organisation of the venue (e.g., reception at the entrance); (ii) the existence of physical guidance to help identify pathways (e.g., handrails, labelling); (iii) the existence of a floor without steps or accentuated unevenness; and (iv) other physical barriers like the existence of narrow corridors. The solutions provided in the architectural context for people with physical disabilities are not so relevant for PwVI. However, they need some alternative

means to have meaningful experiences through other senses (Figueiredo et al., 2012; McKercher & Darcy, 2018).

The importance of the logical organisation of the venue (e.g., reception at the entrance), reinforced by M1, M2, M6, M7, F2, F3, F5, F7 and F8 (nine participants), is illustrated in table 6.4. Difficulties of orientation were referred to (seven participants), namely concerning the way the space is organised and the importance of having physical guidance to help identify pathways (e.g., handrails, labelling). It is important to notice that there are specific areas in which PwVI need assistance, one of which is orientation/mobility (Lancioni et al., 2019).

The importance of having a floor without steps, accentuated unevenness and physical barriers was mentioned by 10 participants. As mentioned by some participants, stairs, if they have a handrail to help identify pathways, can be a strategy to improve accessibility. This supports some literature (Mesquita & Carneiro, 2016; V. Richards et al., 2010b). Sometimes, when museums are located inside historical buildings, it is even more difficult to have good physical accessibilities, as interventions to improve accessibility must be made with care to not change the character of the spaces (Goodall et al., 2004; Naniopoulos et al., 2015). Two participants stressed this aspect (Table 6.4), with one participant expressing comprehension of this fact considering the type of physical monument he was visiting. Some other physical barriers were also mentioned by eight participants, such as narrow corridors or ropes.

Table 6.4. Museums' physical factors, frequency and sample quotes

Physical factors mentioned (references = 54, participants = 14)	Sample quotes
Logical organisation of the venue (references = 15, participants = 9)	<ul style="list-style-type: none"> • What I felt most difficult was orientation and the organisation of the visit. I found the museum confusing. I felt disoriented, but this is normal. However, I tried to follow all the indications attentively (F3) • My greatest difficulty was concerned with orientation and the organisation of the visit (F2)
Physical guidance to help identify pathways (e.g., handrails, labelling) (references = 12, participants = 7)	<ul style="list-style-type: none"> • There are some strategies that allow us to be more autonomous. For example, there was nothing to mark the way; there was no tactile path. I never found a tactile path in any of the museums I visited, but I know there are some museums that have this solution. It would be a good investment. It is important for me to try to be as autonomous as I can, but it is not easy (M1) • There are many physical barriers, but with goodwill, everything is easier, and I think that, even with all the constraints, it ends up being well prepared. For us, stairs are not a big obstacle as long as they have a handrail to help (F4)
Floor with steps, accentuated unevenness or physical barriers (references = 12, participants = 10)	<ul style="list-style-type: none"> • I found many physical barriers during my last visit. For example, in the first access to the museum, as it was located inside a historic listed building, there were many steps, and there was no other option to get inside the building. Inside, an elevator had been installed, the building had four floors, but the access was made by stairs, and the garden behind was very rough, with rudimentary steps and pathway (F6) • I knew I was going to visit an ancient monument, so I was not expecting to find good accessibility. I understand [...] These historical sites date from a period when access for PwD was not a consideration (M8) • The issues of physical accessibility [...] were being studied. It is not easy in historic buildings to make certain changes, like placing ramps (M8)
Other physical barriers (references = 15, participants = 8)	<ul style="list-style-type: none"> • I found a lot of constraints during my last visit to a museum. Maybe it is the reason why I don't visit many museums. I use a cane every day to help me in my mobility. (F2) • At a certain time, the corridors were narrower due to the separation between the pieces in the exhibition and the public. That made me confused (F9)

Source: Own elaboration.

Regarding communicational factors, according to the opinions of the focus group participants, there is a lack of interpretation tools that would help minimise the constraints experienced by PwVI. During the visit to museums, a lot of communicational barriers were experienced by them. However, all the participants who visited museums in the last three years mentioned the existence of some tools that helped to minimise their constraints. The most frequently mentioned features were guided tours (referred to by 16 participants), the provision of information in Braille, the existence of relief figures and replicas, and the provision of electronic devices for obtaining further information, all of them mentioned by seven participants (Table 6.5).

Table 6.5. Museums' communicational factors, frequency and sample quotes

Communicational factors mentioned (references = 93, participants = 17)	Sample quotes
Guided tours (references = 25, participants = 16)	<ul style="list-style-type: none"> • Before visiting a museum, especially if I go alone, I always make a call previously to know if I can have a guided tour. On my last visit I was guided by someone blind, the person responsible for the museums' accessibility department. This made all the difference in my experience. She knew my needs... (F4)
Accessible websites (references = 12, participants = 5)	<ul style="list-style-type: none"> • It is not easy to find accessible websites. Web designers are more concerned with the aesthetic side than with the accessible side of the website. For example, they put up many pictures, which does not help people with low vision or blindness (F8)
Information in Braille (references = 10, participants = 7)	<ul style="list-style-type: none"> • There were no explanations for people like us, museums should provide information in different formats, but no... neither Braille, nor enlarged characters, nor sound (M4) • At the entrance, I was asked if I could read Braille; as I replied yes, he immediately handed me a Braille leaflet that helped me understand the visit better. I read the leaflet attentively to understand better what I was going to see (F9)
Electronic devices (references = 10, participants = 7)	<ul style="list-style-type: none"> • The museum is divided essentially into two main sections. One of the sections has all new equipment and devices. It is very interesting! We have sound which helps us to have a better experience (F3)
Existence of relief figures, models, or replicas (references = 9, participants = 7)	<ul style="list-style-type: none"> • The museum made a relief adaptation of a Bosch triptych, and I participated as a tester for the relief painting (F4). • As it was a visit with someone who is used to guide PwVI, they let us touch some of the objects presented in the exhibition. Concerning some other objects, we were not allowed to due to preservation issues. We understand that! (F4) • We were allowed to touch some traditional tiles in relief, they were original, from the XIX century. Due to the resistance of the material, we were able to touch them (F3)
Interactive equipment (references = 8, participants = 4)	<ul style="list-style-type: none"> • Part of the exhibition was all about technologies... videos, interactive games with questions about the old customs. But it was not complicated since we are used to it. Then there was a table with a huge digital book ... and the book had questions and sounds (F3)
Workshops (references = 6, participants = 3)	<ul style="list-style-type: none"> • I dipped the mould in the water where the dough was, and I made a sheet of paper. I never thought I would ever be able to do that (...) I was very proud of myself (M2) • We had a small demonstration of how matches are made. It was interesting. I like to do practical things; I don't like just hearing information (M3)
Representations (references = 5, participants = 1)	<ul style="list-style-type: none"> • We put on some clothes as if we lived at the time of the Discoveries and pretended that we were from King João I's family. I was his wife, D. Filipa, one of the main characters (F3)
Audio guides (references = 4, participants = 3)	<ul style="list-style-type: none"> • In this visit, the audio description was really good. I felt very confident, and I was able to discuss with other people. Another important aspect is that, with the help of the audio guide, I was able to choose my own way inside the museum (F9)
Multisensorial experiences (references = 4, participants = 1)	<ul style="list-style-type: none"> • During this activity, we were allowed to smell and taste different spices related to the discoveries... cinnamon, cloves, saffron, among others. I was amazed! We touched, we smelt, we had a great experience (F3)

Source: Own elaboration.

All the participants who had visited museums in the last three years stated that they were allowed to touch objects in the museums they visited. This confirms the relevance of tactile sensations for PwVI, but, at the same time, the discourses revealed the visitors' understanding that some objects cannot be touched or handled due to preservation issues, as argued in the literature (Mesquita & Carneiro, 2016). Participant M3 described a unique touching experience, when visiting an exhibition related to the medieval period. This may corroborate the fact that visitors who experience tactile sensations tend to feel much more immersed in the visit (Antón et al., 2018). Also, all the focus group participants were guided during their visit by staff or others. This highlights the importance of guided tours for this market segment. The importance of providing information in different formats like Braille, audio, relief figures or models was emphasised by various participants (Table 6.5). Among the participants, only one (F9) stated that she was provided with information in Braille and had access to an audio guide. The importance of technology was referred to by some participants, but again only one mentioned important interactive equipment.

A few participants referred to the importance of workshops to stimulate engagement and the learning process. The relevance of workshops for groups with visual disabilities has already been pointed out (Asakawa et al., 2018). This means of interpretation allowed visitors to participate actively and interact with the objects, giving them a feeling of well-being, as can be seen in the experience shared by one of the participants (M2).

The importance of representations and participatory activities in providing memorable experiences has been also stressed in the literature (Kingham & Willis, 2008; Mygind et al., 2015; Nielsen, 2015). Of all the participants, only one (F3) reported having experienced multisensorial stimuli. Five participants also mentioned that museum websites were not adequately designed for PwVI.

Finally, discourse analysis confirms the relevance of attitudinal factors for PwVI (Antón et al., 2018; H. Chen & Rahman, 2018; Poria et al., 2009; V. Richards et al., 2010) (Table 6.6). Some attitudes which facilitated co-creation were referred to, alongside many others which constrained this process. A positive attitude (e.g., being kind) was sometimes referred to as a facilitator of co-creation, and when this same attitude was not present (i.e., when people were not kind) a constraint was recognised.

The lack of training and awareness of how to deal with PwVI was a constant discussion. This confirms the literature review: more than focusing on the physical condition, it is

important to consider teaching practical skills and promoting knowledge about PwD in general, and specifically about PwVI. Most staff are not prepared to deal with PwVI, as mentioned by 11 participants. The complexity of sight loss and the way it affects people's daily lives leads to the need for specific strategies to deal with this public (V. Richards et al., 2010), but, according to most participants, people in general and museum staff are not aware of them.

Table 6.6. Museums' attitudinal factors, frequency, and sample quotes

Attitudinal factors mentioned (references = 58, participants = 16)	Sample quotes
Ability to deal with PwD and inclusive/non-inclusive approach (references = 16, participants = 11)	<ul style="list-style-type: none"> • I was guided by an intern whose mother was blind. It was amazing. She had knowledge and sensitivity like I'd never encountered (M5) • When I arrived at the reception and asked if there was any material to help me with the visit, the lady started talking to me as if I was 10 years old (M1) • Sometimes, a big investment is not necessary. The ability of those who are in museums to understand and answer to our individual needs is enough (M4)
Encouraging (or not) participation in activities (references = 13, participants = 7)	<ul style="list-style-type: none"> • During the visit, no one helped or encouraged me to participate in any of the activities; only my teachers (F1) • The employees, when they are prepared [...] they know how to encourage us to participate in activities (M8)
Being (or not) kind (references = 11, participants = 10)	<ul style="list-style-type: none"> • The guide was very patient and always asked me if everything was ok and if I understood the explanations (F9)
Providing (or not) clarifications regarding the exhibition (references = 9, participants = 4)	<ul style="list-style-type: none"> • Throughout the visit, the guide tried to answer all my questions. I always ask a lot of questions because I like to leave without any doubts. When I go with people who are not blind, they must often find the questions meaningless (F9)
Seeking (or not) to understand individual needs (references = 6, participants = 4)	<ul style="list-style-type: none"> • During one of my visits the guide's speech wasn't very accessible. He didn't know we were blind. When we told him, he reframed his speech and he succeeded. Another time in another museum the guide had a PhD in accessibility (M4)
Encouraging (or not) exploration of the objects of the exhibition (references = 3, participants = 3)	<ul style="list-style-type: none"> • Most of the time, there is no one to accompany us during the visit and to encourage us to touch the objects when possible. Thankfully, I was with my mum, who showed me the objects I could touch and described the rest of the exhibition. [...] I could force myself to go, but the fear is huge. I will never manage to do it (M1)

Source: Own elaboration.

A small set of individuals talked about the importance of having people in museums who encourage PwVI to explore objects. Statements not only corroborate the relevance of encouraging the PwVI to participate in activities and explore the objects of the exhibition, but also stress the importance of providing additional and appropriate information and support to PwVI, corroborating previous literature (Antón et al., 2018; V. Richards et al., 2010). The absence of trained staff or guides thus has severe potentially negative impacts for PwVI's access to museums. When the staff had an inclusive approach, goodwill and kindness, everything became easier, and participants recognized the effort made by the museum's staff.

Figure 6.1 summarises the factors that influence co-creation of PwVI's experiences in museums which emerged from the focus groups and that museum managers and curators can consider designing and implementing attractive and meaningful experiences for PwVI

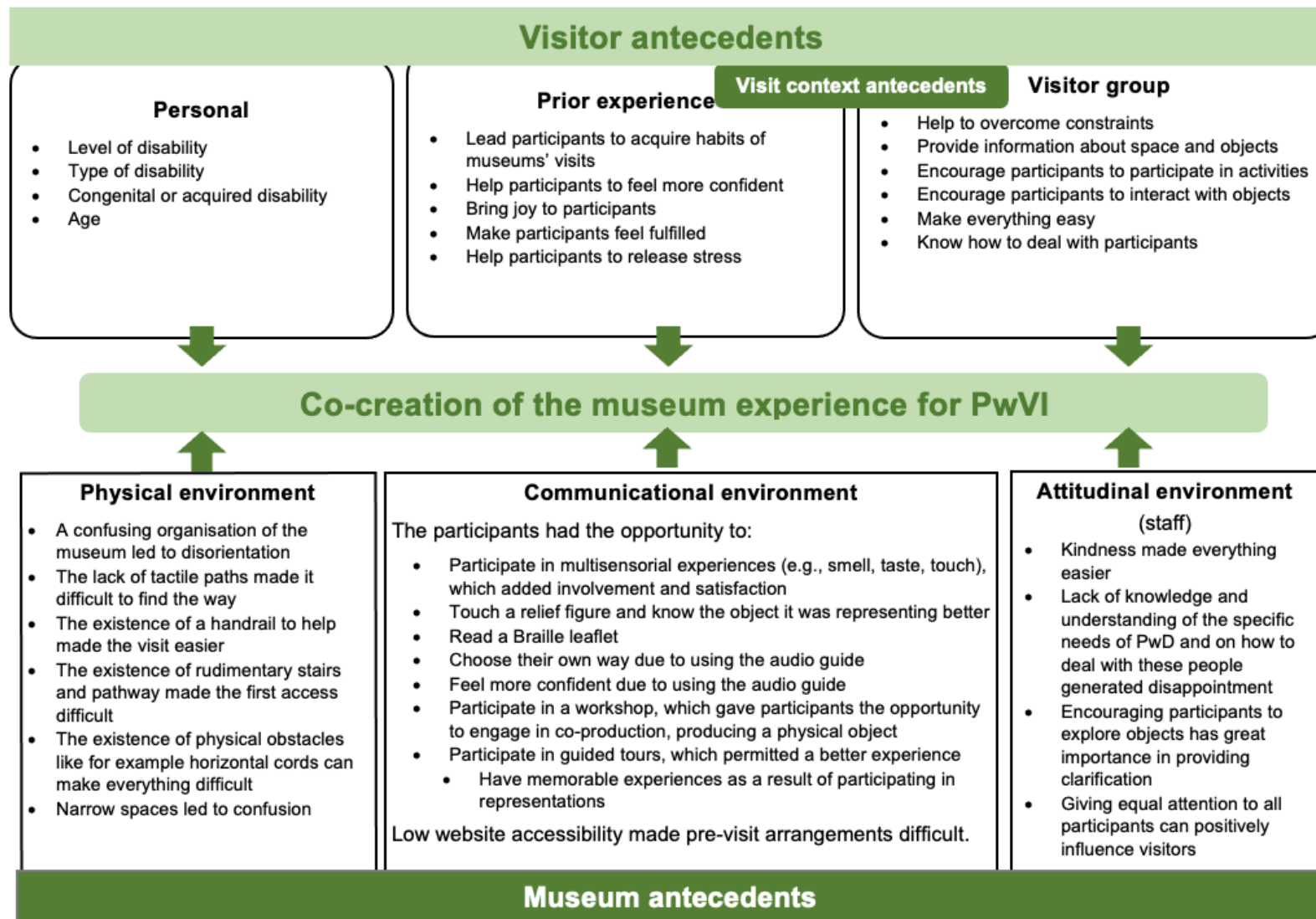


Figure 6.1. Factors influencing co-creation of the museum experience for PwVI

6.5. Conclusion

This chapter highlighted the findings of the qualitative stage of the research regarding an in-depth understanding of how PwVI co-create experiences in museums.

The present study enabled to identify a wide plethora of factors that stimulate and prevent co-creation in museums by PwVI. These factors, also designated as antecedents, can work as facilitators or constraints of co-creation. These factors encompass individual characteristics of the museum visitors, such as their level of disability, features related to the museum visit, such as the persons who accompany them, as well as factors related to the physical, communicational, and attitudinal environments of museums.

Moreover, the research carried out also enabled an understanding of the way individual antecedents can help or hinder co-creation. The study suggests that prior experiences and the visit group can have an important role in co-creation. Findings highlight, for example, the importance of family, museum staff and schools in the decision to visit these cultural spaces and in the success of the visit. Furthermore, it was concluded that those who are used to visiting museums since an early age do it regularly and have positive experiences, minimising the constraints they can experience. On the other hand, it is important to understand that there are differences in the visiting habits of those born blind and those who are late blind. Those who were born blind do not feel as confident in visiting museums and in co-creating experiences.

The present research also provides important conclusions on the impact of museum features, namely physical, communicational, and attitudinal factors, on the co-creation of the museum experience in the case of PwVI. The research suggests that the communicational and attitudinal factors are considered the most negative features when not correctly addressed by museums. In this context, this study emphasises the lack of training among museum staff regarding PwVI, as mentioned in the literature, and highlights its high negative potential impacts. Also, kindness and sensitivity of staff were pointed out as crucial aspects in promoting a more in-depth exploration of museums by PwVI, encouraging a higher engagement with activities and objects. Regarding communicational factors, the research clearly remarks the relevance of an approach based on multiple formats of the information provided. Although the physical environmental factors seem less

influential than the communicational and attitudinal factors in experiencing co-creation, the findings highlight certain aspects of this environment that must not be disregarded.

7. Analysis of results of the quantitative study concerning co-creation of experiences in museums by the general public including PwSI

“Science, is made up of mistakes which it is useful to make, because they lead little by little to the truth”
Jules Vernes

7.1. Introduction

In this chapter the analysis of the results of the quantitative study is presented and the results are discussed. The data of the 675 questionnaires collected were analysed through statistical analysis using the SPSS and the PLS-PM modelling, as already mentioned.

The chapter is divided in nine sections. In this first section the objectives and the structure of the chapter are described. Then, in the second section, the profile of the sample is presented, referring, among other aspects, the differences between PwSI and the general public. In the third section the results of visits made to museums and an analysis of the last museum visited, are made, also comparing the general public and PwSI. In the fourth section, the data related to co-creation of experiences in museums are discussed. This discussion is followed, in the fifth section by an analysis of data related to the antecedents of co-creation in museums by PwSI. The sixth and seventh sections present the outcomes of co-creation of experiences in museums, first for PwSI, and then comparing PwSI with people without sensory impairments. The eighth section presents a brief analysis of the open questions placed in the questionnaire. In the ninth section conclusions are presented.

7.2. Profile of the sample

The characterization of the respondents regarding disabilities and the sociodemographic profile are going to be presented in this section.

Regarding **disabilities**, the sample encompasses a total of 675 individuals, 254 people with sensory impairments and 421 people without impairments (from now on designed as people

without sensory impairments). From the 254 PwSI, 154 had visual impairments and 100 had hearing impairments (Figure 7.1).

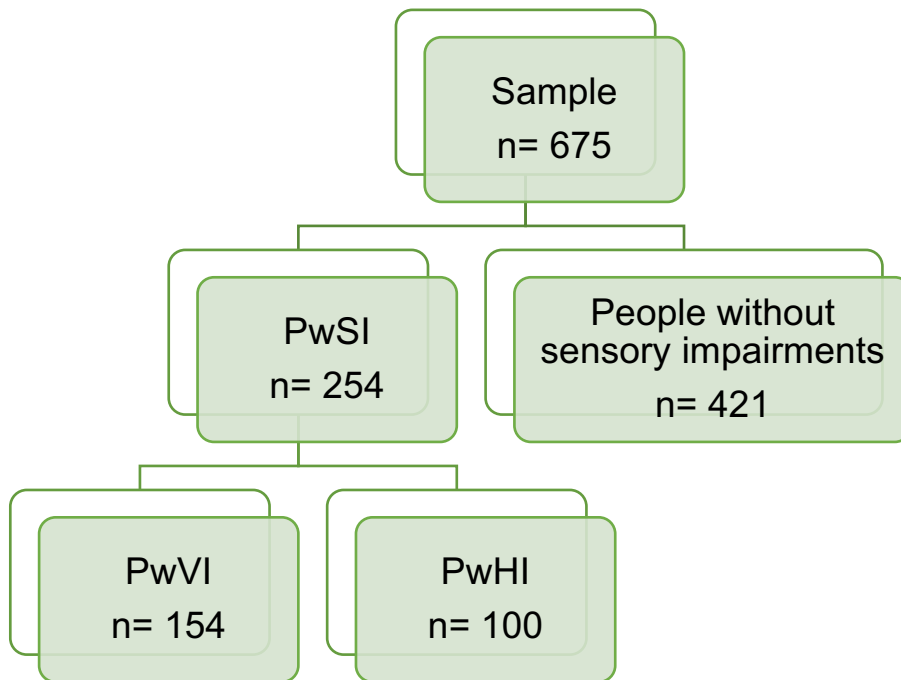


Figure 7.1. Sample

Source: Own elaboration.

Among those who referred having a disability, 199 indicated their level of disability according to the ICF- International Classification of Functioning, Disability and Health, which was 80.9%, in average (with a standard error of 14.0, indicating some variability concerning this level of disability). These people probably were those with higher impairments. Some of the respondents reported being dependent on a personal assistant, familiar member, friend, or caretaker to visit a museum (n= 21), on a mobility aid such as a walking stick (n= 60), a guide dog (n= 14) or other type of assistive technologies (n= 96) such as digital apps, magnifying glasses, hearing aids, among other (Figure 7.2).

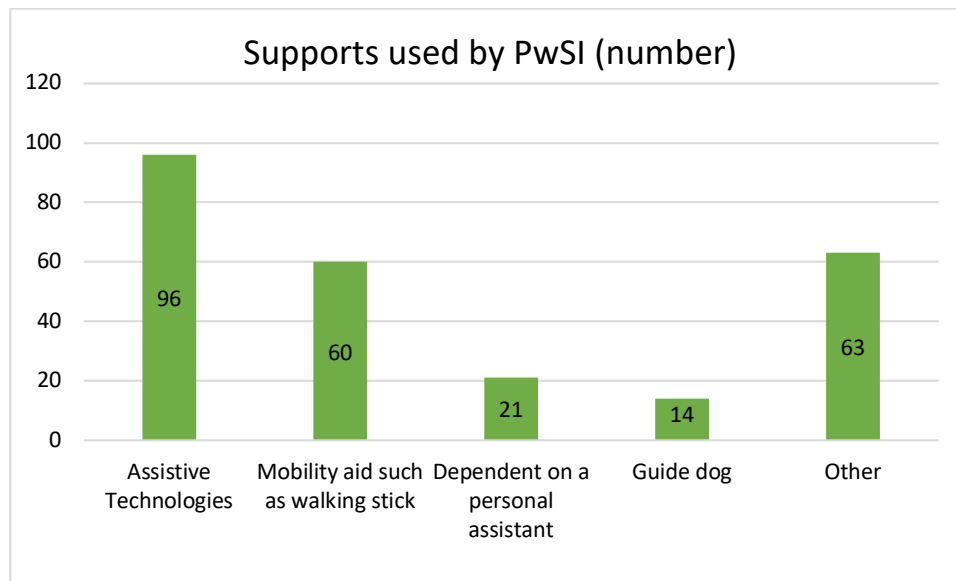


Figure 7.2. Supports used by PwSI

Source: Own elaboration.

Considering the **sociodemographic profile** of the whole sample, in terms of gender, there is a higher representation of female respondents (70.4%), compared to males (29.3%), with 0.3% corresponding to other's option (Table 7.2). Concerning the age of the participants, the average age is 48 years both for people with sensory impairments and without sensory impairments (Table 7.1). The standard error of age for the whole sample is 13.7, which confirms a considerable variety concerning ages.

Table 7.1. Age of the participants

	Total			PwSI			People without sensory		
	N	Mean	Standard error	N	Mean	Standard error	N	Mean	Standard error
Age	674	47.9	13.7	254	48.5	14	420	47.5	13.5

Source: Own elaboration.

Regarding academic qualifications, it is observed that there is a predominance of people with higher education - 47.4% of respondents are graduates, 19.1% have a master's degree and 6.8% have a PhD. However, there is also a considerable group who has only secondary education qualifications (22.1%).

As far as the employment status is concerned, most respondents (69%) are employed. However, 6.5% are students, 12.9% are retired and 8.3% are unemployed. Only 1.3% respondents are housekeepers.

Regarding the country of residence of the respondents, there is a predominance of residents in Portugal (81.8%), although people from various countries of the world are identified. United Kingdom (4.3%), Brazil (4.0%), France (2.8%) and United States (2.5%) are the countries other than Portugal where more visitors live (Table 7.2).

Concerning **people with sensory impairments** (n=254), there is also a higher representation of female respondents, who correspond to 61.8% of the sample, compared to males (38.2%). Regarding academic qualifications, it is observed that 57.2% of the respondents have higher education qualifications - 46.9% are graduate, 7.9% have a master's degree and 2.4% have a PhD. However, there is also a considerable group who has only secondary education qualifications (32.3%) and 10.6% have not completed secondary school.

Concerning the employment status, most respondents (62.7%) are employed. However, 7.9% are students, 13.1% are retired and 13.1% are unemployed. Only 2.0% of the respondents are housekeeper.

Regarding the country of residence of the respondents, there is a predominance of residents in Portugal (71.7%), although people from various countries of the world are identified. United Kingdom (9.2%), Brazil (4.0%), France (6.0%), United States (4.0%) are the countries other than Portugal from where more visitors live.

Concerning **people without sensory impairments** (n= 421), there is a higher representation of female respondents, who correspond to 75.5% of the sample, compared to males (24%), with 0.5% corresponding to others. Regarding academic qualifications, it is observed that most respondents have higher education qualifications 47.7% are graduate, 25.9% have a master's degree and 9.5% have a PhD. However, there is also a considerable group who has only secondary education qualifications (15.9%) and 1% have not completed secondary school.

Concerning employment status, most respondents (72.9%) are employed. However, 5.7% are students, 12.9% are retired and 5.5% are unemployed. Only 1% of the respondents are housekeeper. Regarding the country of residence of the respondents, there is a predominance of residents in Portugal (87.9%), although people from various countries of the world are identified. United Kingdom (1.4%), Brazil (4.0%), France (1.0%) and United States (1.7%) are the countries other than Portugal where more visitors live.

Table 7.2. Sociodemographic profile

	Total		PwSI		People without sensory impairments	
	N	%	N	%	N	%
Gender						
Female	475	70.4	157	61.8	318	75.5
Male	198	29.3	97	38.2	101	24.0
Other	2	0.3	0	0.0	2	0.5
Total	675		254		421	
Education						
Not completed secondary school	31	4.6	27	10.6	4	1.0
Secondary school	149	22.1	82	32.3	67	15.9
Graduate	320	47.4	119	46.9	201	47.7
Master's Degree	129	19.1	20	7.9	109	25.9
PhD	46	6.8	6	2.4	40	9.5
Total	675		254		421	
Employment status						
Employed	464	69.0	158	62.7	306	72.9
Student	44	6.5	20	7.9	24	5.7
Housekeeper/Domestic	9	1.3	5	2.0	4	1.0
Retired	87	12.9	33	13.1	54	12.9
Unemployed	56	8.3	33	13.1	23	5.5
Other	12	1.8	3	1.2	9	2.1
Total	672		252		420	
Country of residence						
Portugal	549	81.8	180	71.7	369	87.9
United Kingdom	29	4.3	23	9.2	6	1.4
Brazil	27	4.0	10	4.0	17	4.0
France	19	2.8	15	6.0	4	1.0
United States	17	2.5	10	4.0	7	1.7
Other	30	4.5	13	5.2	17	4.0
Total	671		251		420	

Source: Own elaboration.

7.3. Experience with museums and last museums visited

A total of 675 visitors who answered the questionnaire had visited museums. The data suggests that some of respondents visited many museums contrarily to others. Regarding people without sensory impairments a total of 421 respondents visited museums with a mean of 9.4 (with a standard error of 11.5, indicating some variability concerning the number

of museums visited). Results suggest that people without sensory impairments visited several museums, however, here too there is a big variability in the number of museums visited by respondents. Some visitors visited many museums while others visited few. Results show that visitors with sensory impairments (n= 254) also visited a lot of museums although less than people without sensory impairments, showing different behaviours concerning visits (Figure 7.3).

Total	PwSI	People without sensory impairment
<ul style="list-style-type: none"> •N=675 •Mean 8.252 •Standard error 13.119 	<ul style="list-style-type: none"> •N=254 •Mean 6.366 •Standard error 15.210 	<ul style="list-style-type: none"> •N=421 •Mean 9.390 •Standard error 11.549

Figure 7.3. Number of museums visited

Source: Own elaboration.

Participants were requested to identify the last **museum visited in the last three years**. Concerning the countries where museums were located, Portugal was the country where most persons (n= 452) visited museums. France (n= 41), United Kingdom (n= 38), Spain (n= 29), USA (n= 18) and Brazil (n= 15) were the countries, besides Portugal, where most respondents visited the last museum. Other countries were referred such as Australia, Austria, Belgium, Colombia, Cuba, Germany, Greece, India and Italy.

Concerning PwSI, most of the museums referred were located in Portugal (n= 168). France (n= 25), United Kingdom (n= 21), Spain (n= 9), Brazil (n= 7) and USA (n= 7). Other countries mentioned were Australia, Austria, Belgium, Greece, Italy and Netherland. People without sensory impairments mainly visited museums in Portugal (n=284), followed by museums in France (n= 16), Spain (n= 20), United Kingdom (n= 17), USA (n= 11), Brazil (n= 8) and other countries (n= 82).

In the case of PwSI, there is a high prevalence of people visiting museums in Portugal, but participants with sensory impairments also visited museums in France (6.3%), UK (4.7%), Spain (2.4%) and other countries (50.7%). Regarding people without sensory impairments there is more variability of museums visited. Most of the museums were in Portugal (18.3%),

France (1.9%), Spain (1%) and other (78.8%) (Figure 7.4). As can be observed the percentage of people visiting museums in Portugal in the group of PwSI is higher than in the group of people without sensory impairment.

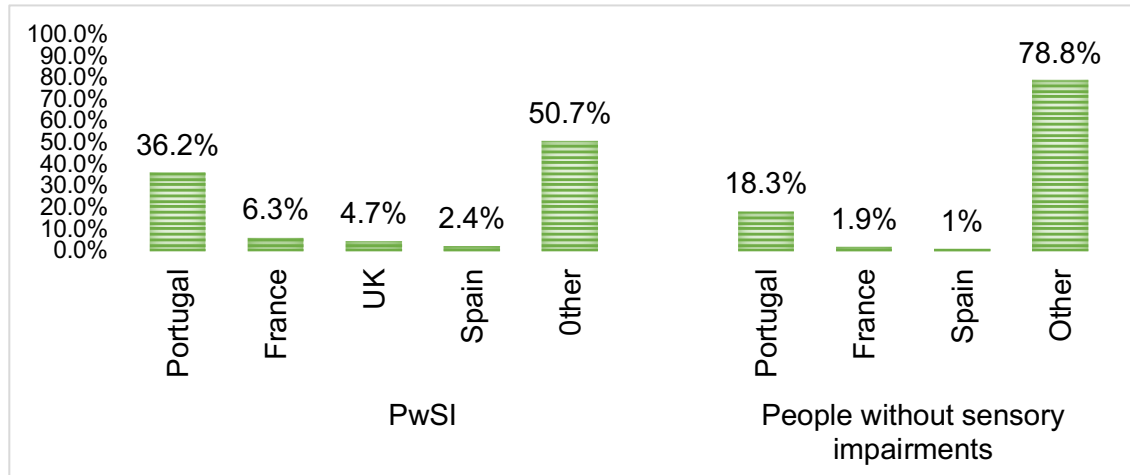


Figure 7.4. Museum's location

Source: Own elaboration.

In table 7.3 are presented the museums most visited, more precisely, those visited by, at least, four respondents. In Portugal, the main visited museums are located mainly in Lisbon, the capital, and in Porto. Among the most visited museums by PwSI we have *Casa do Infante*, *Casa-Museu Fernando Pessoa*, *Museu da Farmácia* and *Museu de Arte Antiga*. In UK we have Victoria & Albert Museum and the London Museum and in France we have the Louvre Museum, Rodin and the Quai Brandy Museum. Concerning people without sensory impairments, the most visited museum in Portugal was *Museu Calouste Gulbenkian* in Lisbon, followed by *Museu de Serralves* in Porto and the *Museu Nacional de Arte Antiga*, in Lisbon. In France, the most visited museum is the Louvre Museum and in Spain the *Museo Reina Sofía*. Probably museums *Casa do Infante* and *Museu da Farmácia* were among the museums most visited in Portugal by PwSI because some guided tours were carried out in these museums for PwSI by the author of the thesis, an official guide, in order to increase the opportunities of having more PwSI in the sample. The museum *Fernando Pessoa*, in Lisbon, visited by a considerable number of PwSI, is considered one of the most accessible museums in Portugal.

Table 7.3. Last museum visited

Museums visited	Country	Museums visited	Number	Country	Museums visited	Number	Country	
Museu Casa do Infante	31	Portugal	Museu Casa do Infante	30	Portugal	Museu Calouste Gulbenkian	20	Portugal
Museu Nacional de Arte Antiga	28	Portugal	Museu Casa Fernando Pessoa	20	Portugal	Museu de Arte Contemporânea - Serralves	19	Portugal
Museu de Arte Contemporânea - Serralves	22	Portugal	Museu da Farmácia - Porto	17	Portugal	Museu Nacional de Arte Antiga	11	Portugal
Museu Calouste Gulbenkian	20	Portugal	V&A - Victoria and Albert Museum	8	UK	Musée du Louvre	8	France
Museu da Farmácia - Porto	16	Portugal	Musée du Louvre	7	France	Museu Nacional Soares dos Reis	7	Portugal
V&A - Victoria and Albert Museum	10	UK	Museu Nacional de Arte Antiga	7	Portugal	Museu do Côa	6	Portugal
Museu Nacional Soares dos Reis	9	Portugal	Museo Tifológico	6	Spain	Museu do Oriente	5	Portugal
Paço dos Duques	6	Portugal	Musée Rodin	5	France	Museu dos Coches	5	Portugal
Enoteca 1756	6	Portugal	Paço dos Duques de Bragança	5	Portugal	Museo Nacional Reina Sofia	4	Spain
London Museum	5	UK	Museu da Oliveira e do Azeite	5	Portugal	Museu Nacional do Traje	4	Portugal
Musée du Quai Brandy	5	France	Musée du Quai Branly	4	France			
Museo Nacional Reina Sofia	4	Spain	London Museum	4	UK			
Tate Museum	4	UK	Museu da Imandade dos Clérigos	4	Portugal			
Van Gogh Museum	4	Netherland	Enoteca 1756	4	Portugal			
Other	505		Other	128		Other	332	
Total	675		Total	254		Total	421	

Source: Own elaboration.

Concerning the **visitor's group**, i.e., the persons who visited the museum with the visitor, most respondents visited the museum with family members (n= 241) or friends (n= 104) (Table 7.4). Few are the visitors who visit the museum alone.

Table 7.4. Visitor's group

Travel group	PwSI	People without sensory impairments
Alone	24	68
Family members	128	241
Friends	105	104
School	7	16
Social institution	11	1
Other	18	26
Total	293	456

Source: Own elaboration.

7.4. Co-creation of experiences at the museum by the general public including PwSI

As there is not a consensual definition of co-creation nor a complete consensus regarding its dimensions, a **factor analysis**, specifically a principal component analysis (PCA) with a varimax rotation was carried out with the items concerning co-creation of experiences at the last museum visited for PwSI, since this segment is the focus of the present thesis. The aim was to identify a reduced number of dimensions or factors that could represent these items well. In all the PCAs carried out in the thesis factors were extracted based on the eigenvalue criterion, i.e., only factors with an eigenvalue higher than 1 were extracted. Data adequacy was assessed using several indicators. Various items were excluded from the analysis due to having low communalities or being the only item represented by a specific factor. Since the p value of the **Bartlett's test of sphericity** is lower than 0.05 (indicating that the correlation matrix is an identity matrix), the **Kaiser-Meyer-Olkin (KMO)** = 0.745, all the factor loadings and all the communalities are > 0.5, the cumulative variance explained is 70.346 and the Cronbach' alpha of all factors are > 0.720, the PCA is considered appropriate.

As presented in table 7.5, the PCA meets all the requirements necessary for this type of analysis. The KMO was 0.745, the Bartlett's test of sphericity was about 2.247 (p-value=0.000), communalities were considerably high (all of them are equal or higher than 0.5), all the factor loadings are higher than 0.5, the cumulative variance explained was about 70% and the Cronbach' alpha of all factors are > 0.720. Six factors were obtained:

- **Factor 1** “Co-creation with electronic devices and multisensory activities” (**CEDMA**)
- which refers to the use of electronic devices, interactive panels, and participation in activities and in experiences that appealed to multiple senses.
- **Factor 2** “Co-creation with traditional non-personal interpretative means (**CTNPIM**)”
- includes the use of traditional interpretative means like reading a printed leaflet, brochure or guide and reading the information panels, and also, seeing the objects of the exhibition attentively and taking pictures.
- **Factor 3** “Co-creation with staff (**CWS**)” - refers to the interaction with staff, including obtaining information or asking for help.
- **Factor 4** “Co-creation with new digital technologies (**CWNDT**)” - includes the use of mobile/digital apps, social media, augmented reality, and virtual reality.
- **Factor 5** “Co-creation in events and interpretative activities (**CEIA**)” - which refers to hearing stories during the visit, attending an event or seeing demonstrations related to the exhibition like, for example, someone doing a craft.
- **Factor 6** “Co-creation with other visitors and local community (**CWOVLC**)” includes the interaction with visitors or with the local community.

Table 7.5. PCA of items concerning co-creation of experiences at the museums by PwSI

	Factor loadings	Communalities	Cumulative variance explained	Cronbach's alpha
Co-creation with electronic devices and multisensory activities (CEDMA)			14.149	0.797
Used electronic devices from the museum (e.g., computers)	0.854	0.799		
Used interactive panels	0.848	0.756		
Participated in activities	0.672	0.506		
Had experiences that appealed to multiple senses	0.588	0.528		
Carried out online activities related to the museum (e.g., Information search, games)	0.576	0.526		
Co-creation with traditional non-personal interpretative means (CTNPIM)			27.276	0.807
Read a printed leaflet, brochure or guide	0.910	0.831		
Read the information panels	0.910	0.843		
Saw the objects of the exhibition attentively	0.671	0.569		
Took pictures at the museum	0.652	0.623		
Co-creation with staff (CWS)			39.598	0.867
Obtained information from staff	0.894	0.819		
Asked staff for help	0.875	0.783		
Interacted with staff	0.871	0.770		
Co-creation with new digital technologies (CWNDT)			51.503	0.773
Used mobile / digital apps	0.800	0.700		
Used social media	0.790	0.736		
Used augmented reality or virtual reality	0.750	0.643		
Co-creation in events and interpretative activities (CEIA)			62.293	0.727
Heard stories	0.794	0.710		
Attended an event / show	0.748	0.715		
Saw demonstrations (e.g., seeing someone doing a craft, an experiment,...)	0.691	0.645		
Co-creation with other visitors and local community (CWOVLC)			70.346	0.757
Interacted with other visitors	0.830	0.765		
Interacted with the local community	0.808	0.805		
Note: PCA with Varimax rotation. N=253. KMO = 0.745. Bartlett's test of sphericity = 2247.473 (p value = 0.000).				

Source: Own elaboration.

In order to understand which kind of co-creation most frequently occurred among PwSI and people without sensory impairments, means and standard deviations were carried out. Considering the total sample, as well as the factors obtained through the PCA previously presented, the types of co-creation that most frequently occurred were *co-creation with traditional non-personal interpretative means (CTNPIM)*, with a mean of 3.9 (in a scale from 1 = totally disagree to 5 = totally agree), followed by *co-creation with the staff (CWS)* (3.3) and *co-creation with electronic devices and multisensory activities (CEDMA)* (2.5), while the co-creation represented by the other factors is lower, with *co-creation with new digital technologies (CWNDT)* being the lowest one (1.8) (Table 7.6). The co-creation represented by the other two factors was also low. However, respondents also showed some co-creation represented by specific items not integrated in the PCA, mainly by *interacted with friends or family members who accompanied on the visit* (4.1), and *participated actively in the visit* (4.0), *chose the route in the museum* (3.5) and *used common areas of the museum* (3.1).

The same pattern of the global sample was observed both in the groups of **PwSI** and in **people without sensory impairments** (Table 7.6). Hence, in the case of PwSI, the more frequent types of co-creation were *co-creation with traditional non-personal interpretative means (CTNPIM)* (3.7), *co-creation with staff (CWS)* (3.7) and *co-creation with electronic devices and multisensory activities (CEDMA)* (3.0), whereas *co-creation with new digital technologies (CWNDT)* was least frequent, not surpassing the 1.7. For **people without sensory impairments** the factors are the same that for PwSI. Thus, the most frequent was *co-creation with traditional non-personal interpretative means (CTNPIM)* (4.0), *co-creation with staff (CWS)* (3.1) and *co-creation with electronic devices and multisensory activities (CEDMA)* (2.3), while *co-creation with new digital technologies (CWNDT)* was the least frequent one (1.8). This clearly reveals, as suggested in previous studies (Candlin, 2003; Hetherington, 2015; Hooper-Greenhill et al., 2000; Udo & Fels, 2010; Vaz, 2020), the importance of, for example, providing traditional non-personal interpretative means like inclusive leaflets, with information in Braille and large-sized fonts. The fact that co-creation with new digital technologies (CWNDT) presents the lowest value may be related to the recent character of emerging of technologies in museums (Vaz, 2018), a reality that is changing the way people co-create experiences but that cannot be found in many museums yet. Although some differences could be noticed between the level of co-creation regarding some factors or dimensions of co-creation identified, the impact on co-creation in museums of having or not a sensory impairment will be tested in section 7.7 through SEM. Therefore, a more in-depth analysis of this impact will be done in that section.

Table 7.6. Co-creation of experiences at the museum by PwSI and people without disabilities – Univariate analysis (continues)

	Total			PwSI			People without sensory impairments		
	N	Mean	Standard error	N	Mean	Standard error	N	Mean	Standard error
Co-creation with electronic devices and multisensory activities (CEDMA)	675	2.5	1.195	254	3.0	1.143	421	2.3	1.150
Used electronic devices from the museum (e.g., computers)	675	2.5	1.629	254	3.0	1.676	421	2.1	1.498
Used interactive panels	675	2.4	1.574	254	2.8	1.546	421	2.2	1.542
Participated in activities	675	2.5	1.623	254	3.4	1.443	421	2.0	1.468
Had experiences that appealed to multiple senses	675	3.2	1.481	254	3.2	1.444	421	3.2	1.504
Carried out online activities related to the museum (e.g., information search, games)	675	2.0	1.465	254	2.3	1.573	421	1.9	1.375
Co-creation with traditional non-personal interpretative means (CTNPIM)	675	3.9	0.907	254	3.7	1.070	421	4.0	0.774
Read a printed leaflet, brochure or guide	675	3.6	1.391	254	3.5	1.500	421	3.6	1.321
Read the information panels	675	4.1	1.134	254	3.8	1.415	421	4.2	0.887
Saw the objects of the exhibition attentively	675	4.5	0.807	254	4.5	0.892	421	4.5	0.752
Took pictures at the museum	675	3.5	1.588	254	3.1	1.475	421	3.7	1.603
Co-creation with staff (CWS)	675	3.3	1.287	254	3.7	1.136	421	3.1	1.316
Obtained information from staff	674	3.4	1.428	253	3.7	1.281	421	3.2	1.485
Asked staff for help	675	3.2	1.468	254	3.5	1.344	421	2.9	1.491
Interacted with staff	675	3.5	1.365	254	4.0	1.202	421	3.2	1.374
Co-creation with new digital technologies (CWNDT)	675	1.8	1.095	254	1.7	1.030	421	1.8	1.132
Used mobile / digital apps	675	1.9	1.365	254	1.9	1.347	421	1.8	1.377
Used social media	675	1.9	1.404	254	1.8	1.256	421	2.0	1.482
Used augmented reality or virtual reality	675	1.6	1.194	254	1.5	1.113	421	1.6	1.238
Co-creation in events and interpretative activities (CEIA)	675	1.9	1.108	254	2.0	1.046	421	1.9	1.144
Heard stories	675	2.4	1.555	254	2.5	1.433	421	2.4	1.625
Attended an event / show	675	1.7	1.293	254	1.7	1.182	421	1.7	1.357
Saw demonstrations (e.g., seeing someone doing a craft, an experiment,...)	675	2.0	1.215	254	1.8	1.276	421	1.6	1.231
Co-creation with other visitors and local community (CWOVLC)	685	2.0	1.215	254	2.2	1.274	421	1.9	1.171
Interacted with other visitors	675	2.1	1.428	254	2.4	1.493	421	1.9	1.356
Interacted with the local community	675	1.9	1.343	254	1.9	1.344	421	1.9	1.344

Source: Own elaboration.

Table 7.6. Co-creation of experiences at the museum by PwSI and people without disabilities – Univariate analysis (continuation)

	Total			PwSI			People without sensory impairments		
	N	Mean	Standard error	N	Mean	Standard error	N	Mean	Standard error
Aspects of co-creation not included in any factor									
Chose the route in the museum	675	3.5	1.471	254	3.0	1.421	421	3.8	1.428
Used common areas of the museum	675	3.1	1.678	254	3.0	1.670	421	3.2	1.680
Handled objects or replicas of the exhibition	675	2.5	1.606	254	3.3	1.587	421	2.0	1.427
Created an object, piece or artwork to keep as a souvenir	675	1.5	1.134	254	1.6	1.209	421	1.5	1.085
Used audio guides	675	2.0	1.561	254	2.3	1.706	421	1.9	1.446
Watched videos	675	2.7	1.624	254	2.5	1.552	421	2.8	1.659
Interacted with specialists on a particular subject	675	2.3	1.578	254	2.7	1.616	421	2.1	1.517
Interacted with friends or family members who accompanied on the visit	675	4.1	1.405	254	4.2	1.254	421	4.0	1.486
Participated actively in the visit	675	4.0	1.230	254	4.4	0.815	421	3.8	1.371
Participated in guided tours	675	2.6	1.713	254	3.3	1.615	421	2.2	1.634
Participated in workshops or talks	675	1.7	1.253	254	1.7	1.272	421	1.6	1.241
Participated in recreational/fun activities	675	1.7	1.282	254	1.7	1.276	421	1.6	1.285

Source: Own elaboration

7.5. Antecedents of co-creation of experiences in museums by PwSI

In this thesis two types of potential antecedents of co-creation of experiences in museums by PwSI previously identified in the literature review were examined - antecedents related to visitors (encompassing both individual antecedents and visit context variables) and antecedents related to museums. The univariate analysis of antecedents of co-creation associated with visitors were already presented in previous sections of this chapter. Univariate analysis of type and level of impairment were presented in section 7.2 and the experience of visitors with museums (number of museums previously visited), as well as the visit group (people with which the respondent visited the last museum), were presented in section 7.3. Therefore, as far as descriptive analyses are concerned, only univariate analyses of the antecedents related to museums will be analysed in this section.

Regarding the antecedents related to museums, first a PCA with varimax rotation was undertaken. A **PCA of the factors**, using varimax rotation, was used to identify factors concerning antecedents of co-creation. Specific variables, with low communalities, were excluded from the PCA.

According to the Bartlett's test of sphericity, the Kaiser-Meyer-Olkin (KMO), the factor loadings and the communalities, it is possible to conclude that this PCA is appropriate (Table 7.7). **Bartlett's test of sphericity** resulted in a value of 6180.762, with a p value lower than 0.05, which confirms the adequacy of the analysis, because the null hypothesis of inexistence of significant correlations between the variables is rejected.

The **Kaiser-Meyer-Olkin (KMO) statistic** is 0.843, which allows considering the factor analysis as adequate, since this value demonstrates that there is a considerable correlation between the variables. Therefore, the data are adequate for the application of factor analysis. Although no statistical guidelines indicate exactly what is "large" or "small" regarding communalities, practical considerations are consistent with a lower level of 0.5 for communalities in analysis (Hair et al., 2019). All the variables included in the PCA had a communality higher than 0.5. Eight factors were identified through the PCA. These eight factors explain about 73% of the variance, meeting the requirements. After transforming the coefficients of the main components using the varimax rotation method, the factor loadings were obtained. As presented in table 7.7 all items had a factor loading above 0.5 in one of the identified factors.

The eight factors of antecedents of co-creation of experiences in museums, related to museums, identified through the PCA were the following ones:

- **Factor 1** “*Inclusive museum staff behaviour*” (**IMSB**) consists of eight items. These items are related to the different appropriate attitudes of the museum staff including kindness, attitudes that help understand the exhibition and clarifying doubts, but also that reveal an inclusive approach and encouraged a more engaging visit to the museums, namely promoting participation in activities and exploring objects.
- **Factor 2** “*Information legibility and suitable lighting*” (**ILSL**) includes seven items. These items are related to presenting information in an appropriate way, ensuring good colour contrasts, properly sized texts, good image definition, as also providing suitable lighting in the exhibition and in the venue, and clear signage.
- **Factor 3** “*Existence of interactive and electronic devices*” (**EIED**) includes four items related to the existence of interactive equipment, electronic devices for entertainment (e.g., games) and obtaining further information and experiences that appeal/stimulate multiple senses. The fact that experiences appealing to multiple senses was included in the same factor of interactive equipment and electronic devices suggests that some of these experiences may be enabled by this kind of equipment.
- **Factor 4** “*Physical barrier free access and wayfinding support*” (**PBFAWS**) includes three items representing floor without physical barriers, without steps or accentuated unevenness and systems to help identify directions and objects.
- **Factor 5** “*Interpretation activities*” (**IA**) includes three items encompassing three distinct types of activities that may be used to carry out interpretation, namely: “storytelling”, “representations” and “workshops or seminars”.
- **Factor 6** “*Existence of guided tours and traditional non-personal interpretative means*” (**EGTNPIM**) includes three items representing the existence of guided tours and of some non-personal interpretative means - flyers, brochures or guides, information boards and panels.
- **Factor 7** “*Opportunities for multisensory experiences*” (**OMSE**) includes four items representing the supply of different types of multisensory experiences - chance to touch/hold objects, models or replicas, and relief figures - and information in different formats.
- **Factor 8** “*Communication in different languages*” (**CDL**) includes two items: communicated in several languages and information in different languages.

Table 7.7. PCA of antecedents of co-creation (continues)

	Factor loadings	Communalities	Cumulative variance explained	Cronbach's alpha
Antecedents - Inclusive museum staff behaviour (IMSB)			16.730	0.918
Provided reliable answers	0.847	0.758		
Provided clarifications regarding the exhibition	0.833	0.738		
Sought to understand individual needs	0.830	0.768		
Encouraged the participation in activities	0.790	0.734		
Encouraged you to explore the objects of the exhibition	0.789	0.765		
Promoted a safe visit	0.736	0.657		
They were kind	0.731	0.584		
They were aware of how to deal with every type of visitor and had an inclusive approach (e.g., giving attention to everyone)	0.677	0.689		
Antecedents - Information legibility and suitable lighting (ILSL)			30.998	0.909
Information boards and panels with good colour contrasts	0.834	0.872		
Properly sized texts	0.807	0.857		
Images with good contrast and definition	0.806	0.812		
Easy reading texts	0.743	0.778		
Suitable lighting in the exhibition	0.728	0.795		
Suitable lighting in the venue	0.709	0.801		
Clear signage	0.544	0.574		
Antecedents - Existence of interactive and electronic devices (EIED)			39.994	0.849
Interactive equipment	0.826	0.807		
Electronic devices for entertainment (e.g., games)	0.821	0.797		
Electronic devices for further information	0.778	0.709		
Experiences that appeal / stimulate multiple senses (e.g., sight and smell)	0.650	0.716		

Source: Own elaboration.

Table 7.7. PCA of antecedents of co-creation (continuation)

	Factor loadings	Communalities	Cumulative variance explained	Cronbach's alpha
Antecedents - Physical barrier free access and wayfinding support (PBFAWS)			47.733	0.792
Floor without physical barriers	0.830	0.754		
Floor without steps or accentuated unevenness	0.817	0.745		
Systems to help identify directions and objects (e.g., sound or digital systems)	0.728	0.582		
Antecedents - Interpretation activities (IA)			54.927	0.809
Storytelling (appealing stories on themes from the museum were presented)	0.848	0.780		
Representations (e.g., plays, historical recreations)	0.798	0.738		
Workshops or seminars	0.689	0.671		
Antecedents - Existence of guided tours and traditional non-personal interpretative means (EGTNPIM)			61.528	0.726
Flyers, brochures or guides	0.843	0.803		
Information boards and panels	0.693	0.661		
Guided tours	0.581	0.627		
Antecedents - Opportunities for multisensory experiences (OMSE)			67.884	0.817
Chance to touch / hold objects, models or replicas	0.753	0.729		
Relief figures	0.648	0.768		
Information in different formats (e.g., Braille, sign language, audio / sound information) adapted to your needs	0.591	0.668		
Antecedents - Communication in different languages (CDL)			73.409	0.739
Communicated in several languages	0.746	0.735		
Information in different languages	0.698	0.751		
Note: PCA with Varimax rotation. N=254. KMO = 0.843. Bartlett's test of sphericity = 6180.762 (p value = 0.000).				

Source: Own elaboration.

Cronbach's Alpha was also calculated for each of the factors, and values obtained vary between 0.726 and 0.918, which indicates that the factors have good internal consistency.

Descriptive analysis such as mean and standard error were carried out to better interpret the antecedents of co-creation experienced by visitors. As in the questionnaire antecedents were presented as facilitators, low means represent constraints, while higher means shows the awareness of facilitators. For example, if the factor "*Inclusive museum staff behaviour*" (**IMSB**) has a low mean, this suggests that visitors don't think that the staff had an appropriate attitude and, therefore, experienced some constraints in this level. In contrast, a high mean suggests that the museum is investing in this facilitator of co-creation and that the visitors consider that the staff have a positive attitude.

The findings presented in table 7.8 regarding the whole sample, suggest that, despite visitors recognise that some efforts are being made to foster co-creation in museums through several antecedents, some respondents still experience some constraints in this context and more efforts can be done to encourage more co-creation in museums. This is concluded since the mean of the factors found in the PCA varies from 2.7 to 3.9 (in a 5-point Likert scale from 1= totally disagree to 5 = totally agree), with any of these means surpassing 4.0. However, the standard error of one the factors reaches 1.221 and of one item is even 1.543, suggesting that some visitors may have experienced much more constraints than others, in certain contexts. The results support other studies (H. Chen & Rahman, 2018; Mesquita & Carneiro, 2016, 2021; Minkiewicz et al., 2014, 2016; Mirghadr et al., 2018; Poria et al., 2009) that mentioned constraints experienced by visitors during their museums' visits. The antecedents (facilitators) most frequently identified were *the existence of guided tours and traditional non-personal interpretative means* (**EGTTNPIM**) (with a mean of 3.9), *information legibility and suitable lighting* (**ILSL**) (3.9) and the *inclusive museum staff behaviour* (**IMSB**) (3.6), while *interpretation activities* (**IA**) were the least mentioned (2.7) together with the *existence of interactive and electronic devices* (**EIED**) (2.8). The highest result (3.9) concerning the *information legibility and suitable lighting* (**ILSL**) and the *existence of guided tours and traditional non-personal interpretative means* (**EGTTNPIM**) may be related to some of the most important aspects for a good exhibition - museum information, lighting, guided tours and non-personal interpretative means -, as stated by Ambrose and Paine (2018). According to the authors, "To redesign the lighting and the labelling is often all that is needed to make an old fashioned gallery seem renewed" (Ambrose & Paine, 2018, p. 150). Furthermore, a good guide can be inspiring. A guided

tour with quality can revolutionise visitors' perception of museum allowing the visitor to better understand, for example, local culture (Ambrose & Paine, 2018; H. Chen & Rahman, 2018). Considering the results of the present thesis, the *information legibility and suitable lighting (ILSL)*, as well as the *existence of guided tours and traditional non-personal interpretative means (EGTTNPIM)*, seem to, not only facilitate the visit, and promote a better museum experience, but also to play a very important role in encouraging co-creation in museums. In addition, the findings suggest that interactive and electronic devices together with interpretation activities such as storytelling, representations and workshops should be more explored in the museum visit context.

Comparing **PwSI and people without sensory impairments**, the antecedents (facilitators) most identified by **PwSI** were the *existence of guided tours and traditional non-personal interpretative means (EGTTNPIM)* (4.2), the *inclusive museum staff behaviour (IMSB)* (4.0) and the *information legibility and suitable lighting (ILSL)* (3.9). These results reveal that some issues considered important to a good experience of PwD in museums, such as an appropriate attitude of the museum staff (Accentuate et al., 2018; Accentuate & History Place, 2018; Cock et al., 2018; Mesquita & Carneiro, 2021), and also important for co-creation in these cultural attractions, are being taken into consideration by some museums that already present a somewhat positive performance in this scope.

For people without sensory impairments, two of the items referred by PwSI are also the most identified – *information legibility and suitable lighting (ILSL)* (4.0) followed by the *existence of guided tours and traditional non-personal interpretative means (EGTTNPIM)* (3.8) -, but another factor not so much mentioned by PwSI, emerges as one of the most identified - *communication in different languages (CDL)* (3.4). This result suggests that PwSI are not so satisfied with the communication in different languages. This can be explained by the lack of museums' staff that can communicate in sign language with people with hearing impairments and with the fact that staff is not used to communicate with PwSI. PwVI need to have more details about the context they are experiencing in order to better co-create, PwHI need a sign language (SL) interpreter and to clearly see the lips of the guide in order to try to understand the narrative. Staff and volunteers must have the skills and confidence to support PwVI and PwHI.

Table 7.8. Antecedents of co-creation – Univariate analysis (continues)

	Total			PwSI			People without sensory impairments		
	N	Mean	Standard error	N	Mean	Standard error	N	Mean	Standard error
Inclusive museum staff behaviour (IMSB)	675	3.6	1.068	254	4.0	0.898	421	3.3	1.089
Provided reliable answers	675	3.9	1.163	254	4.1	1.051	421	3.7	1.202
Provided clarifications regarding the exhibition	675	3.5	1.427	254	4.0	1.145	421	3.2	1.490
Sought to understand individual needs	675	3.4	1.297	254	3.8	1.137	421	3.2	1.325
Encouraged the participation in activities	675	3.1	1.428	254	3.7	1.275	421	2.8	1.397
Encouraged you to explore the objects of the exhibition	675	3.1	1.444	254	3.7	1.274	421	2.8	1.429
Promoted a safe visit	675	4.0	1.185	254	4.4	1.034	421	3.8	1.218
They were kind	675	4.1	1.066	254	4.3	0.913	421	3.9	1.131
They were aware of how to deal with every type of visitor and had an inclusive approach (e.g., giving attention to everyone)	675	3.5	1.260	254	3.8	1.138	421	3.3	1.290
Information legibility and suitable lighting (ILSL)	675	3.9	0.901	254	3.9	0.930	421	4.0	0.882
Information boards and panels with good colour contrasts	675	4.1	1.026	254	4.2	0.990	421	4.1	1.047
Properly sized texts	675	3.8	1.159	254	3.8	1.231	421	3.8	1.115
Images with good contrast and definition	675	3.9	1.127	254	3.9	1.173	421	3.9	1.098
Easy reading texts	675	3.8	1.158	254	3.9	1.184	421	3.8	1.143
Suitable lighting in the exhibition	675	4.2	1.037	254	4.0	1.109	421	4.3	0.972
Suitable lighting in the venue	675	4.1	1.058	254	4.0	1.115	421	4.2	1.014
Clear signage	675	4.0	1.068	254	4.1	1.044	421	4.0	1.081
Existence of interactive and electronic devices (EIED)	675	2.8	1.272	254	3.0	1.203	421	2.7	1.295
Interactive equipment	675	2.9	1.524	254	3.2	1.429	421	2.7	1.545
Electronic devices for entertainment (e.g., games)	675	2.4	1.439	254	2.5	1.532	421	2.3	1.375
Electronic devices for further information	675	3.3	1.452	254	3.5	1.350	421	3.1	1.499
Experiences that appeal / stimulate multiple senses (e.g., sight and smell)	675	2.8	1.515	254	3.0	1.481	421	2.7	1.522
Physical barrier free access and wayfinding support (PBAWS)	675	3.1	1.195	254	3.0	1.281	421	3.2	1.128
Floor without physical barriers	675	3.4	1.371	254	3.3	1.377	421	3.4	1.367
Floor without steps or accentuated unevenness	675	3.2	1.492	254	3.0	1.620	421	3.2	1.407
Systems to help identify directions and objects (e.g., sound or digital systems)	675	2.9	1.469	254	2.5	1.564	421	3.1	1.369

Source: Own elaboration.

Table 7.8. Antecedents of co-creation - Univariate analysis (continuation)

	Total			PwSI			People without sensory impairments		
	N	Mean	Standard error	N	Mean	Standard error	N	Mean	Standard error
Interpretation activities (IA)	675	2.7	1.192	254	2.8	1.186	421	2.5	1.183
Storytelling (appealing stories on themes from the museum were presented)	675	2.8	1.443	254	2.9	1.395	421	2.7	1.465
Representations (e.g., plays, historical recreations)	675	2.5	1.432	254	2.6	1.413	421	2.4	1.440
Workshops or seminars	675	2.7	1.411	254	3.0	1.374	421	2.5	1.409
Existence of guided tours and traditional non-personal interpretative means (EGTNPIM)	675	3.9	0.964	254	4.2	0.880	421	3.8	0.980
Flyers, brochures or guides	675	3.8	1.223	254	4.0	1.143	421	3.7	1.251
Information boards and panels	675	3.8	1.178	254	3.8	1.220	421	3.8	1.153
Guided tours	675	3.9	1.341	254	4.4	1.143	421	3.6	1.364
Opportunities for multisensory experiences (OMSE)	675	3.1	1.221	254	3.5	1.205	421	2.8	1.144
Chance to touch / hold objects, models or replicas	675	2.9	1.543	254	3.5	1.414	421	2.5	1.502
Relief figures	675	3.4	1.431	254	3.7	1.354	421	3.2	1.455
Information in different formats (e.g., Braille, sign language, audio / sound information) adapted to your needs	675	2.9	1.464	254	3.4	1.457	421	2.6	1.380
Communication in different languages (CDL)	675	3.4	1.095	254	3.4	1.148	421	3.4	1.064
Communicated in several languages	675	3.2	1.274	254	3.3	1.289	421	3.2	1.266
Information in different languages	675	3.7	1.239	254	3.6	1.289	421	3.7	1.210
Antecedents not included in any factor									
Logical organisation of the venue (e.g., reception at the entrance)	675	4.5	0.859	254	4.6	0.778	421	4.4	0.895
3D models or relief maps representing the museum	675	3.3	1.522	254	3.5	1.648	421	3.2	1.437
Physical guidance to help identify pathways (e.g., handrail, labeling)	675	3.6	1.342	254	3.5	1.498	421	3.7	1.234
Easy access to means of interpretation such as information panels, leaflets, guided tours or audio guides	675	3.9	1.174	254	4.2	1.095	421	3.7	1.183

Source: Own elaboration.

Least identified factors by PwSI were *interpretation activities (IA)* (2.8) and *physical barrier free access and wayfinding support (PBFAWS)* (3.0). On the other hand, for people without sensory impairments least identified factors were also *interpretation activities (IA)* (2.5), the *existence of interactive and electronic devices (EIED)* (2.7) and the *opportunities for multisensory experiences (OMSE)* (2.8).

As table 7.8 illustrates, the least identified items by both **PwSI and people without sensory impairments** are *electronic devices for entertainment (e.g., games)* with a mean of 2.4, *representations (e.g., plays, historical representations)* (2.5), *workshops or seminars* (2.7), *experiences that appeal/stimulate multiple senses (e.g., sight and smell)* (2.8), *storytelling* (2.8), *interactive equipment* (2.9), *systems to help identify directions and objects (e.g., sound or digital systems)* (2.9), *the chance to touch/hold objects, models or replicas* (2.9) and *information in different formats* (2.9).

Comparing **PwSI and people without sensory impairments**, least perceived items by **PwSI** were *electronic devices for entertainment* (2.5), *systems to help identify directions and objects* (2.5), *representations* (2.6) and *storytelling* (2.9). For **people without sensory impairments** the least identified items were *electronic devices for entertainment* (2.3), *representations* (2.4), *chance to touch/hold objects, models or replicas* (2.5), *workshops or seminars* (2.5), *information in different formats* (2.6), *experiences that appeal /stimulate multiple senses* (2.7), *interactive equipment* (2.7), and *storytelling* (2.7).

Concerning the factors that achieved a lowest mean for PwSI, these are *interpretation activities (IA)* and *physical barrier free access and wayfinding support (PBFAWS)*. This probably happens because few are the museums that offer interpretation activities like storytelling, representations or workshops. The same is true concerning systems to help identify directions and objects, that provide, specially to PwVI, the opportunity to act independently and to make their own choices. The *existence of interactive and electronic devices (EIED)* and the *opportunities for multisensory experiences (OMSE)* also present a low mean, a result that can also be explained by the existence of few museums that offer these types of resources. Providing diverse and accessible ways to engage with the exhibitions can improve co-creation with the exhibition. Interactive and electronic devices and multisensory experiences can be useful to create more interesting contents leading to a more active participation.

To identify the factors - antecedents related to visitors and antecedents related to museums – that influence the six dimensions of co-creation (*co-creation with electronic devices and multisensory activities, co-creation with traditional non-personal interpretative means, co-creation with staff, co-creation with new digital technologies, co-creation in events and interpretative activities, co-creation with other visitors and local community*) in the case of PwSI, six multiple linear regressions were carried out (equation 1). The stepwise method was used. The dependent variable of each regression was one of the six dimensions of co-creation. The independent variables of all regressions corresponded to various antecedents related to visitors and to museums specified below (see equation 1).

$$DCMPwSI_{ij} = \alpha + \beta_1 EVM_i + \beta_2 TD_i + \beta_3 IMSB_i + \beta_4 ILSL_i + \beta_5 EI ED_i + \beta_6 PBF AWS_i + \beta_7 IA_i + \beta_8 EGTTNPIM + \beta_9 OMSE + \beta_{10} CDL + \varepsilon_i$$

Where:

Dependent variables

DCMPwSI – Dimensions of co-creation in museums in the case of PwSI;

$i = 1 \dots n$ – Number of PwVI who answered the questionnaire;

$j = 1 \dots 2$ – Dimensions of co-creation in museums in the case of PwSI (1 = Co-creation with electronic devices and multisensory activities, 2 = Co-creation with traditional non-personal interpretative means, 3 = Co-creation with staff, 4 = Co-creation with new digital technologies, 5 = Co-creation in events and interpretative activities, 6 = Co-creation with other visitors and local community).

Independent variables

Antecedents related to visitors

EVM – Experience of visitors with museums (number of museums previously visited)

TD - Type of disability (visual = 0; hearing = 1)

Antecedents related to museums

IMSB – Inclusive museum staff behaviour (mean of the items represented by this factor)

ILSL – Information legibility and suitable lighting (mean of the items represented by this factor)

EIED – Existence of interactive and electronic devices (mean of the items represented by this factor)

PBFAWS – Physical barrier free access and wayfinding support (mean of the items represented by this factor)

IA – Interpretation activities (mean of the items represented by this factor)

EGTTNPIM – Existence of guided tours and traditional non-personal interpretative means (mean of the items represented by this factor)

OMSE – Opportunities for multisensory experiences (mean of the items represented by this factor)

CDL – Communication in different languages (mean of the items represented by this factor)

The procedures used to test the multivariate regression assumptions revealed that the assumptions (normality of error term, homogeneity of variance, linearity, and multicollinearity) are not violated. Regarding multicollinearity, it appears that there is no multicollinearity between the independent variables because, as can be seen in table 7.9, all tolerance values are greater than 0.1 and all Variation Inflation Factor values (VIF) are lower than 10.

In the analysis of the predictive capacity of the model, to assess the explained variance of the endogenous constructs, the coefficient of determination (R^2) must be examined. The results presented in table 7.9 reveal that several antecedents under analysis have a significant impact in co-creation. However, the overall predictive value (R^2) varies among the models. The models regarding *co-creation with electronic devices and multisensory activities* (**CEDMA**) (M1) and concerning the *co-creation with traditional non-personal interpretative means* (**CTNPIM**) (M2), emerge as the models with the highest R^2 (0.373 and 0.366, respectively). These R^2 are considered high. According to Hair et al. (2019), the acceptable values of R^2 depend on the complexity of the model and the study area, and in studies related to consumer behaviour an R^2 value of 0.20 is considered high. In contrast, the models that analyse *co-creation with other visitors and local community* (**CWOVLC**)

(M6) and *co-creation in events and interpretative activities (CEIA)* (M5) have the lowest explanatory power (R^2) (0.044 and 0.071, respectively), only explaining 4.4% and 7.1% of the variance, respectively (Table 7.8). The low R^2 value of these last constructs may be partially related to the fact that aspects like those represented by these constructs aren't very common in museums activities (as may be observed in table 7.9), which limits the variability of the dependent variables – levels of co-creation in these two scopes. The reason why the R^2 of *co-creation with new digital technologies (CWDT)* is not higher (corresponding to 0.122) is also, probably related, to the fact that new digital technologies like augmented reality and virtual reality are still limited in museums.

Concerning the **antecedents related to visitors** that influence the co-creation of experiences, and always taking as a reference a p value < 0.050, only the type of disability has a significant influence on two dimensions of co-creation, *co-creation with electronic devices and multisensory activities (CEDMA)* ($\beta = 0.146$) and in *co-creation with traditional non-personal interpretative means (CTNPIM)* ($\beta = 0.215$), with PwHI co-creating more in these two dimensions than PwVI. Results are in line with McMillen and Alter (2017), who suggest that accessibility issues vary depending on disability type. For example, PwVI experience more constraints with visual challenges than PwHI. PwVI can experience more constraints in understanding how to use or locate electronic devices. The same can happen with multisensory activities if there is no one to explain how to engage with the activity (Table 7.9). Findings also suggest that, probably, *co-creation with traditional non-personal interpretative means (CTNPIM)* presents more challenges for visitors with visual impairments possibly because some of these means are not made according to these visitors' needs (e.g., being written in Braille, having relief images) or because they don't have someone to help them accessing these means.

Concerning the **antecedents related to museums** that influence co-creation of experiences of PwSI, the results provided important insights. First, the factor *communication in different languages (CDL)* emerges as the factor influencing more dimensions of co-creation - *co-creation with traditional non-personal interpretative means (CTNPIM)* ($\beta = 0.213$), *co-creation with staff (CWS)* ($\beta = 0.168$), *co-creation with new digital technologies (CWNDT)* ($\beta = 0.181$) and *co-creation with other visitors and local community (CWOVLC)* ($\beta = 0.206$). These results suggest that the existence of communication in different languages allows more people to read printed leaflets, brochures, guides and panels. Moreover, if the staff knows how to communicate in various languages, including sign language, this can also help visitors, including those with hearing impairments, better

communicate with staff. Different languages also allow visitors to communicate with other visitors and local community and to better co-create with new digital technologies. The existence of a huge diversity of languages can stimulate co-creation as visitors have more options to choose the language that best fits their needs. These results corroborate and expand findings of previous studies (Cheng et al., 2019; Kempiak et al., 2017) that highlight the importance of communicating in different languages to adjust interpretation according to tourists and to their individual needs.

The *information legibility and suitable lighting (ILSL)*, considering the β , appears as the factor with most significant impact in two co-creation dimensions - *co-creation with traditional non-personal interpretative means (CTNPIM)* ($\beta = 0.439$) and *co-creation with staff (CWS)* ($\beta = 0.456$). This suggests that the existence of legible information and suitable lighting can lead PwSI to co-create more with the exhibition and with the space. These aspects can lead visitors, for example, to read more panels, labels, and guides. The results provide empirical evidence of what was previously suggested by some researchers (Barker et al., 1995; Cock et al., 2018; Rnib et Vocaleyes, 2003), that it is essential to study the existent light along the exhibition as well as the type of information presented inside museum in order to ensure that they are appropriate for PwSI. A visually impaired people may require high levels of illumination to co-create. Light should be distributed in a homogeneous way, avoiding dramatic changes, and glare should be avoided (Barker et al., 1995; Cock et al., 2018; Rnib et Vocaleyes, 2003). Some aspects related to how the information is provided are crucial for PwSI. The use of a properly sized text and a right choice of letter characters are some of the concerns museums should have when providing information to visitors (Accentuate et al., 2018; Rnib et Vocaleyes, 2003). Museums should provide different accessible formats of communication for a wide range of public like large print resources, audio-described tours and sign language interpreted talks, among others. The use of Braille guides to provide further interpretation to Braille readers is advised to help people to be autonomous and not dependent on third parties to co-create. Several authors (Chick, 2017; Kempiak et al., 2017; Mesquita & Carneiro, 2016; V. Richards et al., 2010) referred the importance of suitable lighting in the exhibition and in some aspects of co-creation.

The significant positive impact of the *information legibility and suitable lighting (ILSL)* in *co-creation with staff (CWS)* suggests that if museums present good information legibility and suitable lighting, PwSI will engage more in the exhibition and will co-create more with the staff to talk about some information obtained, to ask questions or help or just to interact.

The *existence of interactive and electronic devices (EIED)* has a significant positive influence on *co-creation with electronic devices and multisensory activities (CEDMA)* ($\beta = 0.479$) and *co-creation with new digital technologies (CWNDT)* ($\beta = 0.175$). This highlights the importance of the existence of interactive and electronic devices to boost co-creation. The more they exist in museums the more visitors will co-create. These results clearly illustrate how interactive and electronic devices may have a crucial role in improving co-creation to fully engage in the exhibition. Moreover, these findings reveal the importance of enhancing co-creation in museums through the use of different means of interpretation like those involving technologies (Hashim et al., 2014; Othman et al., 2021).

Physical barrier free access and wayfinding support (PBFAWS) has a significant positive impact on *co-creation with new digital technologies (CWNDT)* ($\beta = 0.163$). These findings are of great relevance to increase knowledge regarding the influence of the antecedents related to visitors and to museums in co-creation. If museums provide an accessible space, free of physical barriers, where visitors with sensory impairments, especially those with visual impairments can walk in a free, independent way, it is normal that visitors co-create more with new technologies, when these technologies are provided. The opportunity to make an autonomous visit (Cock et al., 2018) is of great importance for people with disabilities, especially for PwVI. Several authors already recognised the importance of a floor without other physical barriers (McKercher & Darcy, 2018; Mesquita & Carneiro, 2016; V. Richards et al., 2010). Conversely, the existence of *physical barrier free access and wayfinding support (PBFAWS)* has a significant negative impact on *co-creation with staff (CWS)* ($\beta = -0.146$) which suggests that if visitors are able to orientate themselves in an autonomous way or if there are no physical barriers in the exhibition space, visitors with sensory impairments will have less need to ask help from the staff, as they are more confident to move in the space and in the exhibition. This is positive, since it is desirable that PwSI do a museum visit as autonomously as possible.

Interpretation activities (IA) have a significant positive influence on *co-creation in events and interpretative activities (CEIA)* ($\beta = 0.267$). This highlights that interpretation activities can lead visitors to participate in events and interpretative activities like hearing stories, attending events, or seeing demonstrations. Results highlight the positive effect of special events in enhancing the visitor experience (Falk & Dierking, 2016b; Kempniak et al., 2017). Falk and Dierking (2016b) emphasise that demonstrations enhance the attractiveness of the museum.

The *opportunity for multisensory experiences (OMSE)* has a significant positive influence on *co-creation with electronic devices and multisensory activities (CEDMA)* ($\beta = 0.215$), which suggests that when the museums provide the opportunity for multisensory experiences, visitors co-create more with electronic devices and multisensory activities. Several authors suggest multisensory experiences to engage visitors in the exhibition (Antón, 2018; Cachia, 2013; Falk & Dierking, 2016b). In contrast, the *opportunity for multisensory experiences (OMSE)* has a significant negative impact on *co-creation with traditional non-personal interpretative means (CTNPIM)* ($\beta = -0.154$). Probably this may happen because, with the existence of multisensory activities in the museum, the visitors will co-create less with traditional non-personal interpretative means (CTNPIM). The findings suggest that if visitors have the opportunity to engage in multisensory activities, they will participate less in co-creation with traditional non-personal interpretative means like reading leaflets, brochures, guides or panels.

Results reveal that the *existence of guided tours and traditional non-personal interpretative means (EGTTNPIM)* have a significant negative impact on *co-creation with staff (CWS)* and on *co-creation with other visitors and local community (CWOVLC)* ($\beta = -0.129$ and $\beta = -0.147$). This suggests that the more the museums offer *guided tours, flyers, brochures, guides and information boards and panels* the less visitors will tend to co-create with staff other than the guide and with other visitors and local community. The results suggest that if PwSI have the opportunity to participate on guide tours and if they have access to different types of traditional non-personal interpretative means they will not have the necessity to co-create so much with other staff. This is not bad, since guides of guided tours will probably be prepared to provide more appealing and appropriate information than other staff. Hence, Museums must provide guided tours that describe collections, handling with trained staff (H. Chen & Rahman, 2018; Cock et al., 2018; Minghadr et al., 2018). The negative impact of *existence of guided tours and traditional non-personal interpretative means (EGTTNPIM)* on the interaction with other visitors and local community should be more studied and carefully analysed, in order to understand how these contacts could be better explored in an appealing way.

The findings also highlight the importance to analyse what can be done to improve staff participation in co-creation. Findings suggest that something is failing in the inclusive staff behaviour, since this antecedent does not have a significant influence on co-creation.

Table 7.9. The impact of antecedents on co-creation of museum experiences in the case of PwSI

Antecedents influencing various dimensions of co-creation in museums in the case of PwSI	Dimensions of co-creation in museums in the case of PwSI					
	M1: CEDMA	M2: CTNPIM	M3: CWS	M4: CWNDT	M5: CEIA	M6: CWOVLC
	β	β	β	β	β	β
Antecedents related to visitors						
Experience of visitors with museums (number of museums previously visited)	-	-	-	-	-	-
Type of disability (visual = 0; hearing = 1)	0.146	0.215	-	-	-	-
Antecedents related to museums						
Inclusive museum staff behaviour (IMSB)	-	-	-	-	-	-
Information legibility and suitable lighting (ILSL)	-	0.439	0.456	-	-	-
Existence of interactive and electronic devices (EIED)	0.479	-	-	0.175	-	-
Physical barrier free access and wayfinding support (PBFAWS)	-	-	-0.146	0.163	-	-
Interpretation activities (IA)	-	-	-	-	0.267	-
Existence of guided tours and traditional non-personal interpretative means (EGTNPIM)	-	-	-0.129	-	-	-0.147
Opportunities for multisensory experiences (OMSE)	0.215	-0.154	-	-	-	-
Communication in different languages (CDL)	-	0.213	0.168	0.181	-	0.206
Model diagnostic						
N	254	254	254	254	254	254
R	0.611	0.605	0.488	0.349	0.267	0.210
R ²	0.373	0.366	0.238	0.122	0.071	0.044
Z-statistic (p-value)	49.640 (< 0.001)	35.882 (< 0.001)	19.469 (< 0.001)	11.530 (< 0.001)	19.366 (< 0.001)	5.790 (0.003)
Multicollinearity						
Tolerance (all variables)	>0.7	>0.5	>0.7	>0.8	>0.9	>0.8
VIF (all variables)	<1.4	<1.5	<1.4	<1.2	<1.1	<1.2

Note. **CEDMA** - Co-creation with electronic devices and multisensory activities; **CTNPIM** - Co-creation with traditional non-personal interpretative means, **CWS** - Co-creation with staff, **CWNDT** - Co-creation with new digital technologies, **CEIA** - Co-creation in events and interpretative activities and **CWOVLC** - Co-creation with other visitors and local community

Source: Own elaboration.

Subsequently, another set of **multiple linear regressions**, similar to those previously undertaken, was performed using the stepwise method, in which the dependent variable was each of the dimensions of co-creation in museums **in the case of PwSI**. The main difference was that, besides all the independent variables included in the previous regressions - the two dimensions of antecedents related to visitors (experience of visitors with museums and type of disability) and the eight dimensions of antecedents related to museums -, another independent variable related to the visitors was included in the regression - **the level of disability**. This variable was not included in the regressions previously presented since various PwSI did not report their level of disability when answering the questionnaire. This probably happens because not all people with sensory impairments have a certificate that assigns the disability level based on the International Classification of Functioning, Disability and Health (ICF). Probably, only those with a higher level of impairment have the previously mentioned certificate. All the assumptions were met, namely, normality, homoscedasticity, and independence of errors, as well as the lack of multicollinearity at the level of independent variables.

With the inclusion of the independent variable “level of disability”, the R^2 values increase a little, ranging from 0.049 to 0.427 (Table 7.10). The model regarding the factors influencing co-creating with electronic devices and multisensory activities (**CEDMA**) (M1) emerges as the model with the highest R^2 (above 0.427), followed by *co-creation with traditional non-personal interpretative means* (**CTNPIM**) (M2) (0.423). The constructs related to *co-creation with other visitors and local community* (**CWOVLC**) (M6) and *co-creation in events and interpretative activities* (**CEIA**) (M5) have the lowest R^2 (0.049 and 0.105).

Concerning the antecedents that influence the six dimensions of co-creation, the results provide important insights. Results reinforce the relevance of providing the majority of the antecedents (facilitators) related to museums in order to increase co-creation by PwSI presenting an incapacity according the ICF, since all of them, except *inclusive museum staff behaviour* (**IMSB**) and *existence of guided tours and traditional non-personal interpretative means* (**EGTNPIM**), had a significant positive impact in some dimension(s) of co-creation. It can be concluded that, concerning the **antecedents related to museums** that influence co-creation of experiences of PwSI, some changes happened in the regressions when the level of disability is included. With the inclusion of the variable level of disability it was possible to observe that those with a higher level of disability according the ICF - International Classification of Functioning, Disability and Health - are those presenting more

constraints on co creation with traditional non-personal interpretative means, since the independent variable “level of disability” has a significant negative influence on co-creation with traditional non-personal interpretative means (**CTNPIM**) ($\beta = -0.187$). Those who mentioned having a level of disability have less chance of *co-creating with traditional non-personal interpretative means (CTNPIM)* probably because they face more barriers to read these interpretative means or even to locate them, due to their high impairments (Table 7.10). According to the law (Decreto-Lei N°291/2009 Do Ministério Da Saúde, 2009), individuals with a level of disability that varies from 60% to 100% have access to the measures and benefits provided by law to facilitate their full participation in the community. Thus, the results suggest that those with a higher level of disability have more challenges to co-create with traditional non-personal interpretative means if they don't have external helps and need more strategies to better co-create and achieve positive outcomes after the visit. People with a high level of disability may face various constraints when trying to read a printed leaflet, brochure or guide, read the information panels, taking pictures at the museum or seeing the objects of the exhibition attentively, if museums do not provide different kinds of support. The higher is the level of disability, more needs and less independence exists (Darcy & Buhalis, 2011; WHO & The World Bank, 2011).

Another change is the significant negative impact of *existence of interactive and electronic devices (EIED)* in *co-creation with other visitors and local community* ($\beta = -0.167$), when inserting the level of disability. This suggests that the more interactive and electronic devices exist the less these visitors with higher levels of disability will tend to co-create with other visitors and with local community, probably because for them it will be easier to co-create with electronic devices than with both other visitors and with local community, if any other kind of supports are not provided.

In contrast to the previous multiple linear regressions, when inserting the level of disability, the physical barrier free access and wayfinding support doesn't have a significant impact in *co-creation with staff (CWS)*. This can be explained as visitors with a high level of disability usually travel with a companion, friend or/and with family (Daniels et al., 2005; Devile & Kastenholz, 2018; Yau et al., 2004), not need to interact so much with staff. Yau et al. (2004) mentioned that, very often, PwD prefer family and friends to be their traveling partners.

The existence of guided tours and traditional non-personal interpretative means (**EGTTNPIM**) has a negative impact in co-creation in events and interpretative activities (**CEIA**) ($\beta = -0.140$) and no significant impact on co-creation with other visitors and local

community (**CWOVLC**), in contrast to what happened in the previous multiple linear regression. This suggests that museums offering more guided tours, flyers, brochures or guides and information boards and panels, will have no impact of co-creation of these visitors with other visitors and local community, but will lead visitors to co-create less in events and interpretative activities. This last issue can eventually be explained by these visitors having more facility in reading traditional non-personal interpretative means and integrating in guided tours than in participating in events and interpretative activities, considering the support provided nowadays by the museums visited.

When inserting the level of disability, *opportunities for multisensory experiences* (**OMSE**), only have a positive impact on *co-creation with electronic devices and multisensory activities* (**CEDMA**) ($\beta = 0.276$), and not on *co-creating with traditional non-personal interpretative means* (**CTNPIM**), as previously happened. The results suggest that the more opportunities for multisensory experiences exist the more visitors will co-create with electronic devices and multisensory activities. These results reinforce the importance of multisensory activities for people with sensory impairments even presenting a level of disability according ICF.

Finally, another difference occurring when inserting the level of disability is the emergence of a negative impact of *communication in different languages* (**CDL**) on co-creation with electronic devices and multisensory activities (**CEDMA**). This can be explained by the fact that the more communication in different languages exists, the less these groups will co-create with electronic devices and multisensory activities as, when having different ways to communicate, this group may prefer to co-create with non-personal interpretative means, with staff, with new digital technologies and in the scope of interpretative activities. This can be especially true for PwHI when sign language is available.

The results in both cases, with or without the level of disability, provide important contributions to the scarce research existing concerning the antecedents that influence co-creation in museums for PwSI. The absence of studies examining the relationship between the antecedents and co-creation of experiences makes it difficult to compare and analyse the results more deeply (Table 7.10). Insights regarding theoretical and practical contributions will be presented in chapter 8.

Table 7.10. The impact of antecedents on co-creation of museums experiences in the case of PwSI (including the level of disability)

Antecedents influencing various dimensions of co-creation in museums in the case of PwSI	Dimensions of co-creation in museums in the case of PwSI					
	M1: CEDMA	M2: CTNPIM	M3: CWS	CWNDT	CEIA	CWOVLC
	β	β	β	β	β	β
Antecedents related to visitors						
Experience of visitors with museums (number of museums previously visited)	-	-	-	-	-	-
Type of disability (visual = 0; hearing = 1)	0.128	0.248	-	-	-	-
Level of disability	-	-0.187	-	-	-	-
Antecedents related to museums						
Inclusive museum staff behaviour (IMSB)	-	-	-	-	-	-
Information legibility and suitable lighting (ILSL)	-	0.343	0.480	-	-	-
Existence of interactive and electronic devices (EIED)	0.533	-	-	0.174	-	-0.167
Physical barrier free access and wayfinding support (PBFAWS)	-	-	-	0.187	-	-
Interpretation activities (IA)	-	-	-	-	0.333	-
Existence of guided tours and traditional non-personal interpretative means (EGTNPIM)	-	-	-0.172	-	-0.140	-
Opportunities for multisensory experiences (OMSE)	0.276	-	-	-	-	-
Communication in different languages (CDL)	-0.125	0.207	0.193	0.178	-	0.188
Model diagnostic						
N	199	199	199	199	199	199
R	0.438	0.435	0.506	0.375	0.325	0.22
R ²	0.427	0.423	0.256	0.141	0.105	0.049
Z statistic (p-value)	37.847 (< 0.001)	37.311 (< 0.001)	22.311 (< 0.001)	10.659 (< 0.001)	11.548 (< 0.001)	5.005 (< 0.008)
Multicollinearity						
Tolerance (all variables)	>0.6	>0.6	>0.6	>0.8	>0.8	>0.8
VIF (all variables)	<1.6	<1.7	<1.4	<1.3	<1.2	<1.0

Note. **CEDMA** - Co-creation with electronic devices and multisensory activities; **CTNPIM** - Co-creation with traditional non-personal interpretative means, **CWS** - Co-creation with staff, **CWNDT** - Co-creation with new digital technologies, **CEIA** - Co-creation in events and interpretative activities and **CWOVLC** - Co-creation with other visitors and local community

Source: Own elaboration.

7.6. Outcomes of co-creation of experiences in museums by PwSI

In this thesis, several outcomes of experiences in museums are analysed, namely perceived emotional, learning, and social value obtained with museum visits, satisfaction with the museum visit and loyalty towards the museum.

The findings presented in table 7.11 suggest that, regarding the whole sample, the respondents reported having obtained considerable learning and emotional **values** (means of 4.4 and 4.1, respectively, in a scale of 1 = totally disagree to 5 = totally agree), and a little fewer social value (2.8). The same pattern was observed in both PwSI and people without disabilities, although higher means were generally found for PwSI, suggesting that they obtained more social value from visiting museums.

The specific values most frequently obtained by participants were: *learnt new things from the visit* (4.5), *developed my knowledge* (4.5), *had fun* (4.3), *felt admiration* (4.3) and *became more interested in certain topics* (4.3), *felt joy* (4.3) and *became more motivated to learn* (4.2). In contrast, four items referring to obtaining acceptance and recognition by others - *felt more accepted by others*, *improved the way I am perceived by others*, *get more approval from other people* and *led to a better impression of me on other people* (with means between 2.2 and 2.4) - and *met other people* are the least obtained items (2.5).

Comparing PwSI and people without sensory impairments, **the values that PwSI most got** from the last visit to a museum were associated with the following items: *learnt new things from the visit* (4.7), *developed my knowledge* (4.6), *had fun* (4.6), *felt joy* (4.5), *became more interested in certain topics* (4.5), *became more motivated to learn* (4.4), *felt accompanied* (4.3) and *felt admiration* (4.3). **The values that people without sensory impairments most obtained** from the last visit to a museum were related to the following items: *developed my knowledge* (4.4), *learnt new things from the visit* (4.4), *felt admiration* (4.3), *had fun* (4.2) and *became more interested in certain topics* (4.2).

Visitors' satisfaction is one of the biggest museums' concerns. Globally, respondents reported a high level of satisfaction with their visit (the mean of all the factors varies from 4.5 to 4.6 in a 5-point Likert-type scale). *Visiting the museum was the right decision* and *worth visiting the museum* appeared as the factors with the highest mean (4.6) followed by *satisfied with the visit in general* with a mean of 4.5. Comparing PwSI and people without

sensory impairments, the first recognized more satisfaction after the visit. For PwSI, findings reveal that *visiting the museum was the right decision* and *worth visiting the museum*, present the highest mean (4.8) while for people without sensory impairments the mean is, respectively, 4.5 and 4.6. *Satisfaction with the visit in general* varies from 4.7 for PwSI to 4.4 for people without sensory impairments.

Concerning **loyalty**, results reveal that positive outcomes lead to loyalty. The intention to *recommend the visit* as well as *encourage other people to visit the museum* present the highest mean for the generality of the participants with a mean varying from 4.7 to 4.6. Here too, the results confirm that PwSI will recommend and encourage other people to visit the museum more than people without sensory impairments (Table 7.12).

The global sample perceived obtaining considerable emotional and learning value with the last museum visit, since participants reported a level of agreement higher than 4.0 (in a scale from 1- “totally disagree” to 5 = “totally agree”) in terms of these two values (Table 7.12). However, it may be observed that social value is the least perceived value. Participants also highlighted the learning and emotional values in the open-ended questions concerning the most positive and the worst aspects of the last museum visit. In this context, various participants sometimes referred both knowledge and entertainment as one of the most positive aspects of the visit, as may be observed in the following answers: “Knowledge and fun. [...] A day well spent and with added value” (questionnaire 21); “Deepen my knowledge on the subject” (questionnaire 252); “The knowledge acquired about the objects presented in the exhibition” (questionnaire 536). These results corroborate some research that highlight the importance of learning and education in museum context (Chang, 2006; Falk & Dierking, 2016b; Hooper-Greenhill, 2004; Kelly, 2007) and some literature which advocates the educational role of museums (e.g. Ambrose & Paine, 2018; Black, 2005, 2012; Falk & Dierking, 2016b). Black (2005, 2012) reveals the importance of providing opportunities for learning as a core function for museums. According to Ambrose and Paine (2018), museums are special places, where people can find a “free-choice learning”. Learning presents characteristics, people learn in their own way. When analysing differences between PwSI and people without sensory impairments it seems that there is not a big difference in the results achieved in both groups. Regarding values, for both the learning value is the most important outcome followed by the emotional value. However, when analysing results in detail we can perceived that some differences exist between the two studied groups. In almost all the items concerning values, satisfaction and loyalty, PwSI perceive higher outcomes. Nevertheless, impacts of having a sensory impairment on

obtaining values with the museum visit will be tested in section 7.7. In that section it will be examined whether having a sensory impairment has a significant impact on obtaining values in museum visits.

Table 7.11. Perceived values as consequences of co-creation by PwSI

	Total			PwSI			People without sensory impairments		
	N	Mean	Standard error	N	Mean	Standard error	N	Mean	Standard error
Emtional value	675	4.1	0.885	254	4.2	0.712	421	4.0	0.963
Felt joy	675	4.3	0.986	254	4.5	0.736	421	4.1	1.076
Felt admiration	675	4.3	0.952	254	4.3	0.853	421	4.3	1.008
Felt proud	675	3.9	1.197	254	4.0	0.949	421	3.8	1.316
Felt confidence	675	3.8	1.154	254	4.0	0.962	421	3.7	1.239
Had fun	675	4.3	0.930	254	4.6	0.666	421	4.2	1.035
Learning value	675	4.4	0.793	254	4.5	0.586	421	4.3	0.883
Learnt new things from the visit	675	4.5	0.823	254	4.7	0.548	421	4.4	0.932
Became more interested in certain topics	675	4.3	0.968	254	4.5	0.748	421	4.2	1.063
Developed my knowledge	675	4.5	0.848	254	4.6	0.682	421	4.4	0.931
Social value	675	2.8	1.427	254	3.6	1.260	421	2.3	1.310
Met other people	675	2.5	1.572	254	3.4	1.479	421	2.0	1.383
Felt accompanied	674	3.6	1.463	253	4.3	0.937	421	3.2	1.564
Socialised with other people	675	3.1	1.560	254	3.8	1.308	421	2.6	1.550
Aspects of value not included in any latent variable of the model tested									
Felt well-being	675	4.1	0.995	254	4.1	0.887	421	4.1	1.055
Relieved stress and tension	675	3.8	1.134	254	3.5	0.914	421	3.9	1.225
Felt more fulfilled	675	4.0	1.179	254	4.1	1.132	421	4.0	1.207
Became more motivated to learn	674	4.2	1.024	253	4.4	0.893	421	4.1	1.088
Felt more accepted by others	675	2.4	1.396	254	3.1	1.222	421	2.0	1.351
Improved the way I am perceived by others	675	2.3	1.303	254	2.7	1.084	421	2.0	1.365
Get more approval from other people	675	2.2	1.264	254	2.5	1.073	421	2.0	1.319
Led to a better impression of me on other people	675	2.2	1.292	254	2.5	1.088	421	2.1	1.374

Source: Own elaboration.

Table 7.12. Satisfaction and loyalty as consequences of co-creation by PwSI

	Total			PwSI			People without sensory impairments		
	N	Mean	Standard error	N	Mean	Standard error	N	Mean	Standard error
Satisfaction	675	4.6	0.760	254	4.7	0.581	421	4.5	0.837
Visiting the museum was the right decision	675	4.6	0.790	254	4.8	0.597	421	4.5	0.874
Satisfied with the visit in general	673	4.5	0.861	252	4.7	0.648	421	4.4	0.951
Worth visiting the museum	675	4.6	0.776	254	4.8	0.598	421	4.6	0.857
Loyalty	675	4.5	0.820	254	4.6	0.632	421	4.4	0.905
Recommend the museum to other people	675	4.7	0.777	254	4.8	0.504	421	4.6	0.889
Encourage other people to visit the museum	675	4.6	0.797	254	4.8	0.577	421	4.5	0.893
Returning to the museum	675	4.2	1.208	254	4.3	1.084	421	4.1	1.274

Source: Own elaboration.

To validate the hypotheses and test the model proposed in this thesis (presented in section 4.4) concerning the co-creation of experiences in museums by PwSI, SEM was used, with the **Partial Least Squares – Path Modeling (PLS-PM) method**, employing the statistical software SmartPLS 3 (Ringle et al., 2015). The evaluation of the structural equation model was carried out in two stages, as suggested by Hair et al. (2014): (i) the validation of the measurement model (outer model) and (ii) of the structural model (inner model).

In the bootstrapping analysis, the most recommended option was chosen, with the number of cases equal to the number of valid observations and 5000 samples, since a greater number of bootstrapping samples reduces the effect of random sampling errors (Hair et al., 2017).

7.6.1. Measurement model

In the first phase, the measurement model (the relation between latent variables and their associated items) was validated considering the internal consistency, convergent validity and discriminant validity of the constructs (Hair et al., 2019). The measurement model in this study is of the reflective type and includes eleven reflective latent variables (LVs). Six of them are dimensions of co-creation (previously presented in section 7.4), three regard perceived value (emotional, learning, and social), one represents satisfaction with the visit experience, and the other corresponds to loyalty intentions.

Emotional value, learning value and social value represent the three dimensions of perceived value, considered in the study, as outcomes of the visit. As far as the composition of these dimensions is concerned, it may be observed that: (i) *emotional value (EV)* is related to joy, admiration, proud, confidence, and fun; (ii) *learning value (LV)* is associated with learning new things from the visit, becoming more interested in certain topics, expanding knowledge; and (iii) *social value (SV)* is related to meeting other people, feeling accompanied and socializing with people. Overall satisfaction was studied as another outcome of the visit experience and was measured through three items related to the decision to visit the museum, satisfaction with the visit and if it was worth visiting the museum. Loyalty (future behaviour intentions) was assessed encompassing three items related to the intention to recommend the museum, encourage other people to visit the museum and the intention to visit the museum again. The items for representing each of the dimensions of value, satisfaction and loyalty were identified based on the literature

reviewed in section 4.3, as already explained when presenting the methodology of the empirical study.

The reliability of the constructs was assessed through the loadings of the items and the composite reliability (CR) coefficients. Some items, with low loadings, regarding emotional value (“felt well-being”, “relieved stress and tension”, “felt more fulfilled”), learning value (“became more motivated to learn”) and social value (“felt more accepted by others”, “improved the way I am perceived by others”, “get more approval from other people” and “led to a better impression of me on other people”) were removed from further analysis as, in the prior estimation of the PLS model, the respective constructs did not meet the requirements of internal consistency and convergent validity. Then, the requirement regarding the item reliability was fulfilled since all loadings range from 0.586 to 0.974 (Table 7.13). According to Hair et al. (2019, p. 775) “values between 0.60 and 0.70 are acceptable in exploratory research” whereas results between 0.70 and 0.95 represent “satisfactory to good” reliability levels. Moreover, the internal consistency reliability was confirmed, given that all the CR coefficients are between 0.830 and 0.963, clearly above the cut-off of 0.7 (Table 7.13). Concerning the validity assessment, the average variance extracted (AVE) values attested a suitable convergent validity of the scales used, since the AVE values vary from 0.556 to 0.897, all being higher than 0.50. Also, discriminant validity was checked and confirmed, fulfilling the most demanding HTMT_{0.85} criterion (Table 7.14).

Table 7.13. Measurement model assessment (continues)

Construts	Mean	Standard deviation	Item loading	<i>t</i> value ^{a)}	CR	AVE
Co-creation with electronic devices and multisensory activities (CEDMA)					0.859	0.556
Had experiences that appealed to multiple senses	3.2	1.441	0.586	8.193		
Used electronic devices from the museum (e.g., computers)	3.0	1.673	0.888	43.702		
Carried out online activities related to the museum (e.g., information search, games)	2.3	1.569	0.671	11.959		
Used interactive panels	2.8	1.543	0.869	33.589		
Participated in activities	3.4	1.440	0.667	12.051		
Co-creation with traditional non-personal interpretative means (CTNPIM)					0.869	0.628
Saw the objects of the exhibition attentively	4.5	0.890	0.813	9.652		
Read the information panels	3.8	1.412	0.890	15.916		
Read a printed leaflet, brochure or guide	3.5	1.497	0.829	10.749		
Took pictures at the museum	3.1	1.472	0.612	5.375		
Co-creation with staff (CWS)					0.919	0.791
Interacted with staff	4.0	1.200	0.883	26.634		
Asked staff for help	3.5	1.341	0.897	21.232		
Obtained information from staff	3.7	1.278	0.888	25.301		
Co-creation with new digital technologies (CWNDDT)					0.844	0.647
Used mobile / digital apps	1.9	1.344	0.813	4.277		
Used social media	1.8	1.254	0.655	3.382		
Used augmented reality or virtual reality	1.5	1.111	0.923	6.014		
Co-creation in events and interpretative activities (CEIA)					0.830	0.623
Saw demonstrations (e.g., seeing someone doing a craft, an experimen	1.8	1.273	0.931	3.188		
Heard stories	2.5	1.430	0.662	1.875		
Attended an event / show	1.7	1.179	0.752	2.920		

Table 7.13. - Measurement model assessment (continuation)

Construts	Mean	Standard deviation	Item loading	t value ^{a)}	CR	AVE
Co-creation with other visitors and local community (CWOVLC)					0.872	0.775
Interacted with other visitors	2.4	1.490	0.974	15.858		
Interacted with the local community	1.9	1.341	0.776	7.197		
Emotional value (EV)					0.873	0.580
Felt joy	4.5	0.734	0.804	20.818		
Felt admiration	4.3	0.851	0.769	16.261		
Felt proud	4.0	0.947	0.812	20.624		
Felt confidence	4.0	0.960	0.786	16.004		
Had fun	4.6	0.665	0.622	8.800		
Learning value (LV)					0.892	0.733
Leamt new things from the visit	4.7	0.547	0.879	46.416		
Became more interested in certain topics	4.5	0.746	0.825	18.195		
Developed my knowledge	4.6	0.680	0.864	22.111		
Social value (SV)					0.849	0.657
Met other people	3.4	1.476	0.875	10.446		
Felt accompanied	4.3	0.935	0.627	3.434		
Socialised with other people	3.8	1.305	0.902	11.575		
Satisfaction					0.963	0.897
Visiting the museum was the right decision	4.8	0.596	0.940	59.852		
Satisfied with the visit in general	4.7	0.647	0.951	65.228		
Worth visiting the museum	4.8	0.596	0.950	62.045		
Loyalty					0.911	0.776
Recommend the museum to other people	4.8	0.503	0.932	31.913		
Encourage other people to visit the museum	4.8	0.576	0.946	60.168		
Returning to the museum	4.3	1.082	0.752	14.776		
Notes. CR: composite reliability; AVE: average variance extracted; ^{a)} t-values were obtained through the bootstrapping procedure (5000 samples) and loadings are significant at 0.01 level (two-tailed test).						

Source: Own elaboration.

Table 7.14. Discriminant validity of the construct - Heterotrait-Monotrait Ratio (HTMT)

Construts	1	2	3	4	5	6	7	8	9	10	11
1. Co-creation with electronic devices and multisensory activities											
2. Co-creation with traditional non-personal interpretative mear	0.249										
3. Co-creation with staff	0.354	0.169									
4. Co-creation with new digital technologies	0.677	0.228	0.287								
5. Co-creation in events and interpretative activities	0.573	0.178	0.329	0.568							
6. Co-creation with other visitors and local community	0.386	0.124	0.409	0.482	0.621						
7. Emotional value	0.356	0.352	0.349	0.224	0.240	0.198					
8. Learning Value	0.347	0.338	0.280	0.160	0.205	0.099	0.692				
9. Social Value	0.444	0.138	0.476	0.253	0.372	0.557	0.508	0.390			
10. Satisfaction	0.272	0.393	0.250	0.101	0.102	0.100	0.734	0.683	0.361		
11. Loyalty	0.204	0.307	0.213	0.079	0.074	0.095	0.714	0.639	0.346	0.832	

Source: Own elaboration.

7.6.2. Structural model

In the second phase, the analysis of the **structural model**, was performed. The structural model allows measuring the relevance and significance of the relationships between latent variables and, thus, testing the hypotheses that predict direct effects on the endogenous variables. Figure 7.5 presents the structural model.

To avoid biasing the structural coefficients, the structural model must be first analysed in terms of **multicollinearity**. **Multicollinearity** among all the constructs **was checked with the variance inflation factor (VIF)**. It was found that the multicollinearity is not a problem in the study since all VIF are below 5, varying from 1.274 and 1.334.

The validation of hypothesis was possible by verifying if the structural coefficient presents the expected sign and a significant t value at the level of 0.05. The bootstrapping technique is applied for determining the statistical significance. The coefficients of determination (R^2), the most commonly used measure to evaluate the structural model is a measure of the model's predictive power and is calculated as the squared correlation between a specific endogenous construct's actual and predicted values. The R^2 value range from 0 to 1, with higher levels indicating higher levels of predictive accuracy (Vinzi et al., 2010). The acceptable value of R^2 varies according to the research context.

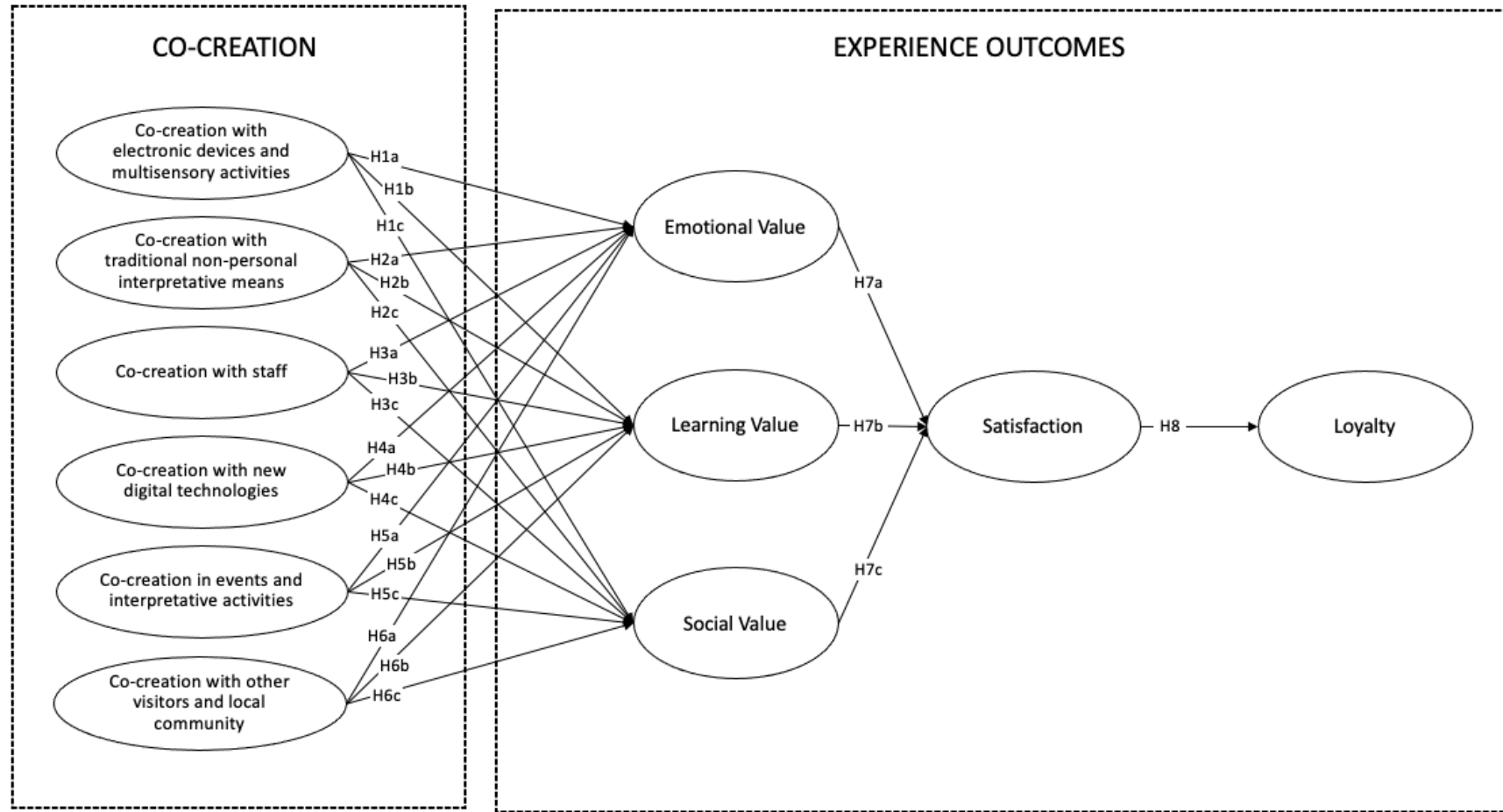


Figure 7.5. Structural model proposed

Source: Own elaboration

In the present study, the coefficient of determination (R^2) accounts for a reasonable predictive power of the research model proposed, with all R^2 values exceeding 0.1 and varying between 0.114 and 0.547. The constructs with highest variance explained by the model are loyalty ($R^2 = 0.547$) and satisfaction ($R^2 = 0.301$). Consequently, the R^2 coefficients indicate that especially loyalty and satisfaction are appropriately explained by the influencing constructs.

Ten of the 22 hypotheses under analysis were supported (Table 7.15). The model presenting the results of hypothesis testing is presented in figure 7.6.

Regarding hypotheses H1a to H1c, *co-creation with electronic devices and multisensory activities (CEDMA)* reveals a significant positive influence on *emotional value* ($\beta = 0.208$, $p < 0.01$) and on *learning value* ($\beta = 0.248$, $p < 0.001$).

Results reveal the importance of electronic devices and multisensory activities in creating emotional value and in apporating knowledge to visitors. These findings are in line with Accentuate and History Place (2018), which stated that technology can help PwD to engage in activities. Electronic devices have a very strong influence on involving visitors intellectually and emotionally in an engaging experience (Taheri, 2011). The importance of using electronic devices like interactive panels to allow involvement with objects leading to emotional benefits is referred by some authors (Asakawa et al., 2018; Vaz et al., 2018). Carrying on online activities to provide information and digital experiences on the museum website is particularly important to improve knowledge in the museum (Black, 2012; Cock et al., 2018). The importance of multisensory experiences in the creation of emotional and learning value is also supported by the results, which are in line with studies provided by Falk and Dierking (2016b), Hetherington (2002, 2015), Asakawa et al. (2018) and Udo and Fels (2010). On the other hand, in contrast to what was hypothesised, *co-creation with electronic devices and multisensory activities (CEDMA)* does not reveal a significant positive influence on social value.

Amongst hypotheses H2a to H2c, *co-creation with traditional non-personal interpretative means (CTNPIM)* reveals a significant positive influence on *emotional value* ($\beta = 0.130$, $p < 0.05$) and on *learning value* ($\beta = 0.126$, $p < 0.05$). These results reveal the importance of allowing visitors to engage actively with the exhibition, throughout the museum, deciding how to use the experience space in their own way (Minkiewicz et al., 2014). By taking pictures, as stated by Minkiewicz et al. (2014), visitors can co-create with the exhibition. Co-

creation can also take place when visitors read printed material, read information panels and labels and this may change the way visitors co-create their experiences (Ambrose & Paine, 2018; Hillis, 2005; Rnib et Vocaleyes, 2003). The study corroborates and expands findings of previous studies, which indicate that co-creation can have positive outcomes such as emotions and learning values (Nowacki, 2005; Nowacki & Kruczek, 2021; Tung & Ritchie, 2011) that revealed the relationship between the co-creation of experiences and emotions. According to Nowacki and Kruczek (2021), emotions have an influence on all dimensions of experiences. Tung and Ritchie (2011) highlighted the importance of emotions in memory. The study also suggested the association between mindfulness and learning. Studies suggest that there is a close relationship between learning and entertainment (Andre, Durksen, et al., 2017; Falk & Dierking, 2016b). Here too, co-creation with non-personal interpretative means does not have a significant influence on social value.

With regard to hypotheses H3a to H3c, *co-creation with the staff (CWS)* reveals a positive impact on *emotional value* ($\beta = 0.143$, $p < 0.05$) and on *learning value* ($\beta = 0.204$, $p < 0.001$). Findings are in line with some studies where the interaction with staff is referred as contributing to a higher interaction between participants and the museum, improving knowledge and obtaining positive outcomes of the experience (Accentuate & History Place, 2018; Ambrose & Paine, 2018; Black, 2005; H. Chen & Rahman, 2018; Mesquita & Carneiro, 2016; Small et al., 2012). The results reveal that *co-creation with staff (CWS)* has a greater contribution to increase the learning value than to create emotions. Findings suggest that staff can help visitors to learn by answering questions or providing information (Antón et al., 2018; Taheri, 2011). Co-creation with the staff does not have a significant influence on social value.

In turn, concerning hypotheses H4a to H4c, *co-creation with new digital technologies (CWNDT)* does not reveal a significant impact on *emotional, learning, or social values*. Taken together H5a to H5c, *co-creation in events and interpretative activities (CEIA)* also does not reveal a significant impact on emotional, learning, or social value. This may happen because new digital technologies, together with new forms of interaction like demonstrations, storytelling and/or events, are still scarce in most of the museums visited. Despite the results, it is important, however, to retain the information obtained from the literature review. According to Antón et al. (2017) and Minkiewicz et al. (2014), the involvement and participation of visitors in museums' activities are essential to co-create experiences. This active participation can happen when implementing several different strategies; demonstrations, storytelling, participation in workshops or even special events

(Accentuate & History Place, 2018). Digital technologies are also referred as an important way to improve the visitors' experiences (Asakawa et al., 2019, 2018).

In turn, amongst hypotheses H6a to H6c, two significant impacts were found. On one hand, *co-creation with other visitors and local community (CWOVLC)* shows a considerable higher positive impact on *social value* ($\beta = 0.277$, $p < 0.01$) confirming H6c. Results corroborate the study of Accentuate and History Place (2018) and Minkiewicz et al. (2016), which highlights the importance of involving both visitors with and without disabilities in activities and of involving the community in co-creation. On the other hand, *co-creation with other visitors and local community (CWOVLC)* has a negative impact on *learning value* (-0.170 , $p < 0.01$), which is in opposition to the positive impact hypothesised. The possibility to share knowledge among a minority and marginalised community was referred in different studies (Accentuate & History Place, 2018). However, the results indicate the opposite. This might have happened because museums do not provide a regular contact between different publics, with different needs, which limits variability of social value and the opportunities of co-creation with these groups of people. This result highlights the importance of socialisation between PwSI and other people and of meeting other visitors during the visit.

With regard to H7a to H7b, *emotional value* shows a significant impact on *satisfaction* ($\beta = 0.367$, $p < 0.01$) as well as *learning value* ($\beta = 0.265$, $p < 0.01$). Results confirm the importance of emotional value in the museum context as stated by different authors (Belver et al., 2018; Kinsey et al., 2019). According to Falk and Dierking (2016b) museums must improve emotional involvement so that visitors feel satisfaction during visits, revealing that this is the value with the highest impact on satisfaction. In the same line of ideas, since museums are cultural institutions, people seek lifelong learning experiences during their visits. Thus, it is expected that learning outcomes have a significant influence on satisfaction. Contrarily, regarding H7c, social value does not present a significant impact on satisfaction. This comes in opposition to literature review, where in which satisfaction is said to be an outcome of social value. This result may be due to social context and socialization, being not yet well used and explored in museums. Hence, visits for PwSI usually have to be pre-booked and restricted to the visiting group. More visits that mix different audiences can, thus, be an asset to increase the influence of the social context on satisfaction.

Regarding the last hypothesis - H8 -, *satisfaction* presents a high influence on *loyalty* ($\beta = 0.740$; $p < 0.001$). Loyalty as a behavioural measure refers to the concept of repeat patronage as stated by Chin-Fu Chen and Fu-Shian Chen (2010). Results show that

satisfaction can lead to the intention to visit again in the future, which is in accordance with previous research on PwD (Devile & Kastenholz, 2018).

With 10 of the 22 hypotheses confirmed, findings are considered relevant, especially considering the innovative character of the present research (Table 7.15).

Although co-creation does not have a very high impact on the emotional, learning and social value under analysis, it is important to highlight that some types of co-creation have a significant impact on some of these, meaning that they contribute to the different dimensions of perceived value. This adds insights to previous research, where these effects had not been tested yet. The fact that this impact is not homogeneous and not significant in all of these relationships is probably because the perceived value in museums is also influenced by other aspects than co-creation, such as the type of objects in museums and the visitors' own motivations, among other antecedents that were not considered in this study as they are not the focus of this thesis.

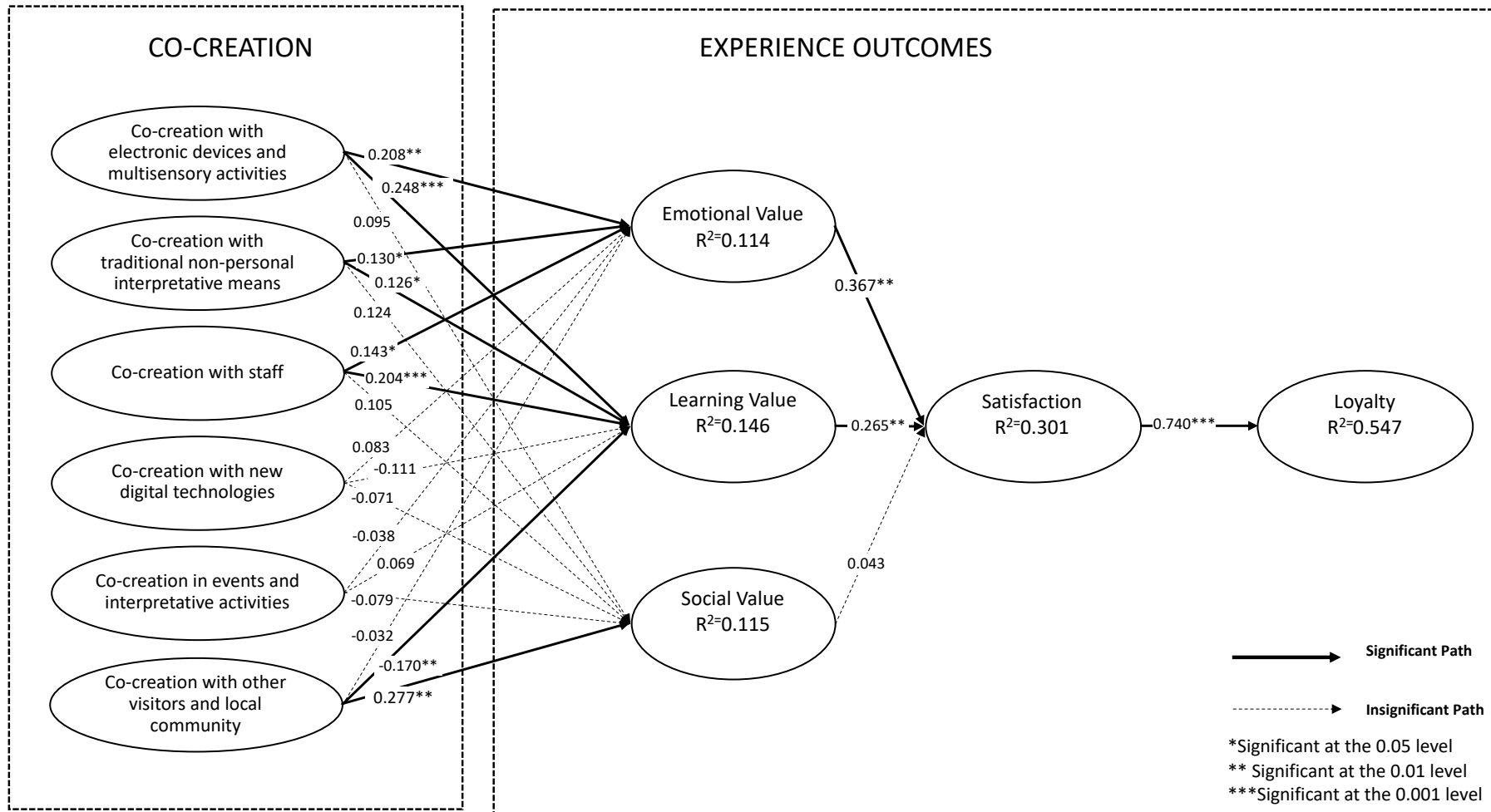


Figure 7.6. Results of hypotheses testing

Source: Own elaboration

Table 7.15. Hypotheses testing

	Hypotheses	Path Coefficient	t-value ^{a)}	p value	Support
H1a	Co-creation with electronic devices and multisensory activities -> EV	0.208	3.219	0.001	Yes
H1b	Co-creation with electronic devices and multisensory activities-> LV	0.248	3.936	0.000	Yes
H1c	Co-creation with electronic devices and multisensory activities-> SV	0.095	1.236	0.216	No
H2a	Co-creation with traditional non-personal interpretative means -> EV	0.130	1.997	0.046	Yes
H2b	Co-creation with traditional non-personal interpretative means-> LV	0.126	2.169	0.030	Yes
H2c	Co-creation with traditional non-personal interpretative means-> SV	0.124	1.738	0.082	No
H3a	Co-creation with staff-> EV	0.143	2.117	0.034	Yes
H3b	Co-creation with staff -> LV	0.204	3.531	0.000	Yes
H3c	Co-creation with staff -> SV	0.105	1.608	0.108	No
H4a	Co-creation with new digital technologies-> EV	0.083	0.998	0.318	No
H4b	Co-creation with new digital technologies-> LV	-0.111	1.470	0.142	No
H4c	Co-creation with new digital technologies-> SV	-0.071	0.811	0.417	No
H5a	Co-creation in events and interpretative activities -> EV	-0.038	0.418	0.676	No
H5b	Co-creation in events and interpretative activities -> LV	0.069	0.932	0.351	No
H5c	Co-creation in events and interpretative activities-> SV	-0.079	0.882	0.378	No
H6a	Co-creation with other visitors and local community -> EV	-0.032	0.385	0.701	No
H6b	Co-creation with other visitors and local community -> LV	-0.170	2.795	0.005	No (different sign)
H6c	Co-creation with other visitors and local community -> SV	0.277	2.91	0.004	Yes
H7a	EV -> Satisfaction	0.367	3.223	0.001	Yes
H7b	LV -> Satisfaction	0.265	2.585	0.01	Yes
H7c	SV -> Satisfaction	0.043	0.600	0.549	No
H8	Satisfaction-> Loyalty	0.740	11.178	0.000	Yes
^a t-values were obtained with the bootstrapping procedure (5000 samples)					

Note. EV = Emotional value, LV = Learning value, SV = Social value

Source: Own elaboration.

As it may be observed (Table 7.16), results reveal that the **highest direct effects** are those of *satisfaction* on *loyalty* ($\beta = 0.740$, $p < 0.001$), of *emotional value (EV)* on *satisfaction* ($\beta = 0.367$, $p < 0.01$), of *co-creation with other visitors and local community (CWOVLC)* on *social value (SV)* ($\beta = 0.277$, $p < 0.01$), of *learning value (LV)* on *satisfaction* ($\beta = 0.265$, $p < 0.01$) and of *co-creation with electronic devices and non-personal interpretative means (CEDMA)* on *learning value (LV)* ($\beta = 0.248$, $p < 0.001$).

Table 7.16 also shows the indirect effects and total effects (direct plus indirect effects) between constructs. Indirect effects are those that do not result from direct linear relationships, with other intervening construct(s) involved, but also impact endogenous constructs (Hair et al., 2017). The **highest indirect effects** are those of *emotional value (EV)* on *loyalty* ($\beta = 0.271$, $p < 0.01$), of *learning value* on *loyalty* ($\beta = 0.196$, $p < 0.01$), of *co-creation with electronic devices and multisensory activities (CEDMA)* on *satisfaction* ($\beta = 0.146$, $p < 0.01$) and *loyalty* ($\beta = 0.108$, $p < 0.001$), and of *co-creation with staff (CWS)* on *satisfaction* ($\beta = 0.111$, $p < 0.01$). Taking into consideration the **total effects**, the highest ones correspond to the situations of the highest direct effects mentioned before and to the indirect effect of *emotional value* on *loyalty*. *Co-creation with new digital technologies (CWNDT)*, *co-creation in events and interpretative activities (CEIA)* and *co-creation with other visitors and local community (CWOVLC)* do not have an indirect influence on *satisfaction* and *loyalty*. *Social value (SV)* also does not have an indirect effect on *loyalty*.

These findings reveal the direct influence of *satisfaction* on *loyalty* (0.740) which corroborates studies that refer, in the tourism field, the influence that satisfaction has on loyalty (Antón et al., 2017; Grisseemann & Stokburger-Sauer, 2012) particularly in museums (Asakawa et al., 2019; Nowacki & Kruczek, 2021). It is also suggested, by the present study, that *emotions* have a key influence on *satisfaction*, which was suggested by some researchers (e.g., De Rojas & Camarero, 2008; Nowacki & Kruczek, 2021; Taheri, 2011). Findings also corroborate the idea that *co-creation with the local community* can have an important effect in the *social value*. This is in line with the authors that highlight the importance of local community on the involvement of different publics (Accentuate & History Place, 2018; Simon, 2010). Another important finding is the impact of *co-creation with electronic devices and multisensory activities* on *learning value*. Many authors mentioned the importance of technology (Accentuate et al., 2018; Meliones & Sampson, 2018) and multisensory activities (Agapito et al., 2012; Candlin, 2008; Kusayama, 2005; Taheri, 2011) in engaging general public. Nevertheless, although the studies previously mentioned

already highlighted the impact of some aspects related to co-creation on generating positive outcomes and identified the important effects that could exist among some of these co-creation outcomes in the scope of tourism, the present thesis shows that these kinds of impacts can be found in museums, in the context of co-creation by PwSI. Furthermore, the present study provides an extensive overview on the impacts of co-creation by PwSI in museums on values, satisfaction, and loyalty. Considering these results, it is important for museums to foster initiatives that lead to satisfaction, as this leads to the intention to recommend and revisit the place. According to the findings it is important that museums continue to promote certain types of co-creation already existent in these cultural spaces such as *co-creation with electronic devices and multisensory activities*, *co-creation with traditional non-personal interpretative means* and *co-creation with staff*. Multisensory experiences together with interactive panels and electronic devices and active participation in activities are of great importance in co-creation. The existence of traditional non-personal interpretative means in different formats and accessible to different publics is also important in co-creation and, finally, training staff to know how to deal with public with different requirements is also highly important according to the study.

Results also highlight the importance of investing in new types of co-creation that can promote co-creation among different publics. The study reveals the importance of new digital technologies like virtual and augmented reality as well as digital apps and social media to co-create in museums. Another important aspect is related with events and interpretative activities like workshops, demonstrations, and storytelling. Museums should also encourage the socialization among all the visitors independently of their condition. The participation of the local community in co-creation should also be encouraged.

Different types of co-creation can lead to positive outcomes which result in satisfied visitors that will recommended or revisit the museum.

Table 7.16. Direct, indirect, and total effects in the model concerning outcomes of co-creation by PwSI (continues)

Path	Direct	Indirect	Total		
			Coefficient	t-value ^{a)}	p value
Co-creation with electronic devices and multisensory activities -> EV	0.208**		0.208**	3.219	0.001
Co-creation with electronic devices and multisensory activities-> LV	0.248***		0.248***	3.936	0.000
Co-creation with electronic devices and multisensory activities-> SV	0.095		0.095	1.236	0.216
Co-creation with electronic devices and multisensory activities-> Satisfaction		0.146***	0.146***	4.159	0.000
Co-creation with electronic devices and multisensory activities -> Loyalty		0.108***	0.108***	4.087	0.000
Co-creation with traditional non-personal interpretative means -> EV	0.130*		0.130*	1.997	0.046
Co-creation with traditional non-personal interpretative means-> LV	0.126*		0.126*	2.169	0.030
Co-creation with traditional non-personal interpretative means-> SV	0.124		0.124	1.738	0.082
Co-creation with traditional non-personal interpretative means -> Satisfaction		0.086**	0.086**	2.594	0.010
Co-creation with traditional non-personal interpretative means -> Loyalty		0.064*	0.064*	2.526	0.012
Co-creation with staff-> EV	0.143*		0.143*	2.117	0.034
Co-creation with staff-> LV	0.204***		0.204***	3.531	0.000
Co-creation with staff -> SV	0.105		0.105	1.608	0.108
Co-creation with staff-> Satisfaction		0.111**	0.111**	2.822	0.005
Co-creation with staff -> Loyalty		0.082**	0.082**	2.770	0.006
Co-creation with new digital technologies-> EV	0.083		0.083	0.998	0.318
Co-creation with new digital technologies-> LV	-0.111		-0.111	1.470	0.142
Co-creation with new digital technologies -> SV	-0.071		-0.071	0.811	0.417
Co-creation with new digital technologies-> Satisfaction		-0.002	-0.002	0.043	0.966
Co-creation with new digital technologies-> Loyalty		-0.002	-0.002	0.043	0.966

Table 7.16. Direct, indirect, and total effects in the model concerning outcomes of co-creation by PwSI (continuation)

Path	Direct	Indirect	Total		
			Coefficient	t-value ^{a)}	p value
Co-creation in events and interpretative activities -> EV	-0.038		-0.038	0.418	0.676
Co-creation in events and interpretative activities -> LV	0.069		0.069	0.932	0.351
Co-creation in events and interpretative activities -> SV	-0.079		-0.079	0.882	0.378
Co-creation in events and interpretative activities -> Satisfaction		0.001	0.001	0.027	0.979
Co-creation in events and interpretative activities -> Loyalty		0.001	0.001	0.026	0.979
Co-creation with other visitors and local community -> EV	-0.032		-0.032	0.385	0.701
Co-creation with other visitors and local community -> LV	-0,170**		-0,170**	2.795	0.005
Co-creation with other visitors and local community -> SV	0.277**		0.277**	2.910	0.004
Co-creation with other visitors and local community -> Satisfaction		-0.045	-0.045	1.099	0.272
Co-creation with other visitors and local community -> Loyalty		-0.033	-0.033	1.084	0.278
EV -> Satisfaction	0.367**		0.367**	3.223	0.001
EV -> Loyalty		0.271**	0.271**	2.872	0.004
LV-> Satisfaction	0.265**		0.265**	2.585	0.010
LV -> Loyalty		0.196**	0.196**	2.739	0.006
SV -> Satisfaction	0.043		0.043	0.600	0.549
SV -> Loyalty		0.032	0.032	0.609	0.542
Satisfaction-> Loyalty	0.740***		0.740***	11.178	0.000

^a t-values were obtained with the bootstrapping procedure (5000 samples)

Note. Note. EV = Emotional value, LV = Learning value, SV = Social value,

* Significant at the 0.05 level, ** Significant at the 0.01 level, *** Significant at the 0.001 level

Source: Own elaboration.

7.7. Outcomes of co-creation of experiences in museums by PwSI and other visitors

In this section, after testing the research model presented in section 4.4 with PwSI, it was decided to test the same model also encompassing people without impairments, while adding the impact of having or not a sensory impairment. With that purpose, a dummy variable regarding sensory impairment condition was incorporated. Nonmetric data is transformed through dummy variable where 1 is assigned as not having any impairment and 2 as having a sensory impairment. The sample presented in this study covers both PwSI and people without disabilities (n = 675).

7.7.1. Measurement model

Results of the **measurement model** assessment confirm the validity of the same co-creation dimensions previously presented – (i) *Co-creation with electronic devices and multisensory activities (CEDMA)*, (ii) *Co-creation with traditional non-personal interpretative means (CTNPIM)*, (iii) *Co-creation with staff (CWS)*, (iv) *Co-creation with new digital technologies (CWNDDT)*, (v) *Co-creation in events and interpretative activities (CEIA)*, (vi) *Co-creation with other visitors and local community (CWOVLC)*, and the same outcomes *emotional value (EV)*, *learning value (LV)*, *social value (SV)*, *satisfaction* and *loyalty*.

All the CR values are between 0.827 and 1.000, clearly above the cut-off of 0.7. The average variance extracted (AVE) values vary from 0.554 and 1.000, which shows the suitable convergent validity of the scales used (Table 7.17). Also, discriminant validity was checked, fulfilling the HTMT_{0.85} criterion (Table 7.18).

Table 7.17. Measurement model assessment among PwSI and people without sensory impairments (continues)

Construts	Mean	Standard deviation	Item loading	t value ^{a)}	CR	AVE
Having a sensory impairment (dummy variable)	n.a.	n.a.	n.a.	n.a.	1.000	1.000
Co-creation with electronic devices and multisensory activities (CEDMA)					0.876	0.590
Had experiences that appealed to multiple senses	3.2	1.480	0.577	14.856		
Used electronic devices from the museum (e.g., computers)	2.5	1.628	0.860	62.407		
Carried out online activities related to the museum (e.g., information search, games)	2.0	1.464	0.724	26.272		
Used interactive panels	2.4	1.572	0.861	61.414		
Participated in activities	2.5	1.622	0.784	44.954		
Co-creation with traditional non-personal interpretative means (CTNPIM)					0.827	0.554
Saw the objects of the exhibition attentively	4.5	0.806	0.820	27.395		
Read the information panels	4.1	1.133	0.856	43.858		
Read a printed leaflet, brochure or guide	3.6	1.390	0.762	25.833		
Took pictures at the museum	3.5	1.587	0.479	6.852		
Co-creation with staff (CWS)					0.932	0.820
Interacted with staff	3.5	1.364	0.909	101.053		
Asked staff for help	3.2	1.467	0.895	72.686		
Obtained information from staff	3.4	1.427	0.912	98.786		
Co-creation with new digital technologies (CWNDT)					0.867	0.686
Used mobile / digital apps	1.9	1.364	0.863	35.654		
Used social media	1.9	1.403	0.832	33.708		
Used augmented reality or virtual reality	1.6	1.193	0.787	22.831		
Co-creation in events and interpretative activities (CEIA)					0.848	0.651
Saw demonstrations (e.g., seeing someone doing a craft, an experiment,...)	1.7	1.250	0.798	27.654		
Heard stories	2.4	1.554	0.848	41.504		
Attended an event / show	1.7	1.292	0.773	23.709		

Table 7.17. Measurement model assessment among PwSI and people without sensory impairments (continuation)

Construts	Mean	Standard deviation	Item loading	t value ^{a)}	CR	AVE
Co-creation with other visitors and local community (CWOVLC)					0.865	0.763
Interacted with other visitors	2.1	1.427	0.925	78.108		
Interacted with the local community	1.9	1.342	0.819	28.886		
Emotional value (EV)					0.896	0.632
Felt joy	4.3	0.985	0.852	62.598		
Felt admiration	4.3	0.951	0.774	32.229		
Felt proud	3.9	1.196	0.778	33.797		
Felt confidence	3.8	1.153	0.797	42.529		
Had fun	4.3	0.929	0.770	34.708		
Learning value (LV)					0.925	0.804
Leamt new things from the visit	4.5	0.822	0.910	83.379		
Became more interested in certain topics	4.3	0.968	0.874	51.108		
Developed my knowledge	4.5	0.847	0.905	59.455		
Social value (SV)					0.890	0.730
Met other people	2.5	1.571	0.851	67.458		
Felt accompanied	3.6	1.462	0.820	50.493		
Socialised with other people	3.1	1.559	0.891	95.521		
Satisfaction					0.958	0.883
Visiting the museum was the right decision	4.6	0.789	0.927	70.633		
Satisfied with the visit in general	4.5	0.860	0.940	103.135		
Worth visiting the museum	4.6	0.775	0.952	112.054		
Loyalty					0.921	0.796
Recommend the museum to other people	4.7	0.776	0.953	111.097		
Encourage other people to visit the museum	4.6	0.796	0.954	105.317		
Returning to the museum	4.2	1.207	0.755	26.895		
Notes. CR: composite reliability; AVE: average variance extracted; n.a.: not applicable (for single item constructs); ^{a)} t-values were obtained through the bootstrapping procedure (5000 samples) and loadings are significant at 0.01 level (two-tailed test).						

Source: Own elaboration.

Table 7.18. Discriminant validity of the constructs of the model tested among a sample encompassing both PwSI and people without sensory impairments - Heterotrait-Monotrait Ratio (HTMT)

Construct	1	2	3	4	5	6	7	8	9	10	11	12
1. Having a sensory impairment												
2. Co-creation with electronic devices and multisensory activities	0.303											
3. Co-creation with traditional non-personal interpretative means	0.180	0.249										
4. Co-creation with staff	0.250	0.354	0.169									
5. Co-creation with new digital technologies	0.072	0.677	0.228	0.287								
6. Co-creation in events and interpretative activities	0.067	0.573	0.178	0.329	0.568							
7. Co-creation with other visitors and local community	0.117	0.386	0.124	0.409	0.482	0.621						
8. Emotional value	0.180	0.356	0.352	0.349	0.224	0.240	0.198					
9. Learning Value	0.169	0.347	0.338	0.280	0.160	0.205	0.099	0.692				
10. Social Value	0.494	0.444	0.138	0.476	0.253	0.372	0.557	0.508	0.390			
11. Satisfaction	0.161	0.272	0.393	0.250	0.101	0.102	0.100	0.734	0.683	0.361		
12. Loyalty	0.153	0.204	0.307	0.213	0.079	0.074	0.095	0.714	0.639	0.346	0.832	

Source: Own elaboration.

7.7.2. Structural model

After testing the measurement model, the **structural model** was analysed in order to measure the relevance and significance of the relationships between the latent variables and consequently testing the hypotheses (Table 7.19). Multicollinearity among all the constructs was checked with the variance inflation factor (VIF). It was found that the multicollinearity is not a problem in the study since all VIF are below 5, varying between 1.000 and 1.858.

The constructs with highest variance explained are *loyalty* ($R^2 = 0.592$) and *satisfaction* ($R^2 = 0.516$). With the introduction of the dummy variable indicating whether respondents had a sensory impairment or not, not all R^2 values exceed 0.1, varying from 0.002 and 0.592. The lower R^2 values are those of co-creation factors, impacted only by sensory impairment condition (dummy variable: having or not having a sensory impairment). Yet, it is important to highlight that the impairment condition was not expected to fully explain *per se* all the different co-creation dimensions since many other factors should be considered, but it was nevertheless understood as pertinent in the study to test the influence on co-creation of having or not a sensory impairment. Moreover, the sensory impairment condition also revealed a significant influence on all dimensions of perceived value (emotional, learning and social) (Figure 7.7).

Among the 31 hypotheses under analysis **18 hypotheses** were supported, as presented in table 7.19. As this model is a follow-up to the previous one, the hypotheses were numbered sequentially starting in hypotheses H9. Regarding hypotheses H9a to H9f, having a sensory impairment reveals a significant positive influence on *co-creation with electronic devices and multisensory activities (CEDMA)* ($\beta = 0.319$, $p < 0.001$), *co-creation with staff (CWS)* ($\beta = 0.240$, $p < 0.001$) and *co-creation with other visitors or local community (CWOVLC)* ($\beta = 0.110$, $p < 0.01$), with PwSI co-creating more, comparing with people not having a sensory impairment. These results are in line with the literature review and with the qualitative study, where the importance of active participation, by interacting with electronic devices and by participating in stimulating multisensory experiences where visitors can touch, smell, taste or watch the objects, is referred (Falk & Dierking, 2016b; Bitgood, 2010; Minkiewicz et al., 2014; 2016). Results also suggest that in a highly competitive industry as museums, the service offered by staff plays an important role in the success of the visit. Results reveal that having a sensory impairment has a positive

influence on co-creation of experiences. It is important for public in general and for PwSI to interact with staff and to ask staff for help and to obtain information. Taheri (2011) mentioned the importance of asking staff different things about the museum. The recognition that staff play a powerful role in adapting the contents for different visitors as well as in mediating learning in museums or fostering personal connections are in line of the results (Pattison & Dierking, 2013). Encouraging a sense of community by sharing time with friends, other visitors that have similar interests, is one of the main roles of museums (Stephen, 2001).

Having a sensory impairment does not have a significant impact in *co-creation with traditional non-personal interpretative means (CWTNIM)* (H9b), with *co-creation with new digital technologies (CWNDT)* (H9d) and in *events and interpretative activities (CEIA)* (H9e). Findings can be related to the fact that digital apps and augmented and virtual reality are now in their begins with regard to the museums. These new technologies can intensify a museum's experience and contribute to different outcomes (Hashim et al., 2014). Another possible conclusion is that most of the museums are not yet prepared with printed leaflets, brochures or guides in accessible formats that allow PwD to access information. The fact that experience design in museums is predominantly focused on visual cues can also explain the results.

Hypotheses 10a to 10c confirm that having a sensory impairment as a significant positive influence on *emotional value (EV)* ($\beta = 0.106$, $p < 0.01$), on *learning value (LV)* ($\beta = 0.097$, $p < 0.01$), and on *social value (SV)* ($\beta = 0.347$, $p < 0.001$). Findings suggest that PwSI are likely to perceive having obtained more social value from their museum visit than people without sensory impairment.

As for the following hypotheses, results are very similar to the first estimation, which considered only PwSI, and in which, consequently, the single-item construct *having a sensory impairment* (dummy variable), was not introduced. Differences are highlighted but the main focus is on the direct effects of *having a sensory impairment* already analysed and its indirect effects ahead examined.

Nevertheless, now the results of the remaining relationships are reported (Table 7.19 and Figure 7.7). Concerning hypotheses H11a to H11c, *co-creation with electronic devices and multisensory activities (CEDMA)* keeps a positive influence on *emotional value (EV)* ($\beta = 0.132$, $p < 0.01$) and *learning value (LV)* ($\beta = 0.174$, $p < 0.001$), but now the impact on *social value (SV)* ($\beta = 0.094$, $p < 0.05$) becomes also significant. Since the path coefficient is

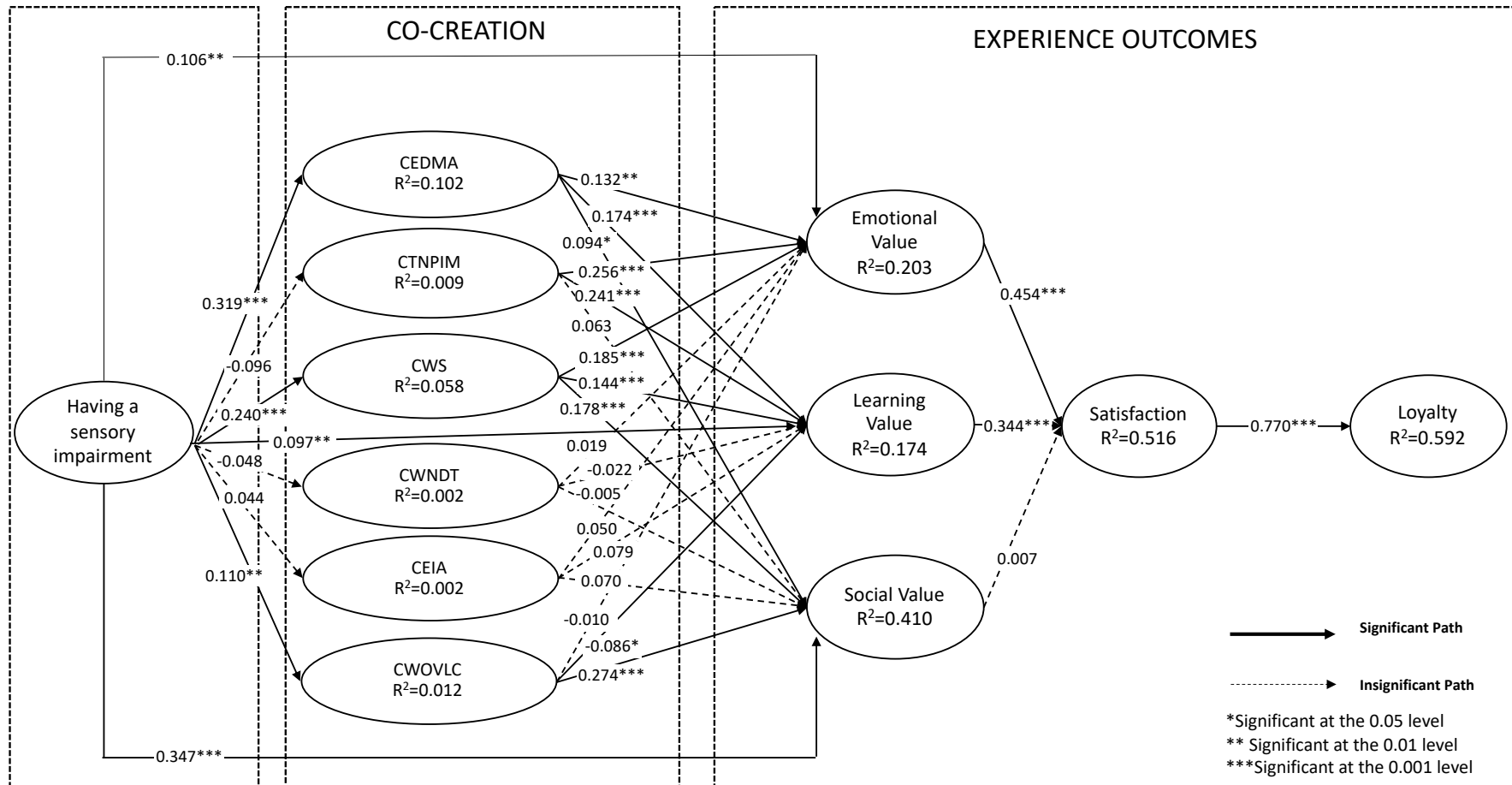
similar, the registered significance result may have to do with the greater size of the sample. With regards to hypotheses H12a to H12c, *co-creation with traditional non-personal interpretative means (CTNPIM)* reinforces a positive influence on *emotional value (EV)* ($\beta = 0.256$, $p < 0.001$) and on *learning value (LV)* ($\beta = 0.241$, $p < 0.001$), suggesting a comparatively greater impact for people without physical impairments since path coefficients and p values are higher. The impact of this co-creation factor on social value (**SV**) remains non-significant at the 0.05 level. As for H13a to H13c, *co-creation with staff (CWS)* registers again a positive influence on *emotional value (EV)* ($\beta = 0.185$, $p < 0.001$) and on *learning value (LV)* ($\beta = 0.144$, $p < 0.001$), but now, with the whole sample, *co-creation with staff* achieves a significant value on its effect on *social value (SV)* ($\beta = 0.178$, $p < 0.001$). This suggests a comparatively lower association between contacts with staff and social value for PwSI, inducing a somewhat unsuccessful performance by museum staff towards them. As for hypotheses H14a to H14c, *co-creation with new digital technologies (CWNDT)* does not have again a significant influence on *emotional value (EV)*, *learning value (LV)* or social value (**SV**). The same happens with hypotheses 15a to H15c. *Co-creation in events and interpretative activities (CEIA)* registers again non-significant influence on *emotional value (EV)*, *learning value (LV)* or social value (**SV**), even if path coefficients become positive in this estimation concerning emotional and social value. With regards to Hypothesis H16a to H16c, there are again significant negative effects of *co-creation with other visitors and local community (CWOVLC)* on *learning value (LV)* ($\beta = -0.086$, $p < 0.05$), even if lower than in the previous model estimation, and a significant positive on social value (**SV**) ($\beta = 0.274$, $p < 0.001$). Its impact on emotional value remains non-significant.

Results reveal that having a sensory impairment has a higher positive impact on perceived value, with PwSI perceiving more emotional, learning and especially social value from museum visits than people without sensory impairment. It is again suggested that co-creation with new digital technologies, co-creation in events and interpretative activities must be implemented in museums as there is no significant influence on perceived value arguably because they are less explored. Findings also confirm the importance of promoting interaction between all visitors with other visitors and local community. As for hypothesis H17a and H17b, *emotional value (EV)* reveals an even stronger positive effect on *satisfaction* ($\beta = 0.454$, $p < 0.001$), as well as *learning value (LV)* ($\beta = 0.344$, $p < 0.001$). As H17c, *social value (SV)* confirms again not having a significant influence on satisfaction. Finally, *satisfaction* keeps a very high positive influence on *loyalty* ($\beta = 0.770$, $p < 0.001$).

Results suggest that almost alone emotional and learning value contribute to satisfaction. These findings are in line with studies referred in literature review (De Rojas & Camarero, 2008; Kempniak et al., 2017; Nowacki & Kruczek, 2021). However, the non-significant impact of social value on satisfaction contradicts what was hypothesised and pointed out in the literature (Antón et al.2018; H.Chen & Rahman, 2018; Falk & Dierking, 2016b). This may indicate that social value must be more effectively fostered in some activities.

In this model estimation, a special attention should be given to the indirect and total effects of having a sensory impairment, since it is the main difference comparing to the previous PLS model analysed.

Table 7.20 shows the total effects (direct plus indirect effects) between constructs. *Having a sensory impairment* has a significant positive indirect effect on *emotional value (EV)* ($\beta = 0.062$, $p < 0.05$), on *learning value (LV)* ($\beta = 0.062$, $p < 0.05$), as well as on *social value (SV)* ($\beta = 0.100$, $p < 0.001$), an even higher one. Moreover, *having a sensory impairment* has an indirect effect on *satisfaction* ($\beta = 0.134$, $p < 0.001$) and on *loyalty* ($\beta = 0.103$, $p < 0.001$). In terms of total effects, *having a sensory impairment* registers significant positive effects on all these outcomes at the 0.001 level: on *emotional value (EV)* ($\beta = 0.168$, $p < 0.001$), on *learning value (LV)* ($\beta = 0.159$, $p < 0.001$), on *social value (SV)* ($\beta = 0.447$, $p < 0.001$), on *satisfaction* ($\beta = 0.134$, $p < 0.001$) and *loyalty* ($\beta = 0.103$, $p < 0.001$). Its higher effect is on *social value (SV)*, suggesting that PwSI extremely apprise socialization since they usually face obstacles on this domain, and that museums can significantly enrich their experience stimulating meaningful experiences on this respect.



Note. CEDMA - Co-creation with electronic devices and multisensory activities, CTNPIM - Co-creation with traditional non-personal interpretative means, CWS - Co-creation with staff, CWNDT - Co-creation with new digital technologies, CEIA - Co-creation in events and interpretative activities and CWOVLC - Co-creation with other visitors and local community

Figure 7.7. Results of hypotheses testing among a sample encompassing both PwSI and people without sensory impairments

Source: Own elaboration.

Table 7.19. Hypotheses testing among a sample encompassing both PwSI and people without sensory impairments

Hypotheses	Path. Coefficient	t-value ^{a)}	p value	Support
Having a sensory impairment -> Co-creation with electronic devices and multisensory activities	0.319	8.758	0.000	Yes
Having a sensory impairment -> Co-creation with traditional non-personal interpretative means	-0.096	1.926	0.054	No
Having a sensory impairment -> Co-creation with staff	0.240	6.774	0.000	Yes
Having a sensory impairment -> Co-creation with new digital technologies	-0.048	1.238	0.216	No
Having a sensory impairment -> Co-creation in events and interpretative activities	0.044	1.116	0.264	No
Having a sensory impairment -> Co-creation with other visitors and local community	0.110	2.682	0.007	Yes
Having a sensory impairment -> Emotional value	0.106	3.065	0.002	Yes
Having a sensory impairment -> Learning Value	0.097	2.783	0.005	Yes
Having a sensory impairment -> Social Value	0.347	10.142	0.000	Yes
Co-creation with electronic devices and multisensory activities -> Emotional value	0.132	2.869	0.004	Yes
Co-creation with electronic devices and multisensory activities -> Learning Value	0.174	4.026	0.000	Yes
Co-creation with electronic devices and multisensory activities -> Social Value	0.094	2.240	0.025	Yes
Co-creation with traditional non-personal interpretative means -> Emotional value	0.256	5.769	0.000	Yes
Co-creation with traditional non-personal interpretative means -> Learning Value	0.241	5.369	0.000	Yes
Co-creation with traditional non-personal interpretative means -> Social Value	0.063	1.872	0.061	No
Co-creation with staff -> Emotional value	0.185	4.650	0.000	Yes
Co-creation with staff-> Learning Value	0.144	3.600	0.000	Yes
Co-creation with staff-> Social Value	0.178	5.009	0.000	Yes
Co-creation with new digital technologies-> Emotional value	0.019	0.459	0.646	No
Co-creation with new digital technologies-> Learning Value	-0.022	0.559	0.576	No
Co-creation with new digital technologies -> Social Value	-0.005	0.125	0.901	No
Co-creation in events and interpretative activities -> Emotional value	0.050	1.278	0.201	No
Co-creation in events and interpretative activities -> Learning Value	0.079	1.899	0.058	No
Co-creation in events and interpretative activities-> Social Value	0.070	1.884	0.060	No
Co-creation with other visitors and local community -> Emotional value	-0.010	0.252	0.801	No
Co-creation with other visitors and local community -> Learning Value	-0.086	2.170	0.030	No (different sign)
Co-creation with other visitors and local community -> Social Value	0.274	7.339	0.000	Yes
Emotional value -> Satisfaction	0.454	9.197	0.000	Yes
Learning Value -> Satisfaction	0.344	6.504	0.000	Yes
Social Value -> Satisfaction	0.007	0.199	0.842	No
Satisfaction -> Loyalty	0.770	24.337	0.000	Yes

^a t-values were obtained with the bootstrapping procedure (5000 samples)

Source: Own elaboration.

All other indirect effects correspond *approximately* to the first PLS model estimation with just PwSI. The strengthened significance of the influence to the 0.001 level of the significant positive effects maybe explained because also people without sensory impairments reported similar perceptions and also because of the greater sample size. The first three factors of co-creation (**CEDMA** – *co-creation with electronic devices and multisensory activities*; **CTNPIM** – *co-creation with traditional non-personal interpretative means*; and **CWS** – *co-creation with staff*) confirm significant positive influences both on satisfaction and loyalty, unlike the other co-creation factors. Also, emotional value and learning value corroborate positive effects on loyalty when considering the enlarged sample (PwSI and people without sensory impairments).

It is confirmed that co-creation, in some of the identified factors, influences significantly and positively perceived value (emotional, learning and social), as well as satisfaction and loyalty. Though, when co-creation is related to traditional non-personal interpretative means and with new digital technologies, the effects are not significant arguably because these are not yet well developed in many museums.

When inserting the single-item construct *having a sensory impairment* (dummy variable), results reveal that PwSI co-create more regarding *electronic devices* (**CEDMA**) and *multisensory activities*; *staff* (**CWS**) and *other visitors and local community* (**CWOVLC**) **than people without sensory impairments**. Thus, having a sensory impairment leads visitors to co-create more. They also perceive high perceived value in all of its three dimensions studied. The results are in line with previous research and findings confirm the importance of engaging visitors in co-creation by providing different means. Museums should invest in electronic devices and multisensory activities as stated in previous studies and should promote training among staff in order to increase knowledge about how to deal with different publics and how to overcome some difficulties. The results also confirm the importance for museums to open to the local community (Kotler, 2001; Simon, 2010; Taheri, 2011).

Table 7.20. Direct, indirect, and total effects in the model concerning outcomes of co-creation among a sample encompassing both PwSI and people without sensory impairment (continues)

Path	Direct	Indirect	Total		
			Coefficient	t-value ^{a)}	p value
Having a sensory impairment -> Co-creation with electronic devices and multisensory activities	0.319***		0.319***	8.758	0.000
Having a sensory impairment -> Co-creation with traditional non-personal interpretative means	-0.096		-0.096	1.926	0.054
Having a sensory impairment -> Co-creation with staff	0.240***		0.240***	6.774	0.000
Having a sensory impairment -> Co-creation with new digital technologies	-0.048		-0.048	1.238	0.216
Having a sensory impairment -> Co-creation in events and interpretative activities	0.044		0.044	1.116	0.264
Having a sensory impairment -> Co-creation with other visitors and local community	0.110**		0.110**	2.682	0.007
Having a sensory impairment -> Emotional value	0.106**	0.062*	0.168***	5.151	0.000
Having a sensory impairment -> Learning Value	0.097**	0.062*	0.159***	5.213	0.000
Having a sensory impairment -> Social Value	0.347***	0.100***	0.447***	15.063	0.000
Having a sensory impairment -> Satisfaction		0.134***	0.134***	5.279	0.000
Having a sensory impairment -> Loyalty		0.103***	0.103***	5.133	0.000
Co-creation with electronic devices and multisensory activities-> Emotional value	0.132**		0.132**	2.869	0.004
Co-creation with electronic devices and multisensory activities -> Learning Value	0.174***		0.174***	4.026	0.000
Co-creation with electronic devices and multisensory activities -> Social Value	0.094*		0.094*	2.240	0.025
Co-creation with electronic devices and multisensory activities -> Satisfaction		0.120***	0.120***	3.887	0.000
Co-creation with electronic devices and multisensory activities-> Loyalty		0.093***	0.093***	3.787	0.000
Co-creation with traditional non-personal interpretative means -> Emotional value	0.256***		0.256***	5.769	0.000
Co-creation with traditional non-personal interpretative means-> Learning Value	0.241***		0.241***	5.369	0.000
Co-creation with traditional non-personal interpretative means-> Social Value	0.063		0.063	1.872	0.061
Co-creation with traditional non-personal interpretative means -> Satisfaction		0.199***	0.199***	5.555	0.000
Co-creation with traditional non-personal interpretative means -> Loyalty		0.153***	0.153***	5.055	0.000
Co-creation with staff -> Emotional value	0.185***		0.185***	4.650	0.000
Co-creation with staff-> Learning Value	0.144***		0.144***	3.600	0.000
Co-creation with staff -> Social Value	0.178***		0.178***	5.009	0.000
Co-creation with staff -> Satisfaction		0.134***	0.134***	4.638	0.000
Co-creation with staff -> Loyalty		0.103***	0.103***	4.450	0.000

Table 7.20. Direct, indirect, and total effects in the model concerning outcomes of co-creation among a sample encompassing both PwSI and people without sensory impairment (continuation)

Path	Direct	Indirect	Total		
			Coefficient	t-value ^{a)}	p value
Co-creation with new digital technologies-> Emotional value	0.019		0.019	0.459	0.646
Co-creation with new digital technologies-> Learning Value	-0.022		-0.022	0.559	0.576
Co-creation with new digital technologies-> Social Value	-0.005		-0.005	0.125	0.901
Co-creation with new digital technologies -Satisfaction		0.001	0.001	0.037	0.970
Co-creation with new digital technologies -> Loyalty		0.001	0.001	0.037	0.970
Co-creation in events and interpretative activities ->Emotional value	0.050		0.050	1.278	0.201
Co-creation in events and interpretative activities -> Learning Value	0.079		0.079	1.899	0.058
Co-creation in events and interpretative activities -> Social Value	0.070		0.070	1.884	0.060
Co-creation in events and interpretative activities -> Satisfaction		0.050	0.050	1.785	0.074
Co-creation in events and interpretative activities -> Loyalty		0.039	0.039	1.783	0.075
Co-creation with other visitors and local community -> Emotional value	-0.010		-0.010	0.252	0.801
Co-creation with other visitors and local community -> Learning Value	-0.086*		-0.086*	2.170	0.030
Co-creation with other visitors and local community -> Social Value	0.274***		0.274***	7.339	0.000
Co-creation with other visitors and local community -> Satisfaction		-0.032	-0.032	1.105	0.269
Co-creation with other visitors and local community -> Loyalty		-0.025	-0.025	1.094	0.274
Emotional value -> Satisfaction	0.454***		0.454***	9.197	0.000
Emotional value -> Loyalty		0.349***	0.349***	8.298	0.000
Learning Value -> Satisfaction	0.344***		0.344***	6.504	0.000
Learning Value -> Loyalty		0.264***	0.264***	5.912	0.000
Social Value -> Satisfaction	0.007		0.007	0.199	0.842
Social Value -> Loyalty		0.005	0.005	0.200	0.841
Satisfaction-> Loyalty	0.770***		0.770***	24.337	0.000

^a t-values were obtained with the bootstrapping procedure (5000 samples)

* Significant at the 0.05 level, ** Significant at the 0.01 level, *** Significant at the 0.001 level

Source: Own elaboration.

Based on the previous discussion regarding non-significant impacts and the performance still ineffective of co-creation on this regard, even if the study does not present a significant influence of new digital technologies and co-creation in events and interpretative activities, museums should also invest in some different means of interpretation, referred in the literature review and by the survey's participants who highlight the importance of new digital technologies like virtual and augmented reality (Cheng et al., 2019; De Bernardi et al., 2018; Falk & Dierking, 2016b). Changes in presentation and interpretation techniques such as storytelling, live interpretation, workshops are also recommended (Falk & Dierking, 2016b; Kempniak et al., 2017; Mirghadr et al., 2018).

All these different dimensions of co-creation can increase value to PwSI and to the general public. These strategies can lead to inclusion and to a better life of those with sensory impairments.

7.8. Positive and negative aspects of the visit

The questionnaire included two open questions to enable respondents to express general attitudes and opinions regarding the museums. In these questions, each respondent was asked to report the most positive and the most negative aspects of his/her visit to the museum. It is important to systematize the factors that visitors both with sensory impairments and without sensory impairments most appreciated in their visit to the museum (see Tables 7.21 and 7.22).

Table 7.21. Most positive aspect of the visit for people without sensory impairments

People without Sensory Impairments	
Most positive aspects	Number
Theme/content	132
Knowledge	54
Design of exhibition	50
Space	40
Interaction with the exhibition	17
Temporarily accessible exhibition	16
Staff Kind, answers	11
Accessibility	10
Travel group	9
Sympathy of the guide	8
Audio guides	7
Ambiance	6
Information	6
Memories	6
Multisensorial experiences	6
Touch objects	5
Different activities	5
Security	5
Workshop	5
Fun	4
Experiences	4
Different supports (Braille, replicas, sound...)	3
Interactivity	3
Guided tours	3
Interaction with experts	3
Technologies	3
Free access	2
Sign Language	2
Storytelling	2
Tactile maquette of the space	2
Lighting	1
Virtual reality	1

Source: Own elaboration.

It is clear regarding **positive aspects**, the “theme/content” of the exhibition is the aspect most mentioned by the **participants without sensory impairments** (n=132) followed with

the knowledge that they obtained during the visit (n= 54) (Table 7.21). Some respondents describe thematic and the contents of the exhibition as “Exceptional! The exhibition was about the ancient Egypt. A topic of main interest for me” (as in the questionnaire number 57) and point as the more positive aspects “the different subject and themes presented in the museum” (questionnaire number 283), or “the collection” (questionnaire number 549).

The recognition of the learning value of the visit is also mentioned by several respondents, highlighting that this is one of the most important outcomes for participants. In this context, respondents highlight the importance of knowledge achieved with the visit: “learn more about the city’s history” (questionnaire number 55), “learn about thematic” (questionnaire number 61) or “the possibility to learn facts that were part of our history” (questionnaire number 136).

The prevalence of aspects related to the physical context was also noticed, mainly associated with: the space (“the modernity of the space” as stated in the questionnaire number 8); the design of the exhibition (“the organisation of the exhibition route” as expressed in the questionnaire number 508), and accessibility (“the museum is very well organized for people with special needs” as referred in the questionnaire number 208, or “this is one of the most accessible museums I have ever visited; very well prepared and designed for all” as registered in the questionnaire number 228).

It was also possible to identify references related with the staff that tried to answer the questions or provided information about the exhibition, such as “the availability of the staff” (questionnaire number 199) or “the museum staff was extremely friendly and helpful, with a clear pleasure in transmitting information and working there” (questionnaire number 380).

Other important aspects were mentioned, such as the opportunities to interact with the exhibition in general (e.g.: “the possibility of interaction with objects or the experience we had” like in the questionnaire number 501, “the interactive exhibition that offer different solutions to the visitor” in the questionnaire number 161) or, specifically, the possibility to touch objects (e.g.: “the possibility to touch and feel the wonder of the details of replicas from all over the world” as in the questionnaire number 258) and multisensorial experiences (“the freedom of sensory exploration” as in the questionnaire number 120). Some other outcomes were also mentioned by the participants like fun, memories and proud (e.g.: “It was very funny, regardless of age” like in the questionnaire number 85).

Concerning **PwSI**, the “theme” was also the most mentioned positive aspect of the visit (n= 46), as expressed in the questionnaire number 227: “The museum is amazing, and the main theme of the exhibition was really interesting. It is very well prepared for people with impairments as I am”. For PwSI, this aspect is followed by the accessibility issue (n= 43), like stated in questionnaire number 228: “this is one of the most accessible museums I have ever visited. Very well prepared and designed for all”. Additionally, important aspects related to accessibility of the space like the existence of a tactile maquette, a system of navigation with a magnet that attracts the cane in order to facilitate the autonomous movement of the participants, were also referred. Knowledge (n= 36) was also an outcome highly recognised by visitors. Here too, aspects related to the physical context, co-creation and the staff were reported. The possibility to touch objects, the existence of different supports, audio guides, guided tours, interact with the exhibition, multisensorial experiences, different activities, workshops, virtual reality, and technologies were other aspects mentioned (Table 7.21). These results allowed an understanding of the positive aspects that influence the visit by people with and without sensory impairments.

It is important to observe that the aspects mentioned by the two groups of participants are similar, which corroborates the idea that the accessibility is a major question not especially for people with disabilities, but for all people, independently of their condition. The results are in line with studies that refer that accessibility is of main importance and can address the needs of PwD (with a permanent and temporary impairment), as well as the needs of people without disabilities, but who have a special need (Buhalis & Darcy, 2011; Darcy & Dickson, 2009; Michopoulou et al., 2015; Poria et al., 2011). Some important aspects referred by the participants give important contributions for museums. It is important to provide different strategies that increase the use of different senses. The existence of several tools and aspects mentioned are essential to engage PwSI in co-creation: different supports (text in Braille, replicas, sound); opportunities for touching objects (“having the opportunity to touch objects and interact with the exhibition” as mentioned in the questionnaire number 42); audio guides (“staff asked if I needed anything in particular and offered me an audio guide and a Braille publication to follow and better understand the exhibition” as referred in the questionnaire number 214); and sign language, guided tours, and virtual reality (“the museum offered the possibility to explore a painting with Virtual Reality” as stated in the questionnaire number 685). Aspects related to the physical context and staff were also mentioned, and it is important to notice that some of the participants

also made reference to some outcomes of the visit such as knowledge, socialization, experiences, memories and fun.

Table 7.22. Most positive aspects of the visit for PwSI

People with Sensory Impairments	
Most positive aspects	Number
Theme/content	46
Accessibility	43
Knowledge	36
Space	35
Socialization	25
Experiences	20
Staff kind, answers	19
Touch objects	17
Interactivity	16
Design exhibition	13
Different supports (Braille, replicas, sound...)	11
Audio guides	10
Temporarily accessible exhibition	8
Guided tours	8
Information	6
Sympathy of the guide	6
Sign language	5
Lighting	4
Travel group	4
Different Activities	3
Interaction with the exhibition	3
Multisensorial experiences	3
Workshop	3
Ambiance	2
Fun	2
Interaction with experts	2
Memories	2
Wayfinding system	2
Virtual reality	2
Proud	1
Security	1
Technologies	1
Tactile maquette of the space	1

Source: Own elaboration.

The unstructured questions in the questionnaire also highlighted some of the **negative aspects** of the visit experienced by the respondents. People without sensory impairments mentioned more negative aspects of the visit than PwSI (see Tables 7.23 and 7.24).

Table 7.23. Most negative aspects of the visit for people without sensory impairments

People without sensory impairments	
Most negative aspects	Number
Space	50
Staff	46
Lack of information	45
No interaction	37
Overcrowded	36
COVID-19	23
Exhibition design	20
Lack of time for the visit	18
No accessibilities	18
No interactivity	14
No wayfinding information	12
Bad conditions of the material	10
Lack of interesting contents	10
Lighting	10
Ambiance	9
Lack of technology	9
Price	9
Lack of visitors	8
No audio guides	8
Lack of organisation	7
No different languages	7
Timetable	7
Physical context	6
Lot of activities	5
Guided tour	3
No touch objects	3
No activities	2
Security at the entrance	2
Bad physical context accessibility	1
No multisensorial experiences	1

Source: Own elaboration.

The negative aspects most mentioned are those linked to the lack of different accessible contents: “it is not an inclusive museum; it has no Braille” (questionnaire number 336) and “the accessibilities; if the visitor has a physical impairment, it is difficult to access some parts of the museum” (questionnaire number 53). These aspects are most often reported by

PwSI. **People without sensory impairments** mentioned more aspects related to space, to the staff, the existence of no interaction, and the existence of overcrowded spaces (e.g.: “lots of people inside the museum” as stated in the questionnaire number 439). Aspects related to the COVID-19 also appeared in some of the answers of those without sensory impairments (e.g.: “the only negative point of the visit was the fact that the top floor was closed to the public, due to security issues imposed by covid” was mentioned in the questionnaire number 380), as well as aspects related to the non-existence of different languages in the museum (e.g.: “the information was only written in Russian and English” in the questionnaire number 430).

PwSI perceived various negative aspects concerning accessibilities related to the physical context, staff, and co-creation. The lack of objects to touch, audio guides, Braille and interactivity were some of the aspects mentioned in this scope. Material in bad conditions, the lack of activities and technologies are also important aspects to take into account.

Table 7.24 - Most negative aspects of the visit for PwSI

People with sensory impairments	
Most negative aspects	Number
No accessibilities	128
Bad conditions of the material (Braille...)	59
No touch objects	46
Lack of training of the staff	27
No sign language interprets	19
Lack of time for the visit	19
Space	19
Staff	17
No audio guides	12
Lack of accessible contexts	12
No interaction	9
Physical context	5
Bad physical context accessibility	4
No Braille	4
Lack of technology	4
No activities	4
Lot of people difficult to experience	4
No interactivity	4
No wayfinding system	3
Lighting	2
Lack of contents	2
Lack of organisation	1

Source: Own elaboration.

The analyse of these two unstructured questions add relevant insights for museum managers to improve co-creation by the general public and especially by those with sensory impairments. The findings underline, among other relevant issues, the importance of offering accessible solutions for PwSI. Some of the aspects mentioned by the respondents

will be referred in the last chapter (Chapter 8), in which conclusions and principal contributions will be pointed out.

7.9. Conclusions

This chapter aimed to present the analysis of the results of quantitative study. Some analyses were first carried out among PwSI and then, in a sample encompassing both PwSI and people without sensory impairments. Various types of analysis were used, such as descriptive univariate analysis, multivariate analysis, namely factor analysis, multiple linear regression analysis and partial least square structural modelling (Smart PLS).

Regarding the experience with museums, there was a considerable variability in terms of frequency of museums visited. Some visitors visited many museums, while others visited few. Concerning the country where the last museum visited was located, Portugal was the country where persons most visited museums, although other countries were also mentioned. Most of the respondents visited museums located in the two main cities of Portugal: Lisbon and Porto. Concerning the visitor's group, the large majority of respondents visited the museum with family members or friends. Few were the visitors who visited the museum alone.

After characterizing the sample, a principal component analysis (PCA) with a varimax rotation was carried out with the items concerning co-creation of experiences at the last museum visited for PwSI, since this segment is the focus of the present thesis. Six dimensions of co-creation were identified: *co-creation with electronic devices and multisensory activities*, *co-creation with traditional non-personal interpretative means*, *co-creation with staff*, *co-creation with new digital technologies*, *co-creation in events and interpretative activities* and *co-creation with other visitors and local community*. In order to understand which kind of co-creation most frequently occurred among PwSI and people without sensory impairments, means and standard deviations were carried out.

Then, antecedents related to museums were analysed. For that, a PCA with varimax was also undertaken to identify dimensions antecedents of co-creation. Eight dimensions of antecedents related to museums were identified: *inclusive museum staff behaviour*, *information legibility and suitable lighting*, *existence of interactive and electronic devices*, *physical barrier free access and wayfinding support*, *interpretation activities*, *existence of guided tours* and *traditional non-personal interpretative means*, *opportunities for*

multisensory experiences and communication in different languages. Descriptive analysis such as mean and standard error were carried out to better interpret the antecedents of co-creation experienced by visitors.

Later, to identify the antecedents - antecedents related to visitors and antecedents related to museums - that influence the six dimensions of co-creation in the case of PwSI, six multiple linear regressions were carried out. The procedures allowed to identify the factors that influenced dimensions of co-creation, as well as detecting which have the highest impact in this scope. Subsequently, another set of **multiple linear regressions**, similar to those previously undertaken, was performed, in which the dependent variable was each one of the dimensions of co-creation in museums **in the case of PwSI**. The main difference was that, besides all the independent variables included in the previous regressions, another independent variable related to the visitors was included in the regression - the level of disability. The results provide important contributions to the scarce research existing concerning the antecedents that influence co-creation in museums for PwSI. The level of disability revealed having impact on some dimensions of co-creation and some differences were also noted concerning the influence of specific antecedents on some dimensions of co-creation.

After, several outcomes of experiences in museums were analysed using univariate analyses, namely perceived emotional, learning, and social value obtained with museum visits, satisfaction with the museum visit and loyalty towards the museum. Subsequently, to validate the hypotheses concerning these outcomes and test the model proposed in this thesis, SEM was used, with the Partial Least Squares – Path Modeling (PLS-PM) method, employing the statistical software SmartPLS 3, to explore the relationships between the various constructs, namely between the six dimensions co-creation and the outcomes of the visit among PwSI. A total of 10 of 22 hypotheses were supported. The results of the analysis of the hypotheses highlighted that some dimensions of co-creation in museums generated positive outcomes and identified the important effects that could exist among some of these co-creation outcomes. The present thesis shows that these kinds of impacts can be found in museums, in the context of co-creation by PwSI. This means that considering these results, it is important for museums to foster some co-creation initiatives that lead to satisfaction, as this leads to the intention to recommend and revisit the place.

The same model tested using PLS-PM was tested encompassing both PwSI and people without sensory impairments, by adding a dummy variable regarding having sensory

impairments. Among the 31 hypotheses under analysis 18 hypotheses were supported. Among other issues, having a disability showed to have a significant impact, not only in several dimensions of co-creation, but also on outcomes, revealing that PwSI had a higher likelihood to engage in co-creation and a higher perceived value from the museums' visits. This suggests that special attention should be provided to PwSI concerning co-creation in museums.

Finally, we proceeded to the analyse of two open questions, included in the questionnaire, to enable respondents to express general opinions regarding the museums, namely the most positive and the most negative aspects of the visit to the museum. The analysis of these two unstructured questions added important insights for museum managers to improve co-creation by the general public and especially by those with sensory impairments.

In conclusion, most of the hypotheses proposed in the conceptual model were supported by the quantitative empirical study undertaken in this thesis as it was presented along the chapter.

PART IV – Conclusions

8. Conclusion

“The value of things is not the time they last, but
the intensity with which they occur.
That is why there are unforgettable moments and
unique people!”
Fernando Pessoa

8.1. Introduction

This chapter concludes the thesis. The aim of this work was to provide a deeper understanding on co-creation of experiences in museums by people with sensory impairments and to analyse antecedents and outcomes of that co-creation. This was accomplished based on empirical evidence collected using a mixed methods approach, namely qualitative and quantitative studies. This chapter presents the main conclusions of the thesis and discusses its main theoretical and managerial contributions. The limitations of the study will be presented and some suggestions for future research in this field will be provided.

8.2. Main conclusions and contributions of the thesis

The present study allows an in-depth understanding of how PwSI co-create experiences in museums, the antecedents that stimulate that co-creation, and the outcomes achieved with co-creation in museums.

The literature on experiences enabled to conclude that the concept of experiences gained relevance in the last decades in the most diverse fields. People are increasingly looking for more participatory and interactive experiences. Several definitions of experience were reviewed and, despite the huge number of definitions, two main common aspects were identified: experiences are personal and involve customers at different levels. Although most of the approaches for identifying dimensions of experiences had several similarities, namely identifying dimensions of the experience such as the sensory, the cognitive and the emotional experience, some differences were also noticed, with, for example, not all the researchers explicitly mentioning the behavioural dimension.

The concept of co-creation of tourism experiences has gained relevance in the last years as customers want to be active players, interacting with the environment, with other consumers and objects. In this context, there is also not a big consensus regarding the definition and the facets of the concept. Nevertheless, it has been concluded that research has been increasingly focused on active participation, co-production, interaction, personalization, customization, and emotional and cognitive engagement. Co-creation can happen in different stages of a visit: pre-visit, on-site and post-visit. Consequently, different stages of the tourist experience were also relevant for the analysis of co-creation, although the present empirical research focus on the on-site co-creation.

Literature review also provides conclusions concerning the museum concept and functions, as well as on the museums' inclusive role. The way the general public and PwD, including PwSI, can co-create during museum visits was discussed. Being institutions with social responsibilities, museums have an important role in fighting against discrimination. PwD have the same desire as those without disabilities of visiting museums, and co-creation is a process where all players are engaged and, a way, when well implemented, to produce value among PwD. The literature review revealed a noticeable lack of empirical studies that address the way co-creation can occur in museums among the visitors in general and PwSI. Literature is also scarce concerning the antecedents that work as facilitators of that co-creation, as well as the outcomes resulting from the co-creation previously mentioned. Even if limited, the review conducted provided some insights about the way PwD can co-create in different museum contexts: physical, social, digital, and multiple contexts. However, the need for further research to understand the co-creation process through both qualitative and quantitative studies was evident.

A literature review on main antecedents of co-creation, first in the tourism domain, and afterwards specifically in the museum context, was done, together with a literature review on outcomes. As antecedents can work as facilitators or as constraints of activities, some clarification related to the meaning of antecedents and different concepts such as barriers and constraints, were presented. Different types of constraints presented by different authors were referred in order to better understand constraints faced by PwSI. Regarding PwSI, some important aspects related to models of disabilities were discussed, with the social model and the biopsychosocial model revealing that society puts up several barriers for PwD, including PwSI. Attention was given to some potential antecedents of co-creation in museums in the case of PwSI, namely visitors' antecedents such as individual antecedents (types and levels of disabilities) and visit context variables (prior experience

with museums, visit travel group) and museums' antecedents (related to museum features). Previous research suggests that the antecedents related to museums may be varied, encompassing factors related to several features of the museums, from more physical features to attitudes (including attitudes of the staff). Concerning constraints related to co-creation in museums for PwD, the review made indicates that previous research only provides some insights on this matter and that further studies must be done on this subject. Outcomes of co-creation are an important topic for museum managers as museums, as cultural attractions and privileged learning environments, must be concerned in offering multiple benefits to visitors. Some benefits identified in the literature review are those related to emotional, learning, and social value. Literature also suggests that satisfaction and loyalty are potential direct and indirect outcomes of co-creation in museums.

The literature review carried out only provided some insights concerning the antecedents, co-creation and outcomes of co-creation in museums for visitors in general and for PwSI in particular. Therefore, based on this literature, a conceptual model was created and proposed in this thesis (Chapter 4, section 4.4) in order to extend knowledge on antecedents and outcomes of co-creation of experiences of visitors with sensory impairments in museums, and provide a broader and deeper overview regarding those aspects. Even if the literature review provided important insights for the model construction, some limitations concerning essential aspects presented in the model required empirical testing of the proposed model in order to validate it.

The hypotheses presented in the proposed model were essentially tested through a quantitative study using a questionnaire survey. However, a qualitative study based on focus groups also provided an in-depth overview on different approaches adopted by PwVI to co-create experiences in museums and indicated antecedents of co-creation in museums by visitors with visual impairments. Results of the empirical studies (Chapter 6 and 7) provided empirical support for the model proposed.

The main intent in proposing this model was (i) to identify the antecedents of co-creation of experiences in museums by PwSI and understand their influence on this kind of co-creation; and (ii) to identify the outcomes of co-creation in museums to PwSI and the general public as well as analysing the impacts of co-creation on these outcomes.

Concerning **co-creation in museums**, the qualitative study undertaken suggested that PwVI tended to co-create in museums in various ways, from participating in multisensorial

experiences, participating in a workshop, touching relief figures to participating in guided tours.

One important finding was, in the quantitative empirical study done, the identification of **dimensions of co-creation of PwSI during their visits**. The importance of engagement in activities is essential and different ways to co-create were identified. PwSI revealed having co-created more with traditional non-personal interpretative means, with the staff and with electronic devices and multisensory activities. In contrast, co-creation was much lower with new digital technologies like digital apps, social media and augmented reality and virtual reality, as well as in events and interpretative activities like storytelling and demonstrations. This suggests that, perhaps, opportunities for this kind of co-creation are not being so well explored in museums.

Concerning the **antecedents of co-creation in museums by PwSI**, two types of antecedents were considered in this thesis – antecedents related to visitors and antecedents related to museums. Concerning the **antecedents related to visitors**, and specifically individual antecedents – having an impairment, as well as type and level of impairment – important conclusions were drawn. Having a sensory impairment has a significant influence in three factors of co-creation: *co-creation with electronic devices and multisensory activities*, in *co-creation with staff* and *co-creation with other visitors and local community*, revealing that PwSI engage more often in these kinds of co-creation than people without sensory impairments. This suggests that PwSI have higher motivation or will to co-create in museums. The influence is non-significant in *co-creation with traditional non-personal interpretative means*, *co-creation with new digital technologies* and *co-creation in events and interpretative activities*. Multiple regressions models also suggest that the type of disability has a significant influence in two dimensions of co-creation, with PwHI co-creating more than PwVI with *electronic devices and multisensory activities* and with traditional non-personal interpretative means. The level of impairment has a significant negative impact in *co-creation with non-personal interpretative means* which confirms the challenges experienced by people with a level of impairment.

Regarding antecedents consisting of visit context variables, the experience of visitors with museums (number of museums previously visited) didn't have a significant impact on any dimension of co-creation. Concerning the group with which PwSI visited the museum, both the qualitative and the quantitative studies reveal that the great majority of PwSI are likely to visit museums with relatives and friends. The qualitative study suggests that the persons

with which PwSI visited the museum help to co-create their museum visit experience by encouraging participation and interaction with objects, by helping to overcome constraints or even making everything easy during the co-creation, although it was not possible to test this impact in the quantitative model.

As far as **antecedents related to museums** are concerned, eight dimensions of these antecedents were identified. Important conclusions result from univariate analyses carried out concerning these dimensions. For example, the antecedent *inclusive museum staff behaviour* presents a low mean, which suggests that visitors do not consider the staff attitudes appropriate. The same happens with *existence of interactive and electronic devices*, which also presents a low mean, suggesting that visitors expect more interactive equipment and electronic devices in museums, as well as with the antecedent *interpretation activities*, which suggests that visitors also expected more interpretation activities. Regarding the impact of the antecedents related to museums in co-creation, the studies show that *communication in different languages* emerges as the factor influencing more dimensions of co-creation. Among the other antecedents related to museums, *information legibility and suitable lighting*, as well as the *existence of interactive and electronic devices*, are those with highest impacts on dimensions of co-creation. The findings suggest the importance of these antecedents as facilitators of co-creation, as the more they exist the more visitors co-create.

Concerning the **outcomes of co-creation in museums by PwSI** – the perceived value obtained with the visit (namely emotional, learning and social values), satisfaction and loyalty towards the museum, important conclusions are also drawn. Univariate analysis enabled to conclude that PwSI reported having obtained considerable learning and emotional values, and to a lesser extent social value. Results also suggest that PwSI perceive more value than people without sensory impairments. One of the most important conclusions of the study is that three dimensions of co-creation – *co-creation with electronic devices and multisensory activities*, *co-creation with traditional non-personal interpretative means* and *co-creation with staff* – had a significant impact on emotional and learning value. Also, another dimension – *co-creation with other visitors and local community* – had a significant impact on social value. Hypothesis testing confirmed that only two dimensions of co-creation – *co-creation with new digital technologies* and *co-creation in events and interpretative activities* –, which also correspond to the dimensions where lowest co-creation exists, did not have a significant impact in any of the three perceived value dimensions. The main differences in results regarding co-creation and experience outcomes, when testing

the model with the whole sample, are that *co-creation with staff* also revealed a significant impact on social value. This difference detected suggests that this effect is strengthened in the group of people without sensory impairments.

Another important finding when testing the model, either only with PwSI or with the global sample, was that emotional value and learning value had a significant positive impact on **satisfaction**. Contrarily to what was expected, social value did not register a significant impact on satisfaction. Finally, satisfaction presented a high significant impact on **loyalty** towards the museum, both in the case of PwSI and for people without sensory impairments, which is a very important conclusion for museums managers.

To summarise, most of the hypotheses proposed in the conceptual model (5 in 7) were supported by the quantitative empirical study undertaken in this thesis. Hence, concerning antecedents, both antecedents related to visitors and to museums revealed a significant impact on co-creation. Impairment (both type and level of impairment) and antecedents related to museums, had an impact on co-creation, supporting hypotheses 1 and 4, respectively. Prior experience with museums did not have a significant impact on co-creation of experiences of PwSI in museums, thus not supporting hypothesis 2 and hypothesis 3 could not be tested in the quantitative study due to the few PwSI traveling alone. Regarding the outcomes of co-creation, the co-creation of experiences of PwSI in museums revealed a positive influence in some kinds of perceived values (supporting hypothesis 5) and, subsequently, some of these values had a positive impact on satisfaction (supporting hypothesis 6) and satisfaction had a positive impact on loyalty towards the museum (supporting hypothesis 7).

The present thesis contributes to both theory and practice. As far as **theoretical contributions** are concerned, the present study enriches the literature on the co-creation of experiences in museums and allowed to test a model on antecedents and outcomes of co-creation. First, it **adds value regarding the dimensions of co-creation of experiences in museums by PwSI, as well as the antecedents that stimulate co-creation and the outcomes achieved** with this kind of co-creation. This work enabled to identify the **main antecedents that have an important impact in stimulating co-creation by PwSI** during museums visits. The influence of antecedents that prevent PwSI from co-creating in museums is a reality and the studies revealed that there are differences between the way people without sensory impairments and PwSI co-create.

The work also enables to understand **the way PwSI co-create in the museums** and the **outcomes** obtained with co-creation. Specifically, the present research shows that, concerning the outcomes that visitors obtained with co-creation, co-creation contributes to obtain the three kinds of perceived value under analysis in this thesis – emotional, learning and social value. Nevertheless, the impact of co-creation on perceived value depends on the dimensions of both co-creation and perceived value. Moreover, the results also reveal that only emotional and learning value have a significant impact on satisfaction which, in turn, has a significant high impact on loyalty. Satisfied visitors lead to loyalty.

Second, the present thesis provides **insights that allow to compare people with sensory impairments and without sensory impairments**. The results suggest that having an impairment impacts co-creation, leading to higher co-creation in museums. Hence, the results reveal objective effects of having an impairment in some dimensions of co-creation. Furthermore, PwSI also perceived higher emotional, learning, and social value. Moreover, the research developed enabled to examine differences between people with different kinds of sensory impairments. PwHI tend to co-create more than PwVI in two dimensions of co-creation – *co-creation with electronic devices and multisensory activities* and in *co-creation with traditional non-personal interpretative means*. The findings indicate that PwVI can experience more challenges during the visit regarding these two kinds of co-creation.

From a practical perspective, the findings provide several **managerial implications** for managers of museums. The empirical studies examine how PwSI co-create their experiences in museums, the impact of antecedents in co-creation and the outcomes achieved with co-creation, which are crucial for the success of museums. Managers should use these findings to better understand and attract visitors, both with and without disabilities. One of the most important findings is that most types of co-creation, corresponding to dimensions of co-creation are still very low, and that co-creation by PwSI must be boosted in museums. This is especially true regarding co-creation with electronic devices and multisensory activities, with new digital technologies, with events and interpretation activities, as well as with other visitors and local community, where very low levels of co-creation are registered.

Considering the results concerning the antecedents of co-creation in museums, findings suggest, for example, that museum managers should do a special effort in order to offer more electronic devices and multisensorial activities, because these means were some of the less offered, but were among those having most impact on emotional and learning value.

These antecedents can lead, therefore to more positive value in the visit. However, the results also reveal that it is of high importance that managers also undertake some studies to evaluate the impact of some of the techniques already used (e.g., guided tours, audio guides) in order to identify improvements to be made, since these techniques currently have no significant impact in some dimensions of co-creation of PwSI and even have a negative impact on others. The study suggests that attention should be devoted to traditional non-personal interpretative means because these materials, even if they already exist, must be provided in a more efficient way, which may involve using Braille, enlarge characters or relief. It should be also further investigated how the inclusive behaviour of staff should be improved, since, in a somehow similar way, this kind of behaviour also does not have a significant impact on co-creation. In this scope, the results of the qualitative research highlighting the attitudes that museum staff should have to satisfy PwSI (more specifically PwVI), should not be ignored. Findings also suggest that managers should develop efforts which may involve training staff to adapt the discourse and the level of description of the contents in order to induce more satisfaction in PwVI and to train staff to use sign language to reach PwHI. It is important to provide appealing information in a way PwSI are able to become aware of the contents provided by museums in a positive way. These suggestions are in line with the literature review and the focus group previously carried out.

According to the literature review and the focus group, technologies are referred as the future of museums. It seems also crucial to investigate which strategies should be implemented to ensure that co-creation with new digital technologies to visitors (such as augmented and virtual reality or digital apps) and co-creation in events and interpretation activities, generate positive outcomes. Managers of museums should also invest more in interactive activities such as storytelling, demonstrations or even workshops. If offering more opportunities to have this kind of co-creation seems to be one way of enhancing the museum experience, more research should be done to identify the most appropriate strategies for achieving this objective. It is important to implement different ways to provide appealing information, able to motivate the desire for PwSI to engage in activities. As main constraints were identified, it is also important for museum managers to understand that constraints are surmountable and that there are several different ways to stimulate visitors to co-create during their visits. Special efforts should also be made to improve communication by adopting more inclusive practices, encouraging the use of different communication formats, such as Braille, sign language, audio guides or providing information in different languages.

The results of the present study also highlight the importance of the staff in co-creation, namely revealing the ability of this co-creation to generate important impacts. Therefore, training the staff to deal with different publics and to know how to provide useful information and answers are of high relevance. Strategies to promote a more autonomous visit by PwSI should be implemented. In addition to the previous identified strategies, different guidance and navigation systems to help identify directions and objects are essential for the success of co-creation.

Results also enabled to identify types of co-creation in which museum managers should continue to invest since they have relevant positive outcomes, including perceived value – emotional, learning or social value. However, concerning the social value of the museum, and considering the literature review, the results suggest that museums should improve the opportunities of socialisation in the museum by, for example, encouraging different socialization strategies. Even if PwSI perceive considerably more socialisation value than people without a sensory impairment, the social value does not result in a higher satisfaction. The only two dimensions of co-creation that have a significant impact on the social value are co-creation with the staff and co-creation with other visitors and local community. However, the social value does not result in a higher satisfaction that can induce more positive intentions to return to the museum or even to recommend the space. It is suggested, in this case, to provide PwSI opportunity to participate in visits that join all kind of publics even if, for that, it is necessary to have more staff. Nevertheless, it would be relevant to carry out further research on how to improve the impacts of social value.

8.3. Limitations and suggestions of future research

Regarding the methodology of data collection, as a result of the COVID-19 pandemic, museums were closed for almost all the entire period in which data collection took place. Therefore, the study had to be almost confined to an online data collection, and to a restricted face-to-face data collection. This limitation, among other things, made it more difficult to identify and have access to the population under analysis – specifically PwSI who visited museums. Moreover, some PwSI are likely to have more difficulties in filling in questionnaires than people without sensory impairments, with these difficulties being exacerbated with online data collection where face-to-face communication was not

possible. This issue, conjointly with the specificity of the study, related to the sample profile, made it difficult to obtain a high number of completed questionnaires from PwSI. When it was possible, four visits were made with a sign language interpreter to help explain the questionnaire to potential respondents. Communication constraints also emerged, with PwVI, but especially with PwHI, making it difficult to ensure a sample with a considerable number of PwSI and, particularly, with a considerable number of PwHI. In future research, the data collection approach should be complemented with a high effort of face-to-face data collection.

Respondents had to answer a questionnaire about a visit they made in the three last years. With museums being closed almost for a year and without the possibility for people to visit these cultural places during that period of time, it was even more difficult to obtain complete questionnaires, especially from PwSI, and mainly for those who don't have visual references. The period of the three last years, only defined like this due to the COVID-19 pandemic, may have been somewhat a large time span, and created a memory bias. It would be desirable to carry out the study again in a period without the constraints of the COVID-19 pandemic, asking the respondents to recall visits carried out in a more recent period.

Another important limitation was concerned with the geographical scope of the study. Initially, the study was planned to be carried out face-to-face in museums in several European capitals. However, with the COVID-19, another approach had to be adopted. The questionnaire had to be administered mostly online, which somewhat restricted the geographical scope of the data collection and resulted in a sample including a considerable percentage of Portuguese people. It would be desirable to extend the study to a larger sample of different countries. This approach would enable to test the proposed hypotheses and the whole model in a wide variety of cultural environments and museum contexts, which would contribute to confirm if the results obtained in this thesis were also obtained in other geographical contexts.

The analysis undertaken was restricted to PwSI. The study should be expanded to other groups, namely to people with cognitive and learning impairments. Moreover, the first study, essentially exploratory and qualitative, was conducted using a focus group including only PwVI, either with low vision or blind, as conducting a focus group with PwHI presented some insurmountable difficulties, namely due to time and financial constraints of, for example, ensuring the support from a sign language interpreter. It would be useful to replicate this

qualitative study with PwHI in order to understand the differences between the perceptions and experiences of co-creation between PwVI and PwHI.

In future investigations other variables should be included in the model. Thus, it would be important to introduce age and educational qualifications as variables in the study. Assessing the impact of age and education in the way visitors with different ages and education co-create, can provide important managerial recommendations.

Finally, considering the COVID-19 pandemic, it would be of great value to expand this research and to compare data from the visits that were carried out in the period before and during COVID-19. The COVID-19 pandemic may have brought new challenges to museum managers for boosting co-creation in museums among PwSI.

References

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- Abbott, S., & McConkey, R. (2006). The barriers to social inclusion as perceived by people with intellectual disabilities. *Journal of Intellectual Disabilities, 10*(3), 275–287. <https://doi.org/10.1177/1744629506067618>
- Accentuate, History of Place, Earnscliffe, J., Tactile Studio, & The Hub. (2018). *Accessible exhibitions for all: A guide to co-designing exhibitions with disabled people*. Screen South. http://historyof.place/wp-content/uploads/2018/11/HOP_TK_Design_Exhibs_Final_PRINT.pdf
- Accentuate, & History Place. (2018). *Engaging deaf and disabled young people with heritage*. http://historyof.place/wp-content/uploads/2018/11/HOP_TK_Design_YoungPeople_Final_PRINT.pdf
- Ackerman, D. (1990). *A natural history of the senses* (1st ed.). Vintage Books. <http://www.amazon.com/Natural-History-Senses-Diane-Ackerman/dp/0679735666>
- Addis, M., & Holbrook, M. B. (2001). On the conceptual link between mass customisation and experiential consumption: An explosion of subjectivity. *Journal of Consumer Behaviour, 1*(1), 50–66. <https://doi.org/https://doi.org/10.1002/cb.53>
- Agapito, D., Mendes, J., & Valle, P. (2013). Exploring the conceptualization of the sensory dimension of tourist experiences. *Journal of Destination Marketing & Management, 2*(2), 62–73. <https://doi.org/10.1016/j.jdmm.2013.03.001>
- Agapito, D., Patrícia, O. do V., & Mendes, J. da C. (2012). Sensory marketing and tourist experiences. *Spatial and Organizational Dynamics, 10*, 7–19.
- Ajzen, I., & Fishbein, M. (1980). *Understanding attitudes and predicting social behavior*. Prentice Hall.
- Alexandris, K., Du, J., Funk, D., & Theodorakis, N. (2017). Leisure constraints and the psychological continuum model: A study among recreational mountain skiers. *Leisure Studies, 36*(5), 670–683. <https://doi.org/10.1080/02614367.2016.1263871>
- Ali, F., Ryu, K., & Hussain, K. (2016). Influence of experiences on memories, satisfaction and behavioral intentions: A study of creative tourism. *Journal of Travel and Tourism Marketing, 33*(1), 85–100. <https://doi.org/10.1080/10548408.2015.1038418>
- Allan, M., & Altal, Y. (2016). Museums and tourism: Visitors motivations and emotional
-

-
- involvement. *Mediterranean Archaeology and Archaeometry*, 16(3), 43–50.
<https://doi.org/10.5281/zenodo.160948>
- Altınay, Z., Saner, T., Bahçelerli, N. M., & Altınay, F. (2016). The role of social media tools: Accessible tourism for disabled citizens. *Educational Technology and Society*, 19(1), 89–99.
- Ambrose, T., & Paine, C. (2018). *Museum Basics* (4th ed.). Routledge.
- American Alliance of Museums. (2018). *Facing Change: Insights from the American Alliance of Museums' diversity, equity, accessibility, and inclusion working group*.
<https://www.aam-us.org/wp-content/uploads/2018/04/AAM-DEAI-Working-Group-Full-Report-2018.pdf>
- American Association of Museums. (1972). *Museums: Their new audience: A Report to the Dept. of Housing and Urban Development by a Special Committee of the AAM*. American Association of Museums.
- Anderson, D. (1999). *A Common Wealth: Museums in the learning age* (1st ed.). The Stationery Office Books.
- Anderson, D., & Lucas, K. B. (1997). The effectiveness of orienting students to the physical features of a science museum prior to visitation. *Research in Science Education*, 27(4), 485–495. <https://doi.org/10.1007/BF02461476>
- Anderson, E. W., Fornell, C., & Rust, R. T. (1997). Customer satisfaction, productivity, and profitability: Differences between goods and services. *Marketing Science*, 16(2), 129–145. <https://doi.org/10.1287/mksc.16.2.129>
- Andre, L., Durksen, T., & Volman, M. (2017). Museums as avenues of learning for children: a decade of research. *Learning Environments Research*, 20(1), 47–76.
<https://doi.org/10.1007/s10984-016-9222-9>
- Angkananon, K., Wald, M., & Gilbert, L. (2015). Technology enhanced interaction framework and method for accessibility in Thai museums. *3rd International Conference on Information and Communication Technology, ICoICT 2015*, 316–321.
<https://doi.org/10.1109/ICoICT.2015.7231443>
- Antón, C., Camarero, C., & Garrido, M.-J. (2018). Exploring the experience value of
-

-
- museum visitors as a co-creation process. *Current Issues in Tourism*, 21(12), 1406–1425. <https://doi.org/10.1080/13683500.2017.1373753>
- Antón, C., Camarero, C., & Laguna-García, M. (2017). Towards a new approach of destination loyalty drivers: Satisfaction, visit intensity and tourist motivations. *Current Issues in Tourism*, 20(3), 238–260. <https://doi.org/10.1080/13683500.2014.936834>
- Antón, C., Camarero, C., Laguna, M., & Buhalis, D. (2019). Impacts of authenticity, degree of adaptation and cultural contrast on travellers' memorable gastronomy experiences. *Journal of Hospitality Marketing & Management*, 28(7), 743–764. <https://doi.org/10.1080/19368623.2019.1564106>
- Appleton, J. (2007). Museums for “the people”? In S. Watson (Ed.), *Museums and Their Communities* (pp. 114–126). Routledge.
- Argyropoulos, V. S., & Kanari, C. (2015). Re-imagining the museum through “touch”: Reflections of individuals with visual disability on their experience of museum-visiting in Greece. *Alter, European Journal of Disability Research*, 9(2), 130–143. <https://doi.org/10.1016/j.alter.2014.12.005>
- Arnould, E., Price, L., & Malshe, A. (2006). Toward a cultural resource-based theory of the customer. In R. F. Lusch & S. L. Vargo (Eds.), *The New Dominant Logic in Marketing* (pp. 91–104). M.E.Sharpe. <https://www.researchgate.net/publication/215915344>
- Arnould, E., & Thompson, C. J. (2005). Reflections consumer culture theory (CCT): Twenty years of research. *Journal of Consumer Research*, 31, 868–882. <https://academic.oup.com/jcr/article-abstract/31/4/868/1812998>
- Arora, N., Dreze, X., Ghose, A., Hess, J. D., Iyengar, R., Jing, B., Joshi, Y., Kumar, V., Lurie, N., Neslin, S., Sajeesh, S., Su, M., Syam, N., Thomas, J., & Zhang, Z. J. (2008). Putting one-to-one marketing to work: Personalization, customization, and choice. *Marketing Letters*, 19(3), 305–321. <https://doi.org/10.1007/s11002-008-9056-z>
- Asakawa, S., Guerreiro, J., Ahmetovic, D., Kitani, K. M., & Asakawa, C. (2018, October 22–24). *The present and future of museum accessibility for people with visual impairments*. Proceedings of the 20th International ACM SIGACCESS Conference on Computers and Accessibility, Galway, Ireland. <https://doi.org/10.1145/3234695.3240997>
- Asakawa, S., Guerreiro, J., Sato, D., Takagi, H., Ahmetovic, D., Gonzalez, D., Kitani, K. M.,
-

-
- & Asakawa, C. (2019, May 13-15). *An independent and interactive museum experience for blind people*. Proceedings of the 16th Web For All 2019 Personalization - Personalizing the Web, W4A 2019. San Francisco, CA, USA. <https://doi.org/10.1145/3315002.3317557>
- Azevedo, A. (2009). Designing unique and memorable experiences: Co-creation and the “surprise” factor. *III Congresso Internacional de Turismo de Leiria e Oeste*, 3(1), 42–54.
- Azmat, F., Ferdous, A., Rentschler, R., & Winston, E. (2018). Arts-based initiatives in museums: Creating value for sustainable development. *Journal of Business Research*, 85, 386–395. <https://doi.org/10.1016/j.jbusres.2017.10.016>
- Bagozzi, R. P. (1981). Attitudes, intentions, and behavior: A test of some key hypotheses. *Journal of Personality and Social Psychology*, 41(4), 607–627. <https://doi.org/10.1037/0022-3514.41.4.607>
- Bagozzi, R. P., Gopinath, M., & Nyer, P. U. (1999). The Role of emotions in marketing. *Journal of the Academy of Marketing Science*, 27(2), 184–206.
- Baker, D. A., & Crompton, J. L. (2000). Quality, satisfaction and behavioral intentions. *Annals of Tourism Research*, 27(3), 785–804. [https://doi.org/10.1016/S0160-7383\(99\)00108-5](https://doi.org/10.1016/S0160-7383(99)00108-5)
- Balakrishnan, A., Kulkarni, K., Moirangthem, S., Kumar, C. N., Math, S. B., & Murthy, P. (2019). The Rights of Persons with Disabilities Act 2016: Mental health implications. *Indian Journal of Psychological Medicine*, 41(2), 119–125. https://doi.org/10.4103/IJPSYM.IJPSYM_364_18
- Ball, D., Coelho, P. S., & Vilares, M. J. (2006). Service personalization and loyalty. *Journal of Services Marketing*, 20(6), 391–403. <https://doi.org/10.1108/08876040610691284>
- Ballantyne, D., Varey, R., Frow, P., & Payne, A. (2008). Service-dominant logic and value propositions: Re-examining our mental models. *Otago Forum*, 2, 42–60.
- Ballantyne, D., & Varey, R. J. (2006). Creating value-in-use through marketing interaction: The exchange logic of relating, communicating and knowing. *Marketing Theory*, 6(3), 335–348. <https://doi.org/10.1177/1470593106066795>
-

-
- Ballantyne, D., & Varey, R. J. (2008). The service-dominant logic and the future of marketing. *Journal of the Academy of Marketing Science*, 36(1), 11–14. <https://doi.org/10.1007/s11747-007-0075-8>
- Barker, P., Barrick, J., & Wilson, R. (1995). *Building Sight- A handbook of building and interior design solutions to include the needs of visually impaired people*. Royal National Institute for the Blind.
- Barlow, J., & Maul, D. (2010). *Emotional value - Creating strong bonds with your customers*. Berrett-Koehler.
- Barnes, P., & McPherson, G. (2019). Co-Creating, co-producing and connecting: Museum practice today. *Curator*, 62(2), 257–267. <https://doi.org/10.1111/cura.12309>
- Baron, S., & Harris, K. (2008). Consumers as resource integrators. *Journal of Marketing Management*, 24(1–2), 113–130. <https://doi.org/10.1362/026725708X273948>
- Baron, S., Harris, K., & Davies, B. (1996). Oral participation in retail service delivery: A comparison of the roles of contact personnel and customers. *European Journal of Marketing*, 30(9), 75–90. <https://doi.org/10.1108/03090569610130052>
- Barr, J. (2005). Dumbing down intellectual culture: Frank Furedi, lifelong learning and museums. *Museum and Society*, 3(2), 98–114.
- Barr, J. J., & Bracchitta, K. (2012). Attitudes toward individuals with disabilities: The effects of age, gender, and relationship. *Journal of Relationships Research*, 3(1992), 10–17. <https://doi.org/10.1017/jrr.2012.1>
- Batra, R., & Ahtola, O. (1990). Measuring the hedonic and utilitarian sources of consumer attitudes. *Marketing Letters*, 2(2), 159–170.
- Battarbee, K., & Koskinen, I. (2005). Co-experience: User experience as interaction. *CoDesign*, 1(1), 5–18. <https://doi.org/10.1080/15710880412331289917>
- Baumgartner, T., Esslen, M., & Jäncke, L. (2006). From emotion perception to emotion experience: Emotions evoked by pictures and classical music. *International Journal of Psychophysiology*, 60(1), 34–43. <https://doi.org/10.1016/j.ijpsycho.2005.04.007>
- Beeho, A. J., & Prentice, R. C. (1997). Conceptualizing the experiences of heritage tourists:

-
- A case study of New Lanark World Heritage Village. *Tourism Management*, 18(2), 75–87.
- Belver, M. H., Ullán, A. M., Avila, N., Moreno, C., & Hernández, C. (2018). Art museums as a source of well-being for people with dementia: An experience in the Prado Museum. *Arts and Health*, 10(3), 213–226. <https://doi.org/10.1080/17533015.2017.1381131>
- Bendapudi, N., & Leone, R. P. (2003). Psychological implications of customer participation in co-production. *Journal of Marketing*, 67(1), 14–28. <https://doi.org/10.1509/jmkg.67.1.14.18592>
- Benjamin, S., & Alderman, D. (2018). Performing a different narrative: Museum theater and the memory-work of producing and managing slavery heritage at southern plantation museums. *International Journal of Heritage Studies*, 24(3), 270–282. <https://doi.org/10.1080/13527258.2017.1378906>
- Bergier, B., Bergier, J., & Kubińska, Z. (2010). Environmental determinants of participation in tourism and recreation of people with varying degrees of disability. *Journal of Toxicology and Environmental Health - Part A: Current Issues*, 73(17–18), 1134–1140. <https://doi.org/10.1080/15287394.2010.491042>
- Bertella, G. (2014). The Co-creation of animal-based tourism experience. *Tourism Recreation Research*, 39(1), 115–125. <https://doi.org/10.1080/02508281.2014.11081330>
- Bettencourt, L. A., & Gwinner, K. (1996). Customization of the service experience: The role of the frontline employee. *International Journal of Service Industry Management*, 7(2), 3–20.
- Bharwani, S., & Jauhari, V. (2013). An exploratory study of competencies required to co-create memorable customer experiences in the hospitality industry. *International Journal of Contemporary Hospitality Management*, 25(6), 823–843. <https://doi.org/10.1108/IJCHM-05-2012-0065>
- Binkhorst, E. (2007). Creativity in tourism experiences: The case of Sitges. In J. Richards, G. and Wilson (Ed.), *Tourism, creativity and development* (pp. 125–144). Routledge.
- Binkhorst, E. (2006). The co-creation tourism experience. *XV International Tourism and Leisure Symposium Barcelona*, 1–13.
-

-
- Binkhorst, E., & Den Dekker, T. (2009). Agenda for co-creation tourism experience research. *Journal of Hospitality Marketing & Management*, 18(2–3), 311–327. <https://doi.org/10.1080/19368620802594193>
- Binks, G., Dike, J., & Dagnall, P. (1988). *Visitors Welcome: A manual on the presentation and interpretation of archaeological excavations*. Her Majesty's Stationery Office for English Heritage.
- Bitgood, S. (2010). *An attention-value model of museum visitors*. Center for the Advancement of Informal Science Education. http://caise.insci.org/uploads/docs/VSA_Bitgood.pdf
- Bitner, M. J., Booms, B. H., & Mohr, L. A. (1994). Critical service encounters: The employee's viewpoint. *Journal of Marketing*, 58(4), 95–106. <http://eds.a.ebscohost.com/login.ezproxy.library.ualberta.ca/eds/detail/detail?sid=7a95c303-3cf6-43b8-a4aa-7fe46580a139%40sessionmgr4009&vid=0&hid=4113&bdata=JnNpdGU9ZWRzLWxpdmUmc2NvcGU9c2l0ZQ%3D%3D#AN=9410316036&db=bth>
- Bitner, M. J., Faranda, W. T., Hubbert, A. R., & Zeithaml, V. A. (1997). Customer contributions and roles in service delivery. *International Journal of Service Industry Management*, 8(3), 193–205. <https://doi.org/10.1108/09564239710185398>
- Björk, P. (2014). Tourist experience value : Tourist experience and life satisfaction. In N. K. Prebensen, J. S. Chen, & M. Uysal (Eds.), *Creating experience value in tourism* (pp. 22–32). CABI.
- Björk, P., & Sfantla, C. (2009). A tripartite model of tourist experience. *Matkailututkimus*, 5(2), 5–18.
- Black, G. (2005). *The engaging museum: Developing museums for visitor involvement* (1st ed.). Routledge.
- Black, G. (2012). *Transforming museums in the twenty first century* (1st ed.). Routledge.
- Blazquez-Resino, J. J., Molina, A., & Esteban-Talaya, A. (2015). Service-dominant logic in tourism: The way to loyalty. *Current Issues in Tourism*, 18(8), 706–724. <https://doi.org/10.1080/13683500.2013.863853>
-

-
- Blume-Kohout, M. E., Leonard, S. R., & Novak-Leonard, J. L. (2015). When going gets tough: Barriers and motivations affecting arts attendance. In *Arts Attendance in the Nation: Barriers, Motivations, and Survey of Arts Participation*. NEA Office of Research & Analysis. <https://www.arts.gov/impact/research/publications/when-going-gets-tough-barriers-and-motivations-affecting-arts-attendance>
- Bolton, R., & Saxena-Iyer, S. (2009). Interactive services: A framework, synthesis and research directions. *Journal of Interactive Marketing*, 23(1), 91–104. <https://doi.org/10.1016/j.intmar.2008.11.002>
- Bourgeon-Renault, D., Urbain, C., Petr, C., Le Gall-Ely, M., & Gombault, A. (2006). An experiential approach to the consumption of art and culture: The case of museums and monuments. *International Journal of Arts Management*, 9(1), 35-47,76.
- Bowden, J. L.-H. (2009). The process of customer engagement: A conceptual framework. *Journal of Marketing Theory and Practice*, 17(1), 63–74. <https://doi.org/10.2753/MTP1069-6679170105>
- Bowonder, B., Dambal, A., Kumar, S., & Shirodkar, A. (2010). Innovation strategies for creating competitive advantage. *Research-Technology Management*, 53(3), 19–32. <https://doi.org/10.1080/08956308.2010.11657628>
- Brakus, J. (2001). *A theory of consumer experiences* [Doctoral dissertation, Columbia University]. Columbia University, New York.
- Brida, J., Meleddu, M., & Pulina, M. (2016). Understanding museum visitors' experience: A comparative study. *Journal of Cultural Heritage Management and Sustainable Development*, 6(1), 47–71. <https://doi.org/10.1108/JCHMSD-07-2015-0025>
- Brodie, R. J., Ilic, A., Juric, B., & Hollebeek, L. (2013). Consumer engagement in a virtual brand community: An exploratory analysis. *Journal of Business Research*, 66(1), 105–114. <https://doi.org/10.1016/j.jbusres.2011.07.029>
- Brohman, M. K., Piccoli, G., Martin, P., Zulkernine, F., Parasuraman, A., & Watson, R. T. (2009). A design theory approach to building strategic network - based customer service systems. *Decision Sciences*, 40(3), 403–430. <https://doi.org/10.1111/j.1540-5915.2009.00242.x>
- Brucks, M. (1985). The effects of product class knowledge on information search behavior.
-

-
- Journal of Consumer Research*, 12(1), 1–16. <https://doi.org/10.1086/209031>
- Brunt, P., Horner, S., & Semley, N. (2017). *Research methods in tourism, hospitality and events management* (1st ed.). Sage.
- Bryce, D., Curran, R., O’Gorman, K., & Taheri, B. (2015). Visitors’ engagement and authenticity: Japanese heritage consumption. *Tourism Management*, 46, 571–581. <https://doi.org/10.1016/j.tourman.2014.08.012>
- Buhalis, D., & Darcy, S. (2011). Accessible tourism: Concepts and issues. In B. Dimitros & S. Darcy (Eds.), *Accessible Tourism: Concepts and Issues*. Channel View Publications. <https://doi.org/10.1080/21568316.2011.603886>
- Buhalis, D., & O’Connor, P. (2005). Information communication technology - revolutionizing tourism. *Tourism Recreation Research*, 30(3), 7–16.
- Buonincontri, P., Marasco, A., & Ramkissoon, H. (2017). Visitors’ experience, place attachment and sustainable behaviour at cultural heritage sites: A conceptual framework. *Sustainability*, 9(7), 1112. <https://doi.org/10.3390/su9071112>
- Burnett, J. J., & Baker, H. B. (2001). Assessing the travel-related behaviors of the mobility-disabled consumer. *Journal of Travel Research*, 40(1), 4–11.
- Busser, J. A., & Shulga, L. V. (2018). Co-created value: Multidimensional scale and nomological network. *Tourism Management*, 65(2018), 69–86. <https://doi.org/10.1016/j.tourman.2017.09.014>
- Cabiddu, F., Lui, T.-W., & Piccoli, G. (2013). Managing value co-creation in the tourism industry. *Annals of Tourism Research*, 42(20), 86–107. <https://doi.org/10.1016/j.annals.2013.01.001>
- Cabinet Office. (2006). *Reaching out: An action plan on social exclusion*. http://www.bris.ac.uk/poverty/downloads/keyofficialdocuments/reaching_out_full.pdf
- Cachia, A. (2013). “Disabling” the museum: Curator as infrastructural activist. *Journal of Visual Art Practice*, 12(3), 257–289. https://doi.org/10.1386/jvap.12.3.257_1
- Calver, S. J., & Page, S. J. (2013). Enlightened hedonism: Exploring the relationship of service value, visitor knowledge and interest, to visitor enjoyment at heritage

-
- attractions. *Tourism Management*, 39(2013), 23–36.
<https://doi.org/10.1016/j.tourman.2013.03.008>
- Cambridge University Press. (2021). *Definition of immerse*.
<https://dictionary.cambridge.org/dictionary/english/immerse>
- Campos, A. C. (2016). *Co-creation of tourism experience: Attention, involvement and memorability* [Doctoral Dissertation, Universidade do Algarve].
<https://sapientia.ualg.pt/handle/10400.1/8678>
- Campos, A. C., Mendes, J., Oom do Valle, P., & Scott, N. (2016). Co-creation experiences: Attention and memorability. *Journal of Travel & Tourism Marketing*, 33(9), 1309–1336.
<https://doi.org/10.1080/10548408.2015.1118424>
- Campos, A. C., Mendes, J., Oom do Valle, P., & Scott, N. (2017). Co-creating animal-based tourist experiences: Attention, involvement and memorability. *Tourism Management*, 63, 100–114. <https://doi.org/10.1016/j.tourman.2017.06.001>
- Campos, A. C., Mendes, J., Oom do Valle, P., & Scott, N. (2018). Co-creation of tourist experiences: A literature review. *Current Issues in Tourism*, 21(4), 369–400.
<https://doi.org/10.1080/13683500.2015.1081158>
- Candlin, F. (2003). Blindness, art and exclusion in museums and galleries. *International Journal of Art and Design Education*, 22(1), 100–110. <https://doi.org/10.1111/1468-5949.00343>
- Candlin, F. (2008). Touch, and the limits of the rational museum or can matter think? *The Senses and Society*, 3(3), 277–292. <https://doi.org/10.2752/174589308x331323>
- Carbone, L. P., & Haeckel, S. H. (1994). Engineering customer experiences. *Marketing Management*, 3(3), 1–9.
- Carlson, R. (1997). *Experienced Cognition* (1st ed.). Lawrence Erlbaum Associates, Inc.
- Carneiro, M. J. (2007). *Modelling the choice of tourism destinations: A positioning Analysis* [Doctoral dissertation, University of Aveiro Digital Archive].
<https://ria.ua.pt/bitstream/10773/1841/1/2008000379.pdf>
- Carneiro, M. J., Kastenholz, E., Caldeira, A., & Mesquita, S. (2019). Immersive heritage
-

- tourism experiences through sensorial and cognitive visitor engagement. In W. Gronau (Ed.), *E-Cul-Tours* (pp. 194–204). E-CUL-TOURS.
- Carù, A., & Cova, B. (2003). Revisiting consumption experience. *Marketing Theory*, 3(2), 267–286. <https://doi.org/10.1177/14705931030032004>
- Carù, A., & Cova, B. (2005). The Impact of Service on the artistic experience : The case of classical music concerts. *International Journal of Arts Management*, 7(2), 39–54.
- Carù, A., & Cova, B. (2007). *Consuming experience* (1st ed.). Routledge.
- Carù, A., & Cova, B. (2015). Co-creating the collective service experience. *Journal of Service Management*, 26(2), 276–294. <https://doi.org/10.1108/JOSM-07-2014-0170>
- Cass, N., Shove, E., & Urry, J. (2005). Social exclusion, mobility and access. *Sociological Review*, 53(3), 539–555. <https://doi.org/10.1111/j.1467-954X.2005.00565.x>
- Caton, S., & Chapman, M. (2017). The use of social media and people with intellectual disability: A systematic review and thematic analysis. *Journal of Intellectual & Developmental Disability*, 41(2), 125–139. <https://doi.org/https://doi.org/10.3109/13668250.2016.1153052>
- Cavinato, J., & Cuckovich, M. (1992). Transportation and tourism for the disabled : An assessment. *Transportation Journal*, 31(3), 46–53.
- Chang, E. (2006). Interactive experiences and contextual learning in museums. *Studies in Art Education*, 47(2), 170–186. <https://doi.org/10.1080/00393541.2006.11650492>
- Chathoth, P., Altinay, L., Harrington, R. J., Okumus, F., & Chan, E. S. W. (2013). Co-production versus co-creation: A process based continuum in the hotel service context. *International Journal of Hospitality Management*, 32(1), 11–20. <https://doi.org/10.1016/j.ijhm.2012.03.009>
- Chathoth, P., Ungson, G. R., Harrington, R. J., & Chan, E. S. W. (2016). Co-creation and higher order customer engagement in hospitality and tourism services. *International Journal of Contemporary Hospitality Management*, 28(2), 222–245. <https://doi.org/10.1108/IJCHM-10-2014-0526>
- Chen, C.-F., & Chen, F.-S. (2010). Experience quality, perceived value, satisfaction and

-
- behavioral intentions for heritage tourists. *Tourism Management*, 31(1), 29–35. <https://doi.org/10.1016/j.tourman.2009.02.008>
- Chen, C. F., & Chou, S. H. (2019). Antecedents and consequences of perceived coolness for Generation Y in the context of creative tourism - A case study of the Pier 2 Art Center in Taiwan. *Tourism Management*, 72(2019), 121–129. <https://doi.org/10.1016/j.tourman.2018.11.016>
- Chen, H., & Rahman, I. (2018). Cultural tourism: An analysis of engagement, cultural contact, memorable tourism experience and destination loyalty. *Tourism Management Perspectives*, 26(2018), 153–163. <https://doi.org/10.1016/j.tmp.2017.10.006>
- Chen, J.-S., & Liu, J. C.-C. (2007). Virtual experiential marketing practices: An examination of the moderating effects. *2007 International Conference on Service Systems and Service Management*, 1–6. <https://doi.org/10.1109/ICSSSM.2007.4280122>
- Chen, T., Ou Yang, S., & Leo, C. (2017). The beginning of value co-creation: understanding dynamics, efforts and betterment. *Journal of Service Theory and Practice*, 27(6), 1145–1166. <https://doi.org/10.1108/JSTP-12-2015-0257>
- Cheng, Y. S., Kuo, N. Te, Chang, K. C., & Hu, S. M. (2019). Integrating the Kano model and IPA to measure quality of museum interpretation service: A comparison of visitors from Taiwan and Mainland China. *Asia Pacific Journal of Tourism Research*, 24(6), 483–500. <https://doi.org/10.1080/10941665.2019.1591474>
- Cheung, C. M. K., Shen, X.-L., Lee, Z. W. Y., & Chan, T. K. H. (2015). Promoting sales of online games through customer engagement. *Electronic Commerce Research and Applications*, 14(4), 241–250. <https://doi.org/10.1016/j.elerap.2015.03.001>
- Chiarelli, B., Garofolo, I., & Novak, V. (2018). *Tools to upgrade facilities for all: How to improve business dealing with tourism*. IOS Press. <https://doi.org/10.3233/978-1-61499-923-2-265>
- Chick, A. (2017). Co-creating an accessible, multisensory exhibition with the National Centre for Craft & Design and blind and partially sighted participants. *REDO: 2017 Cumulus International Conference*. <http://eprints.lincoln.ac.uk/27590/>
- Chiscano, M. C., & Darcy, S. (2020). C2C co-creation of inclusive tourism experiences for customers with disability in a shared heritage context experience. *Current Issues in*
-

-
- Tourism*, 1–18. <https://doi.org/10.1080/13683500.2020.1863923>
- Cho, H., & Jolley, A. (2016). Museum education for children with disabilities: Development of the nature senses traveling trunk. *Journal of Museum Education*, 41(3), 220–229. <https://doi.org/10.1080/10598650.2016.1193313>
- Ciasullo, M. V., & Carrubbo, L. (2011). Tourism Systems co-creation exchanges: Service research and system thinking insights for destination competitiveness. In E. Gummesson, C. Mele, & F. Polese (Eds.), *System Theory and Service Science: Integrating three perspectives in a new service agenda*. Giannini. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1903956
- Clawson, M., & Knetsch, J. (2011). *Economics of outdoor recreation*. RFF Press - Resources for the Future.
- Cloquet, I., Palomino, M., Shaw, G., Stephen, G., & Taylor, T. (2018). Disability, social inclusion and the marketing of tourist attractions. *Journal of Sustainable Tourism*, 26(2), 221–237. <https://doi.org/10.1080/09669582.2017.1339710>
- Cock, M., Bretton, M., Fineman, A., France, R., Madge, C., & Sharpe, M. (2018). *State of museum access 2018*. Vocaleyes and Stagertext. <https://vocaleyes.co.uk/state-of-museum-access-2018>
- Cohen, E. (1979). Rethinking the sociology of tourism. *Annals of Tourism Research*, 6(1), 18–35. [https://doi.org/10.1016/0160-7383\(79\)90092-6](https://doi.org/10.1016/0160-7383(79)90092-6)
- Cöner, A. (2003). Personalization and customization in financial portals. *Journal of American Academy of Business*, 2(2), 498–504.
- Constantinou, V., Loizides, F., & Ioannou, A. (2016). A personal tour of cultural heritage for deaf museum visitors. In M. Ioannides et al. (Eds.): (Ed.), *Digital heritage. progress in cultural heritage: Documentation, preservation, and protection*. (pp. 214–221). Springer, Cham. <https://doi.org/10.1007/978-3-319-48974-2>
- Constituição da República Portuguesa, Diário da República: série I, nº86 (1976). <https://dre.pt/legislacao-consolidada/-/lc/34520775/view>
- Council Directive 2000/78/EC, Council of the European Communities. (2000). Official Journal of the European Communities L 303/16. <https://eur-lex.europa.eu/legal->
-

content/EN/TXT/?uri=CELEX:32000L0078

- Council Directive 2001/ 85/ EC, Council of the European Communities. (2001). Official Journal of the European Communities L 42/1. <https://eur-lex.europa.eu/legal-content/ES/TXT/PDF/?uri=CELEX:32001L0085&from=EN>
- Corbetta, P. (2003). *Social research: Theory, methods and technique* (1st ed.). Sage.
- Cova, B., & Dall'i, D. (2009). Working consumers: the next step in marketing theory? *Marketing Theory*, 9(3), 315–339. <https://doi.org/10.1177/1470593109338144>
- Cova, B., & Salle, R. (2008). Marketing solutions in accordance with the S-D logic: Co-creating value with customer network actors. *Industrial Marketing Management*, 37(3), 270–277. <https://doi.org/10.1016/j.indmarman.2007.07.005>
- Crawford, D. W., & Godbey, G. (1987). Reconceptualizing barriers to family leisure. *Leisure Sciences*, 9(2), 119–127. <https://doi.org/10.1080/01490408709512151>
- Crawford, D. W., Jackson, E. L., & Godbey, G. (1991). A hierarchical model of leisure constraints. *Leisure Sciences*, 13(4), 309–320. <https://doi.org/10.1080/01490409109513147>
- Creswell, J. W., & Creswell, J. D. (2018). *Research design: Qualitative, quantitative and mixed methods approaches* (5th ed.). Sage Publications Inc.
- Crompton, J. L., & Love, L. L. (1995). The predictive validity of alternative approaches to evaluating quality of a festival. *Journal of Travel Research*, 34(1), 11–24. <https://doi.org/10.1177/004728759503400102>
- Crotty, M. (1998). *The foundations of social research: Meaning and perspective in the research process*. Sage.
- Csikszentmihalyi, M. (1975). *Beyond boredom and anxiety: Experiencing flow in work and play*. Jossey-Bass Publishers.
- Csikszentmihalyi, M., & Hermanson, K. (1995). Intrinsic Motivation in museums: Why does one want to learn? In E. Hooper-Greenhill (Ed.), *The Educational Role of the Museum* (2nd ed., pp. 146–160). Routledge.
- Cutler, S., & Carmichael, B. (2010). The dimensions of the tourist experience. In *The*

-
- Tourism and Leisure Experience: Consumer and Managerial Perspectives* (pp. 3–26). Channel View Publications. <https://doi.org/10.1017/CBO9781107415324.004>
- Daengbuppha, J., Hemmington, N., & Wilkes, K. (2006). Using grounded theory to model visitor experiences at heritage sites: Methodological and practical issues. *Qualitative Market Research: An International Journal*, 9(4), 367–388. <https://doi.org/10.1108/13522750610689096>
- Daniels, M. J., Drogin Rodgers, E. B., & Wiggins, B. P. (2005). “Travel Tales”: An interpretive analysis of constraints and negotiations to pleasure travel as experienced by persons with physical disabilities. *Tourism Management*, 26(6), 919–930. <https://doi.org/10.1016/j.tourman.2004.06.010>
- Dann, G. (1977). Anomie, ego-enhancement and tourism. *Annals of Tourism Research*, 4(4), 184–194. <http://www.sciencedirect.com/science/article/pii/0160738377900378>
- Dann, G. (2014). Why, oh why, oh why, do people travel aboard? In *Creating experience value in tourism* (2nd ed., pp. 48–62). CAB International.
- Dann, G., & Jacobsen, J. (2002). Leading the tourist by the nose. In G. Dann (Ed.), *The tourist as a metaphor of the social world* (pp. 209–235). CAB International. <https://doi.org/10.1079/9780851996066.0209>
- Dann, G., & Jacobsen, J. (2003). Tourism smellscapes. *Tourism Geographies*, 5(1), 3–25. <https://doi.org/10.1080/1461668032000034033>
- Darcy, S. (1998). Anxiety to access: Tourism patterns and experiences of New South Wales people with physical disability. In *Tourism New South Wales*.
- Darcy, S. (2002). Marginalized participation: Physical disability, high support needs and tourism. *Journal of Hospitality Management*, 9(1), 61–72.
- Darcy, S. (2010). Inherent complexity: Disability, accessible tourism and accommodation information preferences. *Tourism Management*, 31(6), 816–826. <https://doi.org/10.1016/j.tourman.2009.08.010>
- Darcy, S., & Buhalis, D. (2011). Conceptualising Disability: Medical, social, WHO ICF, dimensions and levels of support needs. In D. Buhalis & S. Darcy (Eds.), *Accessible Tourism; Concepts and Issues* (pp. 21–44). Channel View Publications.
-

-
- Darcy, S., Cameron, B., & Pegg, S. (2010). Accessible tourism and sustainability: A discussion and case study. *Journal of Sustainable Tourism, 18*(4), 515–537. <https://doi.org/10.1080/09669581003690668>
- Darcy, S., & Dickson, T. (2009). A whole-of-life approach to tourism: The case for accessible tourism experiences. *Journal of Hospitality and Tourism Management, 16*(1), 32–44. <https://doi.org/10.1375/jhtm.16.1.32>
- Darcy, S., Lock, D., & Taylor, T. (2017). Enabling inclusive sport participation: Effects of disability and support needs on constraints to sport participation. *Leisure Sciences, 39*(1), 20–41. <https://doi.org/10.1080/01490400.2016.1151842>
- Darcy, S., & Pegg, S. (2011). Towards strategic Intent: Perceptions of disability service provision amongst hotel accommodation managers. *International Journal of Hospitality Management, 30*(2), 468–476. <https://doi.org/10.1016/j.ijhm.2010.09.009>
- Darcy, S., & Taylor, T. (2009). Disability citizenship: An Australian human rights analysis of the cultural industries. *Leisure Studies, 28*(4), 419–441. <https://doi.org/10.1080/02614360903071753>
- Darmer, P., & Sundbo, J. (2008). Introduction to experience creation. In J. Sundbo & P. Darmer (Eds.), *Creating Experiences in the Experience Economy* (pp. 1–12). Edward Elgar Publishing. <https://doi.org/10.4337/9781848444003.00005>
- Daruwalla, P., & Darcy, S. (2005). Personal and societal attitudes to disability. *Annals of Tourism Research, 32*(3), 549–570. <https://doi.org/10.1016/j.annals.2004.10.008>
- Davies, A., & Prentice, R. (2017). Conceptualizing the latent visitor to heritage attractions. *The Heritage Tourist Experience: Critical Essays, Volume Two, 16*(7), 53–62. <https://doi.org/10.4324/9781315239248-11>
- Davies, M., & Shaw, L. (2013). Diversifying the museum workforce: The diversify scheme and its impact on participants' careers. *Museum Management and Curatorship, 28*(2), 172–192. <https://doi.org/10.1080/09647775.2013.776799>
- Davies, S. M. (2010). The co-production of temporary museum exhibitions. *Museum Management and Curatorship, 25*(3), 305–321. <https://doi.org/10.1080/09647775.2010.498988>
-

-
- De Bernardi, P., Gilli, M., & Colomba, C. (2018). Unlocking museum digital innovation. Are 4.0 Torino Museums? In *Smart Tourism* (pp. 453–471). McGraw-Hill Education.
- De Rojas, C., & Camarero, C. (2008). Visitors' experience, mood and satisfaction in a heritage context: Evidence from an interpretation center. *Tourism Management*, 29(3), 525–537. <https://doi.org/10.1016/j.tourman.2007.06.004>
- Debenedetti, S. (2003). Investigating the role of companions in the art museum experience. *International Journal of Arts Management*, 5(3), 52–63.
- Decreto-Lei nº291/2009 do Ministério da Saúde, Diário da República, I série, nº197 (2009). <https://dre.pt/application/conteudo/491686>
- Decreto Lei nº163/ 2006 do Ministério do Trabalho e da Solidariedade Social, Diário da República, I série, nº152 (2006). <https://dre.pt/pesquisa/-/search/538624/details/normal?q=Decreto-Lei+n.º+163%2F2006%2Cde+8+de+Agosto>
- den Brinker, B. P. L. M., & Daffertshofer, A. (2005). The IDED method to measure the visual accessibility of the built environment. *International Congress Series*, 1282, 992–996. <https://doi.org/10.1016/j.ics.2005.05.209>
- Dennison, W. F., & Kirk, R. (1990). *Do, review, learn, apply: A simple guide to experiential learning*. Blackwell Education.
- Denzin, N. K., & Lincoln, Y. S. (2018). *The Sage handbook of qualitative research* (5th ed.). Sage.
- Department for Culture Media and Sport. (2000). *Centres for social change: Museums, galleries and archives for all*. <https://www.bestofdocument.com/pdf/centres-for-social-change-museums-galleries-and-archives-for-all/>
- Devile, E. (2009). O Desenvolvimento do turismo acessível: Dos argumentos sociais aos argumentos de mercado. *Revista Turismo & Desenvolvimento*, 11, 39–46.
- Devile, E., & Kastenholz, E. (2018). Accessible tourism experiences: The voice of people with visual disabilities. *Journal of Policy Research in Tourism, Leisure and Events*, 10(3), 265–285. <https://doi.org/10.1080/19407963.2018.1470183>

-
- Dewey, J. (1980). *Art as experience* (1st ed.). Perigee Books.
- Dierking, L. (1989). The family museum experience: Implications from research. *Journal of Museum Education*, 14(2), 9–11.
- Dierking, L., & Falk, J. (1998). Understanding free-choice learning: A review of the research and its application to museum web sites. *MW98: Museums and the Web Conference, 1998*.
https://www.museumsandtheweb.com/mw98/papers/dierking/dierking_paper.html
- Dimitrova-Radojichikj, D. (2017, January). *Museums: Accessibility to visitors with visual impairment*. National Scientific Conference with International Participation in the BaGMIVI Project of the Erasmus + Program “Access to the Art of the Visually Impaired”.
https://www.researchgate.net/publication/313030970_Museums_Accessibility_to_visitors_with_visual_impairment
- Dincer, F., Ozcit, H., Cifci, I., Sezer, B., Kahraman, O., & Sahinoglu, S. (2019). Accessible museums for visually impaired: A case study from Instambul. *Journal of Tourismology*, 5(2), 113–126. <https://doi.org/10.26650/JOT.2019-5-2-0032>
- Ding, M. (2017). Augmented reality in museums. *Museums & Augmented Reality - A Collection of Essays from the Arts Management and Technology Laboratory*, 1–15.
<https://static1.squarespace.com/static/51d98be2e4b05a25fc200cbc/t/5908d019f5e2314ab790c269/1493749785593/Augmented+Reality+in+Museums.pdf>
- Direction des Musées de France. (1997). *Manuel d'accessibilité physique et sensorielle des musées: Des musées pour tous*. DMF et Amplitude.
- Dirsehan, T. (2012). Analyzing museum visitor experiences and post experience dimensions using SEM. *Bogazici Journal*, 26(1), 103–125.
<https://doi.org/10.21773/boun.26.1.6>
- Disabled World. (2020). *Disability: Benefits, facts and resources for persons with disabilities*. Disabled and Disability. www.disabled-world.com/disability/
- Dodd, J., & Jones, C. (2014). *Mind, body, spirit: How museums impact health and wellbeing*. Research Centre for Museums and Galleries.
https://www.lowe.miami.edu/_assets/pdf/mind,-body,-spirit-how-museums-impact-
-

health-and-wellbeing.pdf

- Doering, Z. (1999). Strangers, guests, or clients? Visitor experiences in museums. *Curator*, 42(2), 74–87. <https://doi.org/10.4324/9780203964194-32>
- Domínguez, T., Alén, E., & Fraiz, J. (2013). International accessibility: A proposal for a system of symbols for people with disabilities. *International Journal on Disability and Human Development*, 12(3), 235–243. <https://doi.org/10.1515/ijdhhd-2012-0102>
- Domínguez, T., Darcy, S., & Alén González, E. (2015). Competing for the disability tourism market – A comparative exploration of the factors of accessible tourism competitiveness in Spain and Australia. *Tourism Management*, 47(2015), 261–272. <https://doi.org/10.1016/j.tourman.2014.10.008>
- Domínguez, T., Fraiz, J. A., & Alén, E. (2013). Economic profitability of accessible tourism for the tourism sector in Spain. *Tourism Economics*, 19(6), 1385–1399. <https://doi.org/10.5367/te.2013.0246>
- Dong, B., Evans, K. R., & Zou, S. (2007). The effects of customer participation in co-created service recovery. *Journal of the Academy of Marketing Science*, 36(1), 123–137. <https://doi.org/10.1007/s11747-007-0059-8>
- Dos Santos, L. N., & De Carvalho, R. J. M. (2012). Ergonomics and accessibility for people with visual impairment in hotels. *Work*, 41(2012), 1417–1424. <https://doi.org/10.3233/WOR-2012-0332-1417>
- Dosono, B., Hayes, J., & Wang, Y. (2018). *Toward accessible authentication: Learning from people with visual impairments*. IEEE Internet Computing. <https://doi.org/10.1109/MIC.2018.112101619>
- Drotner, K., & Schrøder, K. C. (2014). *Museum communication and social media: The connected museum* (1st ed.). Routledge. <https://doi.org/10.1177/0267323117699758>
- Duckett, P. S., & Pratt, R. (2001). The Researched opinions on research: Visually impaired people and visual impairment research. *Disability and Society*, 16(6), 815–835. <https://doi.org/10.1080/09687590120083976>
- Durão, M. (2009). *Gestão de visitantes: Uma perspetiva sobre os museus de Portugal* [Master's Thesis, Universidade de Aveiro]. <http://hdl.handle.net/10773/1746>

-
- Dwyer, L., & Darcy, S. (2011). Economic contribution of tourists with disabilities: An Australian approach and methodology. In D. Buhalis & S. Darcy (Eds.), *Accessible Tourism: Concepts and Issues* (pp. 214–240). Channel View Publications.
- Dwyer, L., Gill, A., & Seetaram, N. (2012). *Handbook of research methods in tourism* (1st ed.). Edward Elgar Publishing, Inc. <https://doi.org/10.4337/9781781001295>
- Edson, G., & Dean, D. (1994). *The Handbook of museums* (1st ed.). Routledge.
- Edvardsson, B., Tronvoll, B., & Gruber, T. (2011). Expanding understanding of service exchange and value co-creation: A social construction approach. *Journal of the Academy of Marketing Science*, 39(2), 327–339. <https://doi.org/10.1007/s11747-010-0200-y>
- Eichhorn, V., & Buhalis, D. (2011). Accessibility: A key objective for the tourism industry. In D. Buhalis & S. Darcy (Eds.), *Accessible Tourism: Concepts and Issues*. Channel View Publications.
- Ek, R., Larsen, J., Hornskov, S. B., & Mansfeldt, O. K. (2008). A dynamic framework of tourist experiences: Space-time and performances in the experience economy. *Scandinavian Journal of Hospitality and Tourism*, 8(2), 122–140. <https://doi.org/10.1080/15022250802110091>
- Engel, G. L. (2012). The need for a new medical model: A challenge for biomedicine. *Psychodynamic Psychiatry*, 40(3), 377–396. <https://doi.org/10.1521/pdps.2012.40.3.377>
- Eraqi, M. I. (2011). Co-creation and the new marketing mix as an innovative approach for enhancing tourism industry competitiveness in Egypt. *International Journal of Services and Operations Management*, 8(1), 76. <https://doi.org/10.1504/IJSOM.2011.037441>
- Erätuuli, M., & Sneider, C. (1990). The experiences of visitors in a physics discovery room. *Science Education*, 74(4), 481–493. <https://doi.org/10.1002/sce.3730740408>
- Erbay, N. (2017). Museums and education projects targeting visitors with disabilities. *Milli Egitim*, 1(214), 345–358.
- Etgar, M. (2008). A descriptive model of the consumer co-production process. *Journal of the Academy of Marketing Science*, 36(1), 97–108. <https://doi.org/10.1007/s11747->
-

007-0061-1

- Etgar, M. (2015). Co-production of services: A managerial extension. In R. F. Lusch & S. L. Vargo (Eds.), *The Service-Dominant Logic of Marketing Dialog, Debate and Directions* (pp. 128–138). Routledge.
- European Commission. (2010). *European Disability Strategy 2010-2020: A renewed Commitment to a Barrier-Free Europe*. https://ec.europa.eu/eip/ageing/standards/general/general-documents/european-disability-strategy-2010-2020_en.html
- European Union. (2020). *Charts of fundamental rights*. <https://fra.europa.eu/en/eu-charter/article/26-integration-persons-disabilities>
- Eurostat. (2019). *Ageing Europe — looking at the lives of older people in the EU*. <https://doi.org/10.2785/26745>
- Evans, J., Bridson, K., & Minkiewicz, M. (2013). *Demonstrating Impact – Four Case Studies of Public Art Museums*. https://creative.vic.gov.au/__data/assets/pdf_file/0006/56364/Demonstrating_Impact_in_Public_Art_Museums_Report-2.pdf
- Falk, J., & Dierking, L. (2000). *Learning from museums: Visitor experiences and making of meaning*. Rowman & Littlefield Publishers, Inc.
- Falk, J., & Dierking, L. (2016a). *The museum experience*. Routledge.
- Falk, J., & Dierking, L. (2016b). *The museum experience revisited*. Routledge. <https://doi.org/10.4324/9781315417851>
- Falk, J., & Dierking, L. (1999). The effect of visitation frequency on long-term recollection. *Visitor Studies: Proceeding on the 3rd Annual Visitor Studies Conference*, 94–104.
- Falk, J., Moussouri, T., & Coulson, D. (1998). The effect of visitors' agendas on museum learning. *Curator*, 41(2), 107–120.
- Falk, J., & Storcksdieck, M. (2005). Using the contextual model of learning to understand visitor learning from a science center exhibition. *Science Education*, 89, 744–778. <https://doi.org/10.1002/sce.20078>

-
- Falk, J., & Storksdieck, M. (2010). Science learning in a leisure setting. *Journal of Research in Science Teaching*, 47(2), 194–212.
- Fan, H., & Poole, M. S. (2006). What Is personalization? Perspectives on the design and implementation of personalization in information systems. *Journal of Organizational Computing and Electronic Commerce*, 16(3–4), 179–202. <https://doi.org/10.1080/10919392.2006.9681199>
- Farsani, N. (2019). Promoting ghetto niche tourism in Isfahan, Iran. *Journal of Heritage Tourism*, 15, 1–10. <https://doi.org/10.1080/1743873X.2019.1593990>
- Fédération Nationale des Comités Départementaux du Tourisme. (2004). *Comment accueillir la clientèle handicapée?* <https://vdocuments.net/download/comment-accueillir-doc-fncdt>
- Ferguson, R. J., Paulin, M., & Bergeron, J. (2010). Customer sociability and the total service experience. *Journal of Service Management*, 21(1), 25–44. <https://doi.org/10.1108/09564231011025100>
- Figueiredo, E., Eusébio, C., & Kastenzholz, E. (2012). How diverse are tourists with disabilities? A pilot study on accessible leisure tourism experiences in Portugal. *International Journal of Tourism Research*, 14(6), 531–550. <https://doi.org/10.1002/jtr.1913>
- Fiore, A. M., Lee, S., & Kunz, G. (2004). Individual differences, motivations, and willingness to use a mass customization option for fashion products. *European Journal of Marketing*, 38(7), 835–849. <https://doi.org/10.1108/03090560410539276>
- Firat, A., & Dholakia, N. (2005). *Consuming People: From political economy to theaters of consumption*. Routledge.
- Fishbein, M., & Ajzen, I. (1975). *Belief, attitude, intention, and behavior: An introduction to theory and research*. Philosophy and Rhetoric.
- Fiske, S. T., & Taylor, S. E. (2017). *Social cognition from brains to culture* (3rd ed.). Sage.
- Fleming, J. R. (1967). *America's museums: The Belmont Report*. American Association of Museums. <https://www.americansforthearts.org/by-program/reports-and-data/legislation-policy/naappd/americas-museums-the-belmont-report>
-

-
- Fletcher, A., & Lee, M. (2012). Current social media uses and evaluations in American museums. *Museum Management and Curatorship*, 27(5), 505–521. <https://doi.org/10.1080/09647775.2012.738136>
- Foley, M., & Mcpherson, G. (2000). Museums as leisure. *International Journal of Heritage Studies*, 6(2), 161–174.
- Fontes, F. (2009). Pessoas com deficiência e politicas sociais em Portugal: Da caridade à caridade social. *Revista Crítica de Ciência Sociais*, 86(2009), 73–93. <https://doi.org/https://doi.org/10.4000/rccs.233>
- Fontes, F., Martins, B., & Hespanha, P. (2014). The emancipation of disability studies in Portugal. *Disability and Society*, 29(6), 849–862. <https://doi.org/10.1080/09687599.2014.880332>
- Fornerino, M., Helme-Guizon, A., & Gotteland, D. (2006). Mesurer l'immersion dans une experience de consommation: Premiers developpements. *Actes Du XXII - Congrès de l'Association Française de Marketing*, 1–27.
- Frambach, R. T., Roest, H. C. A., & Krishnan, T. V. (2007). The impact of consumer Internet experience on channel preference and usage intentions across the different stages of the buying process. *Journal of Interactive Marketing*, 21(2), 26–41. <https://doi.org/10.1002/dir.20079>
- Franke, N., & Schreier, M. (2010). Why customers value self-designed products: The importance of process effort and enjoyment. *Journal of Product Innovation Management*, 27(7), 1020–1031. <https://doi.org/10.1111/j.1540-5885.2010.00768.x>
- Frow, P., & Payne, A. (2011). A stakeholder perspective of the value proposition concept. *European Journal of Marketing*, 45(1), 223–240. <https://doi.org/10.1108/03090561111095676>
- Fu, X., & Lehto, X. (2018). Vacation co-creation: The case of Chinese family travelers. *International Journal of Contemporary Hospitality Management*, 30(2), 980–1000. <https://doi.org/10.1108/IJCHM-09-2016-0533>
- Fyrberg, A., & Jüriado, R. (2009). What about interaction? *Journal of Service Management*, 20(4), 420–432. <https://doi.org/10.1108/09564230910978511>
-

-
- Gadsby, J. (2011). The effects of encouraging emotional value in museum experiences. *Museological Review*, 15, 1–13.
- Gallarza, M. G., & Gil, I. (2008). The concept of value and its dimensions: A tool for analysing tourism experiences. *Tourism Review*, 63(3), 4–20. <https://doi.org/10.1108/16605370810901553>
- Gallego, S., & Olalla, M. (2018). Paintings to my ears: A method of studying subjectivity in audio description for art museums. *Linguistica Antverpiensia New Series*, 17, 140–156.
- Galvagno, M., & Dalli, D. (2014). Theory of value co-creation: A systematic literature review. *Managing Service Quality*, 24(6), 643–683. <https://doi.org/10.1108/MSQ-09-2013-0187>
- Gentile, C., Spiller, N., & Noci, G. (2007). How to sustain the customer experience: An overview of experience components that co-create value with the customer. *European Management Journal*, 25(5), 395–410. <https://doi.org/10.1016/j.emj.2007.08.005>
- Gibbs, D., & Ritchie, C. (2010). Theatre in restaurants: Constructing the experience. In M. Morgan, P. Lugosi, & J. R. B. Ritchie (Eds.), *The Tourism and Leisure Experience: Consumer and Managerial Perspectives* (pp. 182–201). Channel View Publications.
- Gillovic, B., & McIntosh, A. (2015). Stakeholder perspectives of the future of accessible tourism in New Zealand. *Journal of Tourism Futures*, 1(3), 223–239. <https://doi.org/10.1108/JTF-04-2015-0013>
- Gillovic, B., McIntosh, A., Cockburn-Wootten, C., & Darcy, S. (2018). Having a voice in inclusive tourism research. *Annals of Tourism Research*, 71(2018), 54–56. <https://doi.org/10.1016/j.annals.2017.12.011>
- Gilmore, G., & Pine, B. (1997). The four faces of mass customization. *Harvard Business Review*, 91–101.
- Gnoth, J., & Knoblock, U. (2012). Segmenting tourism markets by experiences. *2nd Interdisciplinary Tourism Research Conference, 24-29 April*, 385–398.
- Goleman, D. (2009). *Emotional Intelligence : Why it can matter more than IQ*. Bloomsbury publishing Plc.

-
- Goodale, T. L., & Witt, P. A. (1989). Recreation non-participation and barriers to leisure. In E. . Jackson & T. L. Burton (Eds.), *Understanding leisure and recreation: Mapping the past, charting the future* (pp. 421–449). Venture Publishing.
- Goodall, B., Pottinger, G., Dixon, T., & Russell, H. (2004). Heritage property, tourism and the UK Disability Discrimination Act. *Property Management*, 22(5), 345–357. <https://doi.org/10.1108/02637470410570734>
- Goskar, T. (2016). *New code of ethics and what is a museum?* Curatorial Research Center. <https://tehmina.goskar.com/curators/new-code-of-ethics-and-what-is-a-museum/>
- Goss, J., Kollmann, E., Reich, C., & Lacovelli, S. (2015). Understanding the multilingualism and communication of museum visitors who are d/deaf or hard of hearing. *Museums & Social Issues*, 10(1), 52–65. <https://doi.org/10.1179/1559689314Z.00000000032>
- Gould, E. (2019). *ICOM postpones vote on new 'museum' definition*. <https://ial.uk.com/icom-postpones-vote-on-new-museum-definition/>
- Goulding, C. (2000). The museum environment and the visitor experience. *European Journal of Marketing*, 34(3/4), 261–278. http://www.mcbup.com/research_registers/mkt.asp
- Grandi, S. C., & Gomes, L. C. (2017). Experiência de visitantes com deficiência visual na sala de física do museu de ciências da universidade estadual de Maringá. *Revista Brasileira de Educação Especial*, 23(3), 423–438. <https://doi.org/10.1590/s1413-65382317000300008>
- Gray, D. (2004). *Doing Research in the Real World* (1st ed.). Sage.
- Grisseemann, U. S., & Stokburger-Sauer, N. E. (2012). Customer co-creation of travel services: The role of company support and customer satisfaction with the co-creation performance. *Tourism Management*, 33(6), 1483–1492. <https://doi.org/10.1016/j.tourman.2012.02.002>
- Grönroos, C. (1982). An applied service marketing theory. *European Journal of Marketing*, 16(7), 30–41.
- Grönroos, C. (2008). Service logic revisited: Who creates value? And who co-creates? *European Business Review*, 20(4), 298–314.
-

<https://doi.org/10.1108/09555340810886585>

- Grönroos, C. (2011a). A service perspective on business relationships: The value creation, interaction and marketing interface. *Industrial Marketing Management*, 40(2), 240–247. <https://doi.org/10.1016/j.indmarman.2010.06.036>
- Grönroos, C. (2011b). Value co-creation in service logic: A critical analysis. *Marketing Theory*, 11(3), 279–301. <https://doi.org/10.1177/1470593111408177>
- Grönroos, C., & Voima, P. (2012). Critical service logic: Making sense of value creation and co-creation. *Journal of the Academy of Marketing Science*, 41(2), 133–150. <https://doi.org/10.1007/s11747-012-0308-3>
- Guisasola, J., Solbes, J., Barragues, J., Morentin, M., & Moreno, A. (2009). Students' understanding of the special theory of relativity and design for a guided visit to a science museum. *International Journal of Science Education*, 31(15), 2085–2104. <https://doi.org/10.1080/09500690802353536>
- Gummesson, E. (2008). *Total relationship marketing* (3rd ed.). Elsevier Ltd.
- Gummesson, E., & Mele, C. (2010). Marketing as value co-creation through network interaction and resource integration. *Journal of Business Market Management*, 4(4), 181–198. <https://doi.org/10.1007/s12087-010-0044-2>
- Gupta, S., & Vajic, M. (2000). The contextual and dialectical nature of experiences. In J. A. Fitzsimmons & M. J. Fitzsimmons (Eds.), *New Service Development: Creating Memorable Experience* (pp. 33–51). Sage. <https://doi.org/http://dx.doi.org/10.4135/9781452205564>
- Gurian, E. H. (2006). *Civilizing the museum* (1st ed.). Routledge.
- Guttentag, D. (2010). Virtual reality: Applications and implications for tourism. *Tourism Management*, 31(5), 637–651. <https://doi.org/10.1016/j.tourman.2009.07.003>
- Gwinner, K. P., Bitner, M. J., Brown, S. W., & Kumar, A. (2005). Service customization through employee adaptiveness. *Journal of Service Research*, 8(2), 131–148. <https://doi.org/10.1177/1094670505279699>
- Haathi, A. (2006). Experience design management as creation of identity economies:

-
- Reflections from periphery on entrepreneurial designs in tourism. *Environment – Sixth International Conference: Entrepreneurship in United Europe – Challenges and Opportunities*, 1–15.
- Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2019). *Multivariate data analysis* (8th ed.). Cengage. <https://doi.org/10.1002/9781119409137.ch4>
- Hair, J. F., Hult, G. T. M., Ringle, C., & Sarstedt, M. (2014). *A primer on partial least squares structural equation modeling (PLS-SEM)*. SAGE Publications.
- Hair, J. F., Hult, G. T. M., Ringle, C., & Sarstedt, M. (2017). *A primer on partial least squares structural equation modeling (PLS-SEM)* (2nd ed.). Sage. <https://doi.org/10.1080/1743727x.2015.1005806>
- Hall, E. (2010). Spaces of social inclusion and belonging for people with intellectual disabilities. *Journal of Intellectual Disability Research*, 54(1), 48–57. <https://doi.org/10.1111/j.1365-2788.2009.01237.x>
- Harrigan, P., Evers, U., Miles, M., & Daly, T. (2017). Customer engagement with tourism social media brands. *Tourism Management*, 59, 597–609. <https://doi.org/10.1016/j.tourman.2016.09.015>
- Hashim, A. F., Taib, M. Z. M., & Alias, A. (2014). The Integration of interactive display method and heritage exhibition at museum. *Procedia - Social and Behavioral Sciences*, 153, 308–316. <https://doi.org/10.1016/j.sbspro.2014.10.064>
- Hatch, M. J., & Schultz, M. (2010). Toward a theory of brand co-creation with implications for brand governance. *Journal of Brand Management*, 17(8), 590–604. <https://doi.org/10.1057/bm.2010.14>
- Havlena, W. J., & Holbrook, M. B. (1986). The varieties of consumption experience: Comparing two typologies of emotion in consumer behavior. *Journal of Consumer Research*, 13(3), 394–404. <https://doi.org/10.1086/209078>
- Hayhoe, S. (2017). *Blind visitor experiences at art museum*. Rowman & Littlefield. <http://library1.nida.ac.th/termpaper6/sd/2554/19755.pdf>
- He, W., Goodkind, D., & Kowal, P. (2016). *International population report: An aging world : 2015*. <https://ifa.ngo/publication/demographics/aging-world-2015/>
-

-
- Hein, G. (2002). *Learning in the museum*. Routledge.
- Hein, H. (2000). *The Museum in transition– A philosophical perspective*. Smithsonian Institution.
- Henderson, K. A. (2011). Post-positivism and the pragmatics of leisure research. *Leisure Sciences*, 33(4), 341–346. <https://doi.org/10.1080/01490400.2011.583166>
- Hennig-Thurau, T., Gwinner, K. P., & Gremler, D. D. (2002). Understanding relationship marketing outcomes. *Journal of Service Research*, 4(3), 230–247. <https://doi.org/10.1177/1094670502004003006>
- Henseler, J., Ringle, C. M., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of the Academy of Marketing Science*, 43(1), 115–135. <https://doi.org/10.1007/s11747-014-0403-8>
- Hesseldahl, K., McGinley, C., & Monk, G. (2018). Using design thinking to develop new methods of inclusive exhibition making. In *Transforming our world through design, diversity and education* (pp. 151–204). IOS Press.
- Hetherington, K. (2002). The unsightly touching the parthenon frieze. *Theory, Culture & Society*, 19(5/6), 187–205.
- Hetherington, K. (2015). Accountability and disposal: Visual impairment and the museum. *Museum and Society*, 1(2), 104–115. <https://doi.org/10.29311/mas.v1i2.18>
- Hill, M. M., & Hill, A. (2000). *Investigação por questionário* (2nd ed.). Edições Silabo.
- Hillis, C. (2005). Talking Images: Museums, galleries and heritage sites. *International Congress Series*, 1282, 855–859. <https://doi.org/10.1016/j.ics.2005.05.195>
- Hincapié-Ramos, J. D., Guo, X., & Irani, P. (2015, February, 24). *Designing interactive transparent exhibition cases*. 7th International Workshop on Personalized Access to Cultural Heritage (PATCH 2014) - Intelligent User Interfaces Conference. Haifa, Israel. <https://citeseerx.ist.psu.edu/viewdoc/summary?doi=10.1.1.672.3468>
- Hoch, S. J. (2002). Product experience is seductive. *Journal of Consumer Research, Inc.*, 29, 448–454.
- Holbrook, M. B. (1996). Customer Value: A framework for analysis and research. *Advances*
-

-
- in Consumer Research*, 23, 138–142.
- Holbrook, M. B., & Hirschman, E. C. (1982). The experiential aspects of consumption: Consumer fantasies, feelings, and fun. *The Journal of Consumer Research*, 9(2), 132–140.
- Hood, M. G. (1992). After 70 years of audience research, what have we learned? *Visitor Studies*, 5(1), 16–27. <https://doi.org/10.1080/10645579209445757>
- Hooper-Greenhill, E. (1999). *The educational role of the museum* (2nd ed.). Routledge.
- Hooper-Greenhill, E. (2002). *Developing a scheme for finding evidence of the outcomes and impact of learning in museums, archives and libraries: the conceptual framework*. https://leicester.figshare.com/articles/report/Developing_a_scheme_for_finding_evidence_of_the_outcomes_and_impact_of_learning_in_museums_archives_and_libraries_the_conceptual_framework/10076474
- Hooper-Greenhill, E. (2004). Measuring learning outcomes in museums, archives and libraries: The learning impact research project (LIRP). *International Journal of Heritage Studies*, 10(2), 151–174. <https://doi.org/10.1080/13527250410001692877>
- Hooper-Greenhill, E., Sandell, R., Moussouri, T., & O’Riain, H. (2000). *Museums and social inclusion: The GLLAM report*. The GLLAM Report. [http://www2.le.ac.uk/departments/museumstudies/rcmg/projects/museums-and-social-inclusion-the-gllam-report/GLLAM Interior.pdf](http://www2.le.ac.uk/departments/museumstudies/rcmg/projects/museums-and-social-inclusion-the-gllam-report/GLLAM%20Interior.pdf)
- Hosany, S., & Witham, M. (2009). Dimensions of cruisers’ experiences, satisfaction, and intention to recommend. *Journal of Travel Research*, 49(3), 1–14. <https://doi.org/10.1177/0047287509346859>
- Hsieh, C.-M., Park, S. H., & Hitchcock, M. (2015). Examining the relationships among motivation, service quality and loyalty: The case of the National Museum of Natural Science. *Asia Pacific Journal of Tourism Research*, 20(1), 1505–1526. <https://doi.org/10.1080/10941665.2015.1013143>
- Hudson, K. (1977). *Museums for the 1980s: A survey of world Trends*. UNESCO.
- Hui, M. K., & Bateson, J. E. G. (1991). Perceived control and the effects of crowding and consumer choice on the service experience. *Journal of Consumer Research*, 18(2),
-

174. <https://doi.org/10.1086/209250>
- Hung, W., Lee, Y., & Huang, P. (2016). Creative experiences, memorability and revisit intention in creative tourism. *Current Issues in Tourism*, 19(8), 763–770. <https://doi.org/10.1080/13683500.2013.877422>
- Hyun, S. S., & Park, S. H. (2016). The antecedents and consequences of Travelers' Need for Uniqueness: An empirical study of restaurant experiences. *Asia Pacific Journal of Tourism Research*, 21(6), 596–623. <https://doi.org/10.1080/10941665.2015.1062404>
- ICOM. (2013). *ICOM Code of Ethics for Museums*. ICOM International Council of Museums. https://traffickingarchaeology.files.wordpress.com/2016/10/code_ethics2013_eng.pdf
- ICOM. (2017). *ICOM Code of Ethics for Museums*. ICOM International Council of Museums. <https://doi.org/10.1111/j.0028-1425.2007.ethics.x>
- ICOM. (2018). *ICOM Annual Report 2017*. <https://icom.museum/en/ressource/icom-2017-annual-report/>
- ICOM. (2019). *ICOM announces the alternative museum definition that will be subject to a vote*. https://icom.museum/en/news/icom-announces-the-alternative-museum-definition-that-will-be-subject-to-a-vote/?fbclid=IwAR2hhl32h1ZQRSM2TBLGJ972JbcD8nqw2SnZpey_KL9tBAwrYcmo zm9_MxU
- Ihamäki, P. (2012). Geocachers: the creative tourism experience. *Journal of Hospitality and Tourism Technology*, 3(3), 152–175. <https://doi.org/10.1108/17579881211264468>
- Instituto Português de Museus. (2004). Temas de Museologia :Museus e acessibilidade. In *Colecção Temas de Museologia*. Instituto Português de Museus.
- Internet World Stats. (2021). *World Internet usage and population statistics*. <https://internetworldstats.com/stats.htm>
- Israeli, A. (2002). A Preliminary investigation of the importance of site accessibility factors for disabled tourists. *Journal of Travel Research*, 41, 101–104.
- Izard, E. E. (1977). *Human emotions*. Plenum Press.
- Jackson, E. L. (1989). *Barriers to participation in desired leisure activities: Analysis of data*

-
- from the 1988 General Recreation Survey. <https://open.alberta.ca/dataset/7789d575-d655-440e-affc-7f36e1e5e72e/resource/b6ca1e33-6168-4c1b-9005-51318d43aacc/download/1981-Barriers-Executive-Summary-.pdf>
- Jackson, E. L. (2000). Will Research on leisure constraints still be relevant in the twenty-first century? *Journal of Leisure Research*, 32(1), 62–68. <https://doi.org/10.1080/00222216.2000.11949887>
- Jackson, E. L., Crawford, D. W., & Godbey, G. (1993). Negotiation of leisure constraints. *Leisure Sciences*, 15(1), 1–11. <https://doi.org/10.1080/01490409309513182>
- Jackson, E. L., & Scott, D. (1999). Constraints to leisure. In *Leisure studies - prospects for the twenty-first century*. State College: Venture Publishing.
- Jackson, S. A., & Marsh, H. W. (1996). Development and validation of a scale to measure optimal experience: The flow state scale. *Journal of Sport & Exercise Psychology*, 18, 17–35.
- Jacob, N. (2005). Educating children with visual impairments in rural South India: Examining maternal belief profiles. *Disability and Society*, 20(3), 277–291. <https://doi.org/10.1080/09687590500060646>
- Jager, K. (2009). *Intergovernmental panel on climate change*. Cambridge University Press. <https://doi.org/10.1017/CBO9781107415324.004>
- Jaworski, B., & Kohli, A. (2015). The Service-dominant logic of marketing dialog, debate and directions. In R. F. Lusch & S. L. Vargo (Eds.), *The Service-Dominant Logic of Marketing Dialog, Debate and Directions* (pp. 109–117). Routledge.
- Jeffery-Clay, K. R. (1998). Constructivism in museums: How museums create meaningful learning environments. *Journal of Museum Education*, 23(1), 3–7. <https://doi.org/10.1080/10598650.1998.11510362>
- Jelinčić, D. A., Šveb, M., & E. Stewart, A. (2021). Designing sensory museum experiences for visitors' emotional responses. *Museum Management and Curatorship*, 0(0), 1–18. <https://doi.org/10.1080/09647775.2021.1954985>
- Jennings, G. (2010). *Tourism research* (2nd ed.). John Wiley & Sons Australia, Ltd.
-

-
- Joy, A., & Sherry, J. F. (2003). Speaking of art as embodied imagination: A multisensory approach to understanding aesthetic experience. *Journal of Consumer Research*, 30(2), 259–282.
- Jun, J., Kyle, G., & O’Leary, J. (2008). Constraints to art museum attendance. *Journal of Park & Recreation Administration*, 26(1), 40–61.
- Kahn, W. (1990). Psychological conditions of personal engagement and disengagement at work. *Academy of Management Journal*, 33(4), 692–724.
- Kambil, A., Ginsberg, A., & Bloch, M. (1996). Re-inventing value propositions. In *NYU Working Paper* (IS-96-21; Issue 2451).
- Kanfer, R. (1990). Motivation theory and industrial and organizational psychology. In M. D. Dunnette & M. H. Leatta (Eds.), *Handbook of industrial and organizational psychology* (2nd ed.). Consulting Psychologists Press, Inc.
- Kastenholz, E., Eusébio, C., & Figueiredo, E. (2015). Contributions of tourism to social inclusion of persons with disability. *Disability and Society*. <https://doi.org/10.1080/09687599.2015.1075868>
- Kelly, L. (2001). Developing a model of museum visiting. *Museums Australia Annual Conference National Identity*.
- Kelly, L. (2004). Evaluation research and communities of practice: Program evaluation in museums. *Archival Science*, 4(2004), 45–69. <https://doi.org/10.1007/s10502-005-6990-x>
- Kelly, L. (2007). *The interrelationships between adult museum: Visitors’ learning Identities and their museum experiences* [Doctoral Dissertation]. University of Technology, Sydney.
- Kelly, L. (2010). How Web 2.0 is changing the nature of museum work. *Curator: The Museum Journal*, 53(4), 405–410. <https://doi.org/10.1111/j.2151-6952.2010.00042.x>
- Kempiak, J., Hollywood, L., Bolan, P., & McMahon-Beattie, U. (2017). The heritage tourist: An understanding of the visitor experience at heritage attractions. *International Journal of Heritage Studies*, 23(4), 375–392. <https://doi.org/10.1080/13527258.2016.1277776>

-
- Kerin, R. A., Jain, A., & Howard, D. J. (1992). Store shopping experience and consumer price-quality-value perceptions. *Journal of Retailing*, 68(4), 376–397.
- Kerkmann, F., & Lewandowski, D. (2012). Accessibility of web search engines: Towards a deeper understanding of barriers for people with disabilities. *Library Review*, 61(8/9), 608–621. <http://www.emeraldinsight.com/journals.htm?issn=0024-2535&volume=61&issue=8/9&articleid=17065498&show=abstract>
- Kiefer, F. (2000). Arquitetura de museu. *Arquitetura de Museu*, 1, 12–25. https://www.ufrgs.br/propar/publicacoes/ARQtextos/PDFs_revista_1/1_Kiefer.pdf
- Kim, E. E., Mattila, A. S., & Baloglu, S. (2011). Effects of gender and expertise on consumers' motivation to read online hotel reviews. *Cornell Hospitality Quarterly*, 52(4), 399–406. <https://doi.org/10.1177/1938965510394357>
- Kim, H., Cheng, C. K., & O'Leary, J. T. (2007). Understanding participation patterns and trends in tourism cultural attractions. *Tourism Management*, 28, 1366–1371. <https://doi.org/10.1016/j.tourman.2006.09.023>
- Kim, J.-H. (2010). Determining the factors affecting the memorable nature of travel experiences. *Journal of Travel and Tourism Marketing*, 27(8), 780–796. <https://doi.org/10.1080/10548408.2010.526897>
- Kim, J. H., Ritchie, J. R. B., & McCormick, B. (2012). Development of a scale to measure memorable tourism experiences. *Journal of Travel Research*, 51(1), 12–25. <https://doi.org/10.1177/0047287510385467>
- Kim, W. G., Stonesifer, H. W., & Han, J. S. (2012). Accommodating the needs of disabled hotel guests: Implications for guests and management. *International Journal of Hospitality Management*, 31(4), 1311–1317. <https://doi.org/10.1016/j.ijhm.2012.03.014>
- Kim, Y. H., Duncan, J., & Chung, B. W. (2014). Involvement, satisfaction, perceived value, and revisit intention: A case study of a food festival. *Journal of Culinary Science & Technology*, 13(2), 133–158. <https://doi.org/10.1080/15428052.2014.952482>
- Kim, Y. H., Kim, M., Ruetzler, T., & Taylor, J. (2010). An examination of festival attendees' behavior using SEM. *International Journal of Event and Festival Management*, 1(1), 86–95. <https://doi.org/10.1108/17852951011029324>
-

-
- Kinghorn, N., & Willis, K. (2007). Estimating visitor preferences for different art gallery layouts using a choice experiment. *Museum Management and Curatorship*, 22(1), 43–58. <https://doi.org/10.1080/09647770701264887>
- Kinghorn, N., & Willis, K. (2008). Measuring museum visitor preferences towards opportunities for developing social capital: An application of a choice experiment to the discovery museum. *International Journal of Heritage Studies*, 14(6), 555–572. <https://doi.org/10.1080/13527250802503290>
- Kinsey, D., Lang, I., Orr, N., Anderson, R., & Parker, D. (2019). The impact of including carers in museum programmes for people with dementia: a realist review. *Arts and Health*, 00(00), 1–19. <https://doi.org/10.1080/17533015.2019.1700536>
- Kinsley, R. P. (2016). Inclusion in museums: a matter of social justice. *Museum Management and Curatorship*, 31(5), 474–490. <https://doi.org/10.1080/09647775.2016.1211960>
- Kline, R. B. (2015). Principles and practices of structural equation modelling. In *Methodology in the social sciences* (4th ed.). The Guilford Press.
- Knochel, A. D., Hsiao, W. H., & Pittenger, A. (2018). Touching to see: Tactile Learning, Assistive Technologies, and 3-D Printing. *Art Education*, 71(3), 7–13. <https://doi.org/10.1080/00043125.2018.1436320>
- Knudson, D. M., Cable, T. T., & Beck, L. (1995). *Interpretation of cultural and natural resources* (2nd ed.). Venture Publishing, Inc.
- Kohler, T., Fueller, J., Matzler, K., Stieger, D., & Füller, J. (2011). Co-creation in virtual worlds: The design of the user experience. *MIS Quarterly*, 35(3), 773–788. <https://doi.org/10.2307/23042808>
- Kosmas, P., Galanakis, G., Constantinou, V., Drossis, G., Christofi, M., Klironomos, I., Zaphiris, P., Antona, M., & Stephanidis, C. (2020). Enhancing accessibility in cultural heritage environments: Considerations for social computing. *Universal Access in the Information Society*, 19(2), 471–482. <https://doi.org/10.1007/s10209-019-00651-4>
- Kotler, N. (2001). New ways of experiencing culture: The role of museums and marketing implications. *Museum Management and Curatorship*, 19(4), 417–425. <https://doi.org/10.1080/09647770100801904>
-

-
- Kotler, N., & Kotler, P. (2000). Can museums be all things to all people?: Missions, goals, and marketing's role. *Museum Management and Curatorship*, 18(3), 271–287. <https://doi.org/10.1080/09647770000301803>
- Kreziak, D., & Frochot, I. (2011). Co-construction de l'expérience touristique : Les stratégies des touristes en stations de sport d'hiver. *Décisions Marketing*, 64, 23–33. <https://doi.org/10.7193/DM.064.23.33>
- Kristensson, P., Matthing, J., & Johansson, N. (2008). Key strategies for the successful involvement of customers in the co-creation of new technology-based services. *International Journal of Service Industry Management*, 19(4), 474–491. <https://doi.org/10.1108/09564230810891914>
- Krivec, T., Muck, T., Germadnik, R. F., Majnarić, I., & Golob, G. (2014). Adapting artworks for people who are blind or visually impaired using raised printing. *Journal of Visual Impairment and Blindness*, 108(1), 68–76. <https://doi.org/10.1177/0145482x1410800108>
- Kujala, S. (2003). User involvement: A review of the benefits and challenges. *Behaviour & Information Technology*, 22(1), 1–16. <https://doi.org/10.1080/01449290301782>
- Kumar, A. (2007). From mass customization to mass personalization: A strategic transformation. *International Journal of Flexible Manufacturing Systems*, 19(4), 533–547. <https://doi.org/10.1007/s10696-008-9048-6>
- Kusayama, K. (2005). Access to museums for visually challenged people in Japan. *International Congress Series*, 1282, 877–880. <https://doi.org/10.1016/j.ics.2005.05.068>
- Lancioni, G. E., Singh, N. N., O'Reilly, M. ., Alberti, G., Chiariello, V., Campanella, C., Grillo, G., & Tagliente, V. (2019). A program based on common technology to support communication exchanges and leisure in people with intellectual and other disabilities. *Behavior Modification*, 43(6), 879–897. <https://doi.org/10.1177/0145445519850747>
- Lancioni, G. E., Singh, N. N., O'Reilly, M. F., Sigafos, J., Campodonico, F., & Oliva, D. (2010). Two persons with multiple disabilities use orientation technology with auditory cues to manage simple indoor traveling. *Research in Developmental Disabilities*, 31(2), 397–402. <https://doi.org/10.1016/j.ridd.2009.10.002>
-

-
- Lanir, J., Kuflik, T., Sheidin, J., Yavin, N., Leiderman, K., & Segal, M. (2017). Visualizing museum visitors' behavior: Where do they go and what do they do there? *Personal and Ubiquitous Computing*, 21(2), 313–326. <https://doi.org/10.1007/s00779-016-0994-9>
- Larsen, S. (2007). Aspects of a psychology of the tourist experience. *Scandinavian Journal of Hospitality and Tourism*, 7(1), 7–18. <https://doi.org/10.1080/15022250701226014>
- LaSalle, D., & Britton, T. A. (2003). *Priceless; turning ordinary products into extraordinary experiences*. Harvard Business School Press.
- Le Roux, B., Rouanet, H., Savage, M., & Warde, A. (2008). Class and cultural division in the UK. *Sociology*, 42(6), 1049–1071. <https://doi.org/10.1177/0038038508096933>
- Lee, B., & Shafer, C. S. (2002). The dynamic nature of leisure experience: An application of affect control theory. *Journal of Leisure Research*, 34(3), 290–310. <https://doi.org/10.1080/00222216.2002.11949973>
- Lee, H., Jung, T. H., tom Dieck, M. C., & Chung, N. (2020). Experiencing immersive virtual reality in museums. *Information & Management*, 57(5), 103229. <https://doi.org/10.1016/j.im.2019.103229>
- Lee, H. M., & Smith, S. L. J. (2015). A visitor experience scale: Historic sites and museums. *Journal of China Tourism Research*, 11(3), 255–277. <https://doi.org/10.1080/19388160.2015.1083499>
- Lee, S., Kim, W. G., & Kim, H. J. (2006). The impact of co-branding on post-purchase behaviors in family restaurants. *International Journal of Hospitality Management*, 25(2), 245–261. <https://doi.org/10.1016/j.ijhm.2005.04.008>
- Lee, Y.-K., Lee, C. K., Lee, S. K., & Babin, B. J. (2008). Festivalscapes and patrons' emotions, satisfaction, and loyalty. *Journal of Business Research*, 61(1), 56–64. <https://doi.org/10.1016/j.jbusres.2006.05.009>
- Lehto, X., Luo, W., Miao, L., & Ghiselli, R. F. (2018). Shared tourism experience of individuals with disabilities and their caregivers. *Journal of Destination Marketing and Management*, 8, 185–193. <https://doi.org/10.1016/j.jdmm.2017.04.001>
- Lehto, X., O'Leary, J. T., & Morrison, A. M. (2004). The effect of prior experience on vacation
-

-
- behavior. *Annals of Tourism Research*, 31(4), 801–818.
<https://doi.org/10.1016/j.annals.2004.02.006>
- Lei nº 6/71 da Presidência da República, Diário do Governo: I série, n.º 262 (1971).
<https://dre.tretas.org/dre/36767/lei-6-71-de-8-de-novembro>
- Lei nº 9/89 da Assembleia da República, Diário da República: I série, nº100 (1989).
<https://dre.pt/application/file/611817>
- Lei nº38/2004 da Assembleia da República, Diário da República: I série, nº194 (2004).
<https://dre.pt/application/file/480649>
- Lei nº47/2004 da Assembleia da República, Diário da Republica: I série - A, nº195 (2004).
<https://dre.pt/pesquisa/-/search/480516/details/maximized>
- Lei, S. I., Ye, S., Wang, D., & Law, R. (2020). Engaging customers in value co-creation through mobile instant messaging in the tourism and hospitality industry. *Journal of Hospitality and Tourism Research*, 44(2), 229–251.
<https://doi.org/10.1177/1096348019893066>
- Leighton, D. (2007). ‘Step back in time and live the legend’: experiential marketing and the heritage sector. *International Journal of Nonprofit and Voluntary Sector Marketing*, 12(2), 117–125. <https://doi.org/10.1002/nvsm.288>
- Leinhardt, G., Crowley, K., & Knutson, K. (2011). *Learning conversations in museums*. Taylor & Francis e-library. <https://doi.org/10.4324/9781410606624>
- Leinhardt, G., & Gregg, S. M. (2011). Burning buses, burning cross: Student teachers see civil rights. In G. Leinhardt, K. Crowley, & K. Knutson (Eds.), *Learning conversations in museums* (pp. 139–166). Lawrence Erlbaum Associates, Publishers.
- Lengnick-Hall, C. A., Claycomb, V. (Cindy), & Inks, L. W. (2000). From recipient to contributor: examining customer roles and experienced outcomes. *European Journal of Marketing*, 34(3/4), 359–383. <https://doi.org/10.1108/03090560010311902>
- Lewin, K. (1943). Defining the “Field at a given time.” *Psychological Review*, 50, 292–310.
- Lewis, R. C., & Chambers, R. E. (2000). *Marketing leadership in hospitality*. John Willey.
- Li, X. (Robert), & Petrick, J. F. (2008). Tourism marketing in an era of paradigm shift. *Journal*
-

-
- of Travel Research*, 46(3), 235–244. <https://doi.org/10.1177/0047287507303976>
- Liasidou, S., Umbelino, J., & Amorim, É. (2019). Revisiting tourism studies curriculum to highlight accessible and inclusive tourism. *Journal of Teaching in Travel and Tourism*, 19(2), 112–125. <https://doi.org/10.1080/15313220.2018.1522289>
- Little, L., Sideris, J., Ausderau, K., & Baranek, G. (2014). Activity participation among children with autism spectrum disorder. *Research Technology Management*, 68(2), 177–185. <https://doi.org/10.5437/08956308X5505002>
- Liu, W. (2008). Visitor study and operational development of museums. *Museology Quarterly*, 22(3), 21–37.
- Lofman, B. (1991). Elements of experiential consumption: An exploratory study. *NA-Advances in Consumer Research*, 18, 729–735.
- López Sintas, J., García Álvarez, E., & Pérez Rubiales, E. (2014). Art museum visitors: interaction strategies for sharing experiences. *Museum Management and Curatorship*, 29(3), 241–259. <https://doi.org/10.1080/09647775.2014.919175>
- Lu, H. (2009). Accessible network information environment design from the perspective of visual disability. *2009 International Conference on Environmental Science and Information Application Technology*, 669–672. <https://doi.org/10.1109/ESIAT.2009.216>
- Luckerhoff, J., Perreault, R. G., Garon, R., Lapointe, M. C., & Nguyễn-Duy, V. (2008). Visiting Art Museums: Adding values and constraints to socio-economic status. *Loisir et Société/ Society and Leisure*, 31(1), 69–85.
- Lugosi, P. (2014). Mobilising identity and culture in experience co-creation and venue operation. *Tourism Management*, 40, 165–179. <https://doi.org/10.1016/j.tourman.2013.06.005>
- Lugosi, P., & Walls, A. R. (2013). Researching destination experiences: Themes, perspectives and challenges. *Journal of Destination Marketing & Management*, 2(2), 51–58. <https://doi.org/10.1016/j.jdmm.2013.07.001>
- Lusch, R. F., & Vargo, S. L. (2006). Service-dominant logic: Reactions, reflections and refinements. *Marketing Theory*, 6(3), 281–288.
-

<https://doi.org/10.1177/1470593106066781>

- Lusch, R. F., Vargo, S. L., & Wessels, G. (2008). Toward a conceptual foundation for service science: Contributions from service-dominant logic. *IBM Systems Journal*, 47(1), 5–14. <https://doi.org/10.1147/sj.471.0005>
- Lussenhop, A., Mesiti, L., Cohn, E., Orsmond, G., Goss, J., Reich, C., Osipow, A., Pirri, K., & Lindgren-Streicher, A. (2016). Social participation of families with children with autism spectrum disorder in a science museum. *Museums and Social Issues*, 11(2), 122–137. <https://doi.org/10.1080/15596893.2016.1214806>
- Lynch, B. T. (2011). Custom-made reflective practice: Can museums realise their capabilities in helping others realise theirs? *Museum Management and Curatorship*, 26(5), 441–458. <https://doi.org/10.1080/09647775.2011.621731>
- Lyu, S. (2017). Which accessible travel products are people with disabilities willing to pay more? A choice experiment. *Tourism Management*, 59, 404–412. <https://doi.org/10.1016/j.tourman.2016.09.002>
- Lyu, S., Oh, C., & Lee, H. (2013). The Influence of ethnicity and self-construal on leisure constraints. *Leisure Sciences*, 35(2), 145–166. <https://doi.org/10.1080/01490400.2013.761906>
- MacInnis, D. J., & Folkes, V. S. (2010). The disciplinary status of consumer behavior: A sociology of science perspective on key controversies. *Journal of Consumer Research*, 36(6), 899–914. <https://doi.org/10.1086/644610>
- MacLeod, N., Hayes, D., & Slater, A. (2009). Reading the landscape: The development of a typology of literary trails that incorporate an experiential design perspective. *Journal of Hospitality Marketing & Management*, 18(2–3), 154–172. <https://doi.org/10.1080/19368620802590183>
- Maglio, P. P., & Spohrer, J. (2008). Fundamentals of service science. *Journal of the Academy of Marketing Science*, 36(1), 18–20. <https://doi.org/10.1007/s11747-007-0058-9>
- Majboub, W. (2014). Co-creation of value or co-creation of experience? Interrogations in the field of cultural tourism. *International Journal of Safety and Security in Tourism*, 7(7), 12–31.

-
- Malhotra, N. K. (1981). A Scale to measure self-concepts, person concepts, and product concepts. *Journal of Marketing Research*, 18(4), 456. <https://doi.org/10.2307/3151339>
- Malhotra, N. K. (2019). *Marketing research: An applied orientation* (1st ed.). Pearson. <https://amzn.com/013608544X>
- Malhotra, N. K., Nunan, D., & Birks, D. F. (2017). *Marketing research: An applied approach*. Pearson.
- Marty, P. F. (2007). Museum websites and museum visitors: before and after the museum visit. *Museum Management and Curatorship*, 22(4), 337–360. <https://doi.org/10.1080/09647770701757708>
- Mathis, E. F., Kim, H. L., Uysal, M., Sirgy, J. M., & Prebensen, N. K. (2016). The effect of co-creation experience on outcome variable. *Annals of Tourism Research*, 57, 62–75. <https://doi.org/10.1016/j.annals.2015.11.023>
- Mathisen, L. (2013). Staging natural environments: A performance perspective. In Joseph S. Chen (Ed.), *Advances in Hospitality and Leisure* (Vol. 9, pp. 163–183). Emerald Publishing Limited. [https://doi.org/10.1108/S1745-3542\(2013\)0000009012](https://doi.org/10.1108/S1745-3542(2013)0000009012)
- Matthing, J., Sandén, B., & Edvardsson, B. (2004). New service development: Learning from and with customers. *International Journal of Service Industry Management*, 15(5), 479–498. <https://doi.org/10.1108/09564230410564948>
- McCabe, S. (2002). The tourist experience and everyday life. In G.M.S.Dann (Ed.), *The tourist as a metaphor of the social world* (pp. 61–75). CAB International. <https://doi.org/10.1079/9780851996066.0061>
- McCall, V., & Gray, C. (2014). Museums and the “new museology”: Theory, practice and organisational change. *Museum Management and Curatorship*, 29(1), 19–35. <https://doi.org/10.1080/09647775.2013.869852>
- McColl-Kennedy, J. R., Vargo, S. L., Dagger, T. S., Sweeney, J. C., & van Kasteren, Y. (2012). Health care customer value cocreation practice styles. *Journal of Service Research*, 15(4), 370–389. <https://doi.org/10.1177/1094670512442806>
- McKercher, B., & Darcy, S. (2018). Re-conceptualizing barriers to travel by people with disabilities. *Tourism Management Perspectives*, 26, 59–66.
-

<https://doi.org/10.1016/j.tmp.2018.01.003>

- McKercher, B., Packer, T., Yau, M. K., & Lam, P. (2003). Travel agents as facilitators or inhibitors of travel: Perceptions of people with disabilities. *Tourism Management*, 24(4), 465–474. [https://doi.org/10.1016/S0261-5177\(02\)00107-3](https://doi.org/10.1016/S0261-5177(02)00107-3)
- McKim, C. A. (2017). The value of mixed methods research: A mixed methods study. *Journal of Mixed Methods Research*, 11(2), 202–222. <https://doi.org/10.1177/1558689815607096>
- McLellan, H. (2000). Experience design. *CyberPsychology & Behavior*, 3(1), 59–69. <https://doi.org/10.1089/109493100316238>
- McManus, P. (1987). It's the company you keep: The social determination of learning-related behavior in a science museum. *International Journal of Museum Management and Curatorship*, 53, 43–50.
- McMillen, R. (2012). The inclusive art museum: Determining disability access. *The International Journal of the Inclusive Museum*, 4(101–115).
- McMillen, Rebecca, & Alter, F. (2017). Social media, social inclusion, and museum disability access. *Museums and Social Issues*, 12(2), 115–125. <https://doi.org/10.1080/15596893.2017.1361689>
- McPherson, G. (2006). Public memories and private tastes: The shifting definitions of museums and their visitors in the UK. *Museum Management and Curatorship*, 21(1), 44–57. <https://doi.org/10.1080/09647770600602101>
- Mehmetoglu, M., & Engen, M. (2011). Pine and Gilmore's concept of experience economy and its dimensions: An empirical examination in tourism. *Journal of Quality Assurance in Hospitality & Tourism*, 12(4), 237–255. <https://doi.org/10.1080/1528008X.2011.541847>
- Mei, X. Y., & Lantai, T. (2018). Understanding travel constraints: An exploratory study of Mainland Chinese International Students (MCIS) in Norway. *Tourism Management Perspectives*, 28, 1–9.
- Meliones, A., & Sampson, D. (2018). Blind museum tourer: A System for self-guided tours in museums and blind indoor navigation. *Technologies*, 6(1), 1–31.

<https://doi.org/10.3390/technologies6010004>

- Mercier, G. K. (2017). *Differential concerns: Perceived benefits and barriers to visitation from the mental models of museums visitors and non-visitors* [Master Thesis]. University of Washington.
- Merriam-Webster. (2019). *Definition of outcome*. <https://www.merriam-webster.com/dictionary/outcome>
- Merriam-Webster. (2021a). *Definition of barrier*. Merriam-Webster. <https://www.merriam-webster.com/dictionary/barrier>
- Merriam-Webster. (2021b). *Definition of experience*. <https://www.merriam-webster.com/dictionary/experience>
- Merriman, N. (2000). *Beyond the glass: The past, the Heritage and the public*. Routledge.
- Mesquita, S., & Carneiro, M. J. (2016). Accessibility of european museums to visitors with visual impairments. *Disability and Society*, 31(3), 373–388. <https://doi.org/10.1080/09687599.2016.1167671>
- Mesquita, S., & Carneiro, M. J. (2021). Assistive technologies in museums for people with visual impairments. In Celeste Eusébio, L. Teixeira, & M. J. Carneiro (Eds.), *ICT Tools and Applications for Accessible Tourism* (pp. 256–276). IGI Global. <https://doi.org/10.4018/978-1-7998-6428-8.ch012>
- Metatla, O., Serrano, M., Jouffrais, C., Thieme, A., Kane, S., Branham, S., Brulé, É., & Bennett, C. L. (2018). Inclusive education technologies: Emerging opportunities for people with visual impairments. *Conference on Human Factors in Computing Systems - Proceedings*, 2. <https://doi.org/10.1145/3170427.3170633>
- Mey, L. . P., & Mohamed, B. (2010). Service quality, visitor satisfaction and behavioural intentions: Pilot Study at a museum in Malaysia. *Journal of Global Business and Economics*, 1(1), 226–240.
- Michel, S., Brown, S. W., & Gallan, A. S. (2008). An expanded and strategic view of discontinuous innovations: Deploying a service-dominant logic. *Journal of the Academy of Marketing Science*, 36(1), 54–66. <https://doi.org/10.1007/s11747-007-0066-9>

-
- Michopoulou, E., Darcy, S., Ambrose, I., & Buhalis, D. (2015). Accessible tourism futures: the world we dream to live in and the opportunities we hope to have. *Journal of Tourism Futures*, 1(3), 179–188. <https://doi.org/10.1108/JTF-08-2015-0043>
- Migliaccio, G. (2018). Accessible museums in Italy: An overview. *African Journal of Hospitality, Tourism and Leisure*, 7(6), 1–16.
- Migliaccio, G. (2019). Tourism for people with disabilities in Italy: An overview. *African Journal of Hospitality, Tourism and Leisure*, 8(5), 1–19.
- Miller, D. (1998). *Material Culture: Why some things matter* (1st ed.). UCL Press Limited.
- Miller, G., & Kirk, E. (2002). The Disability Discrimination Act : Time for the stick ? *Journal of Sustainable Tourism*, 10(1), 82–88.
- Minkiewicz, J., Bridson, K., & Evans, J. (2016). Co-production of service experiences: insights from the cultural sector. *Journal of Services Marketing*, 30(7), 749–761. <https://doi.org/10.1108/JSM-04-2015-0156>
- Minkiewicz, J., Evans, J., & Bridson, K. (2014). How do consumers co-create their experiences? An exploration in the heritage sector. *Journal of Marketing Management*, 30(1–2), 30–59. <https://doi.org/10.1080/0267257X.2013.800899>
- Mirghadr, L., Torabi Farsani, N., Shafiei, Z., & Hekmat, M. (2018). Identification of key components of visitor education in a museum. *Museum Management and Curatorship*, 33(3), 223–234. <https://doi.org/10.1080/09647775.2018.1466192>
- Mitchell, A., & Dacin, P. (1996). The assessment of alternative measures of consumer expertise. *Journal of Consumer Research*, 23(3), 219–239.
- Mkono, M. (2012). Authenticity does matter. *Annals of Tourism Research*, 39(1), 480–483. <https://doi.org/10.1016/j.annals.2011.06.004>
- MLA - Modern Language Association. (2001). *Using museums, archives and libraries to develop a learning community: A strategic plan for action, draft for consultation*.
- Mohammadi, F., Yazdani, H. R., Jami Pour, M., & Soltani, M. (2021). Co-creation in tourism: A systematic mapping study. *Tourism Review*, 76(2), 305–343. <https://doi.org/10.1108/TR-10-2019-0425>
-

-
- Mohr, L. A., & Bitner, M. J. (1995). Process factors in service delivery: What employee effort means to customers. *Journal of Business Research*, 32, 239–252. [https://doi.org/10.1016/S1067-5671\(95\)04020-X](https://doi.org/10.1016/S1067-5671(95)04020-X)
- Montgomery, A. L., & Smith, M. D. (2009). Prospects for personalization on the internet. *Journal of Interactive Marketing*, 23(2), 130–137. <https://doi.org/10.1016/j.intmar.2009.02.001>
- Mook, D. G. (1996). Motivation: The organization of action. *Revista de Psicología*, 26(4), 156–159.
- Moore, W. L., & Lehmann, D. R. (1980). Individual differences in search behavior for a nondurable. *Journal of Consumer Research*, 7(3), 296–307. <https://doi.org/10.1086/208817>
- Moorhouse, N., tom Dieck, M., & Jung, T. (2017). Augmented reality to enhance the learning experience in cultural heritage tourism: An experiential learning cycle perspective. *EReview of Tourism Research*, 8, 1–5.
- Moorhouse, N., tom Dieck, M., & Jung, T. (2019). An experiential view to children learning in museums with augmented reality. *Museum Management and Curatorship*, 34(4), 402–418. <https://doi.org/10.1080/09647775.2019.1578991>
- Morgan, M. (2006). Making space for experiences. *Journal of Retail & Leisure Property*, 5(4), 305–313. <https://doi.org/10.1057/palgrave.rlp.5100034>
- Morgan, M., Elbe, J., & de Esteban Curiel, J. (2009). Has the experience economy arrived? The views of destination managers in three visitor-dependent areas. *International Journal of Tourism Research*, 11(2), 201–216. <https://doi.org/10.1002/jtr.719>
- Morgan, M., & Xu, F. (2009). Student travel experiences: Memories and dreams. *Journal of Hospitality Marketing & Management*, 18(2–3), 216–236. <https://doi.org/10.1080/19368620802591967>
- Moscardo, G. (1996). Mindful visitors: Heritage and tourism. *Annals of Tourism Research*, 23(2), 376–397. [https://doi.org/10.1016/0160-7383\(95\)00068-2](https://doi.org/10.1016/0160-7383(95)00068-2)
- Mossberg, L. (2007). A Marketing approach to the tourist experience. *Scandinavian Journal of Hospitality and Tourism*, 7(1), 59–74. <https://doi.org/10.1080/15022250701231915>
-

-
- Moussouri, T. (2002). *A Context for the development of learning outcomes in museums, libraries and archives*. Research Centre for Museums and Galleries. <https://www.informalscience.org/context-development-learning-outcomes-museums-libraries-and-archives>
- Moussouri, T. (2007). Implications of the social model of disability for visitor research. *Visitor Studies*, 10(1), 90–106. <https://doi.org/10.1080/10645570701263479>
- Mukhtar, M., Ismail, M. N., & Yahya, Y. (2012). A hierarchical classification of co-creation models and techniques to aid in product or service design. *Computers in Industry*, 63(4), 289–297. <https://doi.org/10.1016/j.compind.2012.02.012>
- Mullens, F., & Glorieux, I. (2019). No interest, no time! Gendered constraints to museum visits in Flanders. *Loisir et Societe*, 42(2), 244–265. <https://doi.org/10.1080/07053436.2019.1626036>
- Mygind, L., Hällman, A. K., & Bentsen, P. (2015). Bridging gaps between intentions and realities: a review of participatory exhibition development in museums. *Museum Management and Curatorship*, 30(2), 117–137. <https://doi.org/10.1080/09647775.2015.1022903>
- Nambisan, S. (2010). *Information technology and product development* (Vol. 5). Springer.
- Nambisan, S., & Baron, R. A. (2009). Virtual customer environments: Testing a model of voluntary participation in value co-creation activities. *Journal of Product Innovation Management*, 26(4), 388–406. <https://doi.org/10.1111/j.1540-5885.2009.00667.x>
- Naniopoulos, A., Tsalis, P., Papanikolaou, E., Kalliagra, A., & Kourmpeti, C. (2015). Accessibility improvement interventions realised in byzantine monuments of Thessaloniki, Greece. *Journal of Tourism Futures*, 1(3), 254–268. <https://doi.org/10.1108/JTF-03-2015-0008>
- Naylor, G., & Kleiser, S. (2002). Exploring the differences in perceptions of satisfaction across lifestyle segments. *Journal of Vacation Marketing*, 8(4), 343–351. <https://doi.org/10.1177/135676670200800405>
- Neal, J. D., Sirgy, M. J., & Uysal, M. (1999). The Role of satisfaction with leisure travel/tourism services and experience in satisfaction with leisure life and overall life. *Journal of Business Research*, 44(3), 153–163. <https://doi.org/10.1016/S0148->
-

2963(97)00197-5

- Neal, W. D. (1999). Satisfaction is nice , but value drives loyalty. *Marketing Reserach*, 11(1), 21–23.
- Nenonen, S., & Storbacka, K. (2010). Business model design: Conceptualizing networked value co-creation. *International Journal of Quality and Service Sciences*, 2(1), 43–59. <https://doi.org/10.1108/17566691011026595>
- Nesset, V., & Large, A. (2004). Children in the information technology design process: A review of theories and their applications. *Library and Information Science Research*, 26(2), 140–161. <https://doi.org/10.1016/j.lisr.2003.12.002>
- Neuhofer, B. (2016). Value co-creation and co-destruction in connected tourist experiences. In A. Inversini & R. Schegg (Eds.), *Information and Communication Technologies in Tourism 2016* (pp. 779–792). Springer International Publishing. https://doi.org/10.1007/978-3-319-28231-2_56
- Neuhofer, B., Buhalis, D., & Ladkin, A. (2012). Conceptualising technology enhanced destination experiences. *Journal of Destination Marketing & Management*, 1(1–2), 36–46. <https://doi.org/10.1016/j.jdmm.2012.08.001>
- Neuhofer, B., Buhalis, D., & Ladkin, A. (2013). High tech for high touch experiences: A case study from the hospitality industry. In L. Cantoni & Z. (Phil) Xiang (Eds.), *Information and Communication Technologies in Tourism 2013* (pp. 290–301). Springer Berlin Heidelberg. https://doi.org/10.1007/978-3-642-36309-2_25
- Neuman, W. L. (2007). *Basics of social research: Qualitative and quantitative approaches*. Pearson Education, Inc. <https://doi.org/10.1007/s13398-014-0173-7.2>
- Newman, A., & McLean, F. (2002). Architectures of inclusion: museums, galleries and inclusive communities. In R. Sandell (Ed.), *Museums, Society and Inequality* (pp. 54–67). Routledge.
- Newman, M., & Weldin, N. (2010). Museums, multimedia and me: Enhancing the experience of visiting the British Museum through the use of multimedia with people with learning disabilities. *The International Journal of Inclusive Museum*, 2(4), 67–78. <https://doi.org/18848/1835-2014/CGP/v02i04/44292>

-
- Nielsen, J. (2015). The relevant museum: Defining relevance in museological practices. *Museum Management and Curatorship*, 30(5), 364–378. <https://doi.org/10.1080/09647775.2015.1043330>
- Nowacki, M. (2005). Evaluating a museum as a tourist product using the servqual method. *Museum Management and Curatorship*, 20(3), 235–250. <https://doi.org/10.1080/09647770500602003>
- Nowacki, M. (2011). Constraints to visitor attractions attendance. *Ekonomicka Revue Cestovného Ruchu*, 44(4), 225–240.
- Nowacki, M., & Kruczek, Z. (2021). Experience marketing at Polish museums and visitor attractions: the co-creation of visitor experiences, emotions and satisfaction. *Museum Management and Curatorship*, 36(1), 62–81. <https://doi.org/10.1080/09647775.2020.1730228>
- Nyaupane, G. P., & Andereck, K. L. (2008). Understanding travel constraints: Application and extension of a leisure constraints model. *Journal of Travel Research*, 46(4), 433–439. <https://doi.org/10.1177/0047287507308325>
- Nyaupane, G. P., Morais, D. B., & Graefe, A. R. (2004). Nature tourism constraints: A cross-activity comparison. *Annals of Tourism Research*, 31(3), 540–555. <https://doi.org/10.1016/j.annals.2004.01.006>
- O'Hern, M., & Rindfleisch, A. (2008). *Customer co-creation: A Typology and Research Agenda*.
- O'Neill, M. (2006). Essentialism, adaptation and justice: Towards a new epistemology of museums. *Museum Management and Curatorship*, 21(2), 95–116. <https://doi.org/10.1080/09647770600302102>
- O'Shaughnessy, J., & O'Shaughnessy, N. J. (2009). The service-dominant perspective: A backward step? *European Journal of Marketing*, 43(5/6), 784–793. <https://doi.org/10.1108/03090560910947043>
- O'Sullivan, E., & Spangler, K. (1998). *Experience Marketing: Strategies for the new millennium*. Venture Publishing, Inc.
- Oh, H., Fiore, A. M., & Jeung, M. (2007). Measuring experience economy concepts :
-

-
- tourism applications. *Journal of Travel Research*, 46, 119–132. <https://doi.org/10.1177/0047287507304039>
- Olya, H. G. T., Altinay Gazi, Z., Altinay Aksal, F., & Altinay, M. (2018). Behavioral intentions of disabled tourists for the use of peer-to-peer accommodations: An application of fsQCA. *International Journal of Contemporary Hospitality Management*, 30(1), 436–454. <https://doi.org/10.1108/IJCHM-08-2016-0471>
- Ooi, C.-S. (2005). A theory of tourism experiences. In T. O'Dell & P. Billing (Eds.), *Experiencescapes: Tourism, culture, and economy* (pp. 51–68). Copenhagen Business School Press DK.
- Ooi, C.-S. (2003). Crafting Tourism Experiences: Managing the attention product. *12th Nordic Symposium on Tourism and Hospitality Research, October*, 2–5.
- Ordanini, A., & Pasini, P. (2008). Service co-production and value co-creation: The case for a service-oriented architecture (SOA). *European Management Journal*, 26(5), 289–297. <https://doi.org/10.1016/j.emj.2008.04.005>
- Othman, M. K. (2012). *Measuring visitors' experiences with mobile guide technology in cultural spaces* [Doctoral dissertation, University of York].
- Othman, M. K., Aman, S., Anuar, N. N., & Ahmad, I. (2021). Improving children's cultural heritage experience using game-based learning at a living museum. *Journal on Computing and Cultural Heritage*, 14(3). <https://doi.org/10.1145/3453073>
- Otto, J. E., & Ritchie, J. R. B. (1996). The service experience in tourism. *Tourism Management*, 17(3), 165–174. <http://link.springer.com/10.1007/s00261-007-9272-7>
- Overend, D. (2012). Performing sites: Illusion and authenticity in the spatial stories of the guided tour. *Scandinavian Journal of Hospitality and Tourism*, 12(1), 44–54. <https://doi.org/10.1080/15022250.2012.678070>
- Oxford English Dictionnaire. (2021). *Definition of barrier*. Oxford English Dictionary. <https://www.oxfordlearnersdictionaries.com/definition/english/barrier?q=barrier>
- Paciello, M. (2000). *Web accessibility for people with disabilities* (2nd ed.). CMPbooks.
- Packer, J. (2006). Learning for fun: The unique contribution of educational leisure
-

- experiences. *Curator*, 49(3), 329–344.
- Packer, J. (2008). Beyond learning: Exploring visitors' perceptions of the value and benefits of museum experiences. *Curator: The Museum Journal*, 51(1), 33–54. <https://doi.org/10.1111/j.2151-6952.2008.tb00293.x>
- Packer, J., & Ballantyne, R. (2004). Is educational leisure a contradiction in terms? Exploring the synergy of education and entertainment. *Annals of Leisure Research*, 7(1), 54–71.
- Packer, J., & Ballantyne, R. (2005). Solitary vs. shared: Exploring the social dimension of museum learning. *Curator*, 48(2), 177–192.
- Packer, T. L., Mckercher, B., & Yau, M. K. (2007). Understanding the complex interplay between tourism, disability and environmental contexts. *Disability and Rehabilitation*, 29(4), 281–291.
- Pagán, R. (2012). Time allocation in tourism for people with disabilities. *Annals of Tourism Research*, 39(3), 1514–1537. <https://doi.org/10.1016/j.annals.2012.04.005>
- Pandey, S., & Kumar, D. (2020). Customer-to-customer value co-creation in different service settings. *Qualitative Market Research*, 23(1), 123–143. <https://doi.org/10.1108/QMR-09-2018-0106>
- Parasuraman, A., Zeithaml, V. A., & Berry, L. L. (1985). A Conceptual model of service quality and its implications for future research. *Journal of Marketing*, 49(4), 41–50. <https://doi.org/10.2307/1251430>
- Paris, S. G. (1997). Situated motivation and informal learning. *Journal of Museum Education*, 22(2–3), 22–27. <https://doi.org/10.1080/10598650.1997.11510356>
- Paris, S. G., & Mercer, M. J. (2011). Finding self in objects: Identity exploration in museums. In L. Gaea, K. Crowley, & K. Knutson (Eds.), *Learning Conversations in Museums* (pp. 405–427). Lawrence Erlbaum Associates, Publishers. <https://doi.org/10.4324/9781410606624-19>
- Park, C. W., & Lessig, V. P. (1981). Familiarity and its impact on consumer decision biases and heuristics. *Journal of Consumer Research*, 8(2), 223–231. <https://doi.org/10.1086/208859>

-
- Passafaro, P. (2020). Attitudes and tourists' sustainable behavior: An overview of the literature and discussion of some theoretical and methodological issues. *Journal of Travel Research*, 59(4), 579–601. <https://doi.org/10.1177/0047287519851171>
- Patel, M., Heath, C., Luff, P., vom Lehn, D., & Cleverly, J. (2016). Playing with words: creativity and interaction in museums and galleries. *Museum Management and Curatorship*, 31(1), 69–86. <https://doi.org/10.1080/09647775.2015.1102641>
- Patterson, I., Darcy, S., & Mönninghoff, M. (2012). Attitudes and experiences of tourism operators in Northern Australia towards people with disabilities. *World Leisure Journal*, 54(3), 215–229. <https://doi.org/10.1080/04419057.2012.702452>
- Pattison, S. A., & Dierking, L. D. (2013). Staff-mediated learning in museums: A social interaction perspective. *Visitor Studies*, 16(2), 117–143. <https://doi.org/10.1080/10645578.2013.767731>
- Payne, A., Storbacka, K., & Frow, P. (2008). Managing the co-creation of value. *Journal of the Academy of Marketing Science*, 36(1), 83–96. <https://doi.org/10.1007/s11747-007-0070-0>
- Payne, A., Storbacka, K., Frow, P., & Knox, S. (2009). Co-creating brands: Diagnosing and designing the relationship experience. *Journal of Business Research*, 62(3), 379–389. <https://doi.org/10.1016/j.jbusres.2008.05.013>
- Pearce, P. (2005). *Tourism behaviour -Themes and conceptual schemes*. Channel View Publications.
- Pekarik, A. ., Doering, Z., & Karns, D. A. (1999). Exploring satisfying experiences in museums. *Curator*, 42(2), 152–173.
- Pekarik, A. J., & Schreiber, J. B. (2012). The power of expectations. *Curator: The Museum Journal*, 55(4), 487–496. <https://doi.org/10.4324/9781003091615-5>
- Pera, R., Occhiocupo, N., & Clarke, J. (2016). Motives and resources for value co-creation in a multi-stakeholder ecosystem: A managerial perspective. *Journal of Business Research*, 69(10), 4033–4041. <https://doi.org/10.1016/j.jbusres.2016.03.047>
- Pera, R., & Viglia, G. (2015). Turning ideas into products: Subjective well-being in co-creation. *The Service Industries Journal*, 35(7–8), 388–402.
-

<https://doi.org/10.1080/02642069.2015.1015521>

- Petrick, J. F. (2004). The roles of quality, value and satisfaction in predicting cruise passengers' behavioral intentions. *Journal of Travel Research*, 42(4), 397–407. <https://doi.org/10.1177/0047287504263037>
- Phelan, S., Bauer, J., & Lewalter, D. (2018). Visit motivations: Development of a short scale for comparison across sites. *Museum Management and Curatorship*, 33(1), 25–41. <https://doi.org/10.1080/09647775.2017.1389617>
- Piccialli, F., & Chianese, A. (2017). Cultural heritage and new technologies: Trends and challenges. *Personal and Ubiquitous Computing*, 21(2), 187–189. <https://doi.org/10.1007/s00779-016-0984-y>
- Pine, B., & Gilmore, J. (1998). Welcome to the experience economy. *Harvard Business Review*, 97–105.
- Pine, B., & Gilmore, J. (1999). *The experience economy: Work is a theatre & every business a stage*. Harvard Business School Press.
- Plutchik, R. (1980). *Emotion : A psychoevolutionary synthesis*. Harper & Row.
- Poll, R., & Payne, P. P. (2006). Impact measures for libraries and information services. *Library Hi Tech*, 24(4), 547–562. <https://doi.org/10.1108/07378830610715419>
- Poria, Y., Reichel, A., & Brandt, Y. (2009). People with disabilities visit art museums: An exploratory study of obstacles and difficulties. *Journal of Heritage Tourism*, 4(2), 117–129. <https://doi.org/10.1080/17438730802366508>
- Poria, Y., Reichel, A., & Brandt, Y. (2010). The flight experiences of people with disabilities: An exploratory study. *Journal of Travel Research*, 49(2), 216–227. <https://doi.org/10.1177/0047287509336477>
- Poria, Y., Reichel, A., Brandt, Y., & Gadsby, J. (2011). Dimensions of hotel experience of people with disabilities: An exploratory study. *International Journal of Contemporary Hospitality Management*, 23(5), 571–591. <https://doi.org/10.1108/09596111111143340>
- Porter, M. E. (1985). Competitive advantage: Creating and sustaining superior

-
- performance. In M. E. Porter (Ed.), *The Free Press* (Issue 1). The Free Press.
<https://doi.org/10.1016/j.neubiorev.2009.11.015>
- Prahalad, C. K., & Ramaswamy, V. (2000). Co-opting customer competence. *Harvard Business Review*, 79–87.
- Prahalad, C. K., & Ramaswamy, V. (2004). Co-creation experiences: The next practice in value creation. *Journal of Interactive Marketing*, 18(3), 5–14.
<https://doi.org/10.1002/dir.20015>
- Prebensen, N. K., Chen, J. S., & Uysal, M. (2014). Co-creation of tourist experience: scope, definition and structure. In *Creating experience value in tourism* (pp. 1–10). CABI.
<https://doi.org/10.1079/9781786395030.0001>
- Prebensen, N. K., Chen, J. S., & Uysal, M. S. (2018). Creating experience value in tourism. In *Journal of Materials Processing Technology*. CABI.
- Prebensen, N. K., & Foss, L. (2011). Coping and co-creating in tourist experiences. *International Journal of Tourism Research*, 13(1), 54–67.
<https://doi.org/10.1002/jtr.799>
- Prebensen, N. K., Kim, H., & Uysal, M. (2016). Cocreation as moderator between the experience value and satisfaction relationship. *Journal of Travel Research*, 55(7), 934–945. <https://doi.org/10.1177/0047287515583359>
- Prebensen, N. K., Vittersø, J., & Dahl, T. I. (2013). Value co-creation significance of tourist resources. *Annals of Tourism Research*, 42(20), 240–261.
<https://doi.org/10.1016/j.annals.2013.01.012>
- Prebensen, N. K., Woo, E., Chen, J., & Uysal, M. (2013). Motivation and involvement as antecedents of the perceived value of the destination experience. *Journal of Travel Research*, 52(2), 253–264. <https://doi.org/10.1177/0047287512461181>
- Prebensen, N. K., Woo, E., & Uysal, S. (2014). Experience value antecedents and consequences. *Current Issues in Tourism*, 17(10), 910–928.
- Prebensen, N. K., & Xie, J. (2017). Efficacy of co-creation and mastering on perceived value and satisfaction in tourists' consumption. *Tourism Management*, 60, 166–176.
<https://doi.org/10.1016/j.tourman.2016.12.001>
-

-
- Prentice, R., Davies, A., & Beeho, A. (1997). Seeking generic motivations for visiting and not visiting museums and like cultural attractions. *Museum Management and Curatorship*, 16(1), 45–70. <https://doi.org/10.1080/09647779700501601>
- Pühretmair, F. (2004). It's time to make more jobs good jobs. *Human-Computer Interaction -- INTERACT 2011*, 272–279.
- Puhretmair, F., & Nussbaum, G. (2011). Web design, assistive technologies and accessible tourism. In D. Buhalis & S. Darcy (Eds.), *Accessible Tourism: Concepts and Issues* (pp. 274–286). Channel View Publications.
- Quan, S., & Wang, N. (2004). Towards a structural model of the tourist experience: An illustration from food experiences in tourism. *Tourism Management*, 25, 297–305. [https://doi.org/10.1016/S0261-5177\(03\)00130-4](https://doi.org/10.1016/S0261-5177(03)00130-4)
- Quivy, R., & Van Campenhoudt, L. (2005). *Manual de investigação em ciências sociais* (4th ed.). Gradiva.
- Rahimi, F. (2014). A model for sociocultural interactions in museums. *Museum Management and Curatorship*, 29(2), 174–187. <https://doi.org/10.1080/09647775.2014.888821>
- Ralph, N. (2017). *Understanding disability*. Drake Music. <https://www.drakemusic.org/blog/nim-ralph/understandind-disability/>
- Ramaswamy, V., & Ozcan, K. (2018). What is co-creation? An interactional creation framework and its implications for value creation. *Journal of Business Research*, 84, 196–205. <https://doi.org/10.1016/j.jbusres.2017.11.027>
- Ramkissoon, H., & Uysal, M. (2008). Authenticity as a value co-creator of tourism experiences. In N. K. Prebensen, J. S. Chen, & M. S. Uysal (Eds.), *Creating experience value in tourism* (pp. 137–149). CAB International. <https://doi.org/10.1079/9781786395030.0098>
- Ramkissoon, H., & Uysal, M. S. (2011). The effects of perceived authenticity, information search behaviour, motivation and destination imagery on cultural behavioural intentions of tourists. *Current Issues in Tourism*, 14(6), 537–562. <https://doi.org/10.1080/13683500.2010.493607>
-

-
- Ramsey White, T., Hede, A., & Rentschler, R. (2009). Lessons from arts experiences for service-dominant logic. *Marketing Intelligence & Planning*, 27(6), 775–788. <https://doi.org/10.1108/02634500910988672>
- Randle, M., & Dolnicar, S. (2019). Enabling people with impairments to use airbnb. *Annals of Tourism Research*, 76, 278–289. <https://doi.org/10.1016/j.annals.2019.04.015>
- Ray, N., & Ryder, M. E. (2003). “Eibilities” tourism: An exploratory discussion of the travel needs and motivations of the mobility-disabled. *Tourism Management*, 24, 57–72. www.ebility.com,
- Reed, M. G. (1997). Power relations and community-based tourism planning. *Annals of Tourism Research*, 24(3), 566–591. [https://doi.org/10.1016/S0160-7383\(97\)00023-6](https://doi.org/10.1016/S0160-7383(97)00023-6)
- Reich, C., Price, J., Rubin, E., & Steiner, M. (2010). Inclusion, disabilities, and informal science learning. In *CAISE Inquiry Group Report*.
- Reichinger, A., Maierhofer, S., & Purgathofer, W. (2011). High-quality tactile paintings. *Journal on Computing and Cultural Heritage*, 4(2), 1–13. <https://doi.org/10.1145/2037820.2037822>
- Rennie, L. J., & Johnston, D. J. (2004). The nature of learning and its implications for research on learning from museums. *Science Education*, 88(S1), S4–S16. <https://doi.org/10.1002/sce.20017>
- Resolution A/RES/37/52, United Nations, United Nations (1982). <http://un-documents.net/a37r52.htm>
- Resolution A/RES/48/96, United Nations, United Nations (1993). <http://www.un-documents.net/a48r96.htm>
- Resolution A/RES/56/168, United Nation, United Nations (2002). <https://documents-dds-ny.un.org/doc/UNDOC/GEN/N01/488/76/PDF/N0148876.pdf?OpenElement>
- Resolution A/RES/61/106, United Nations, United Nations (2006). <http://un-documents.net/a61r106.htm>
- Richards, G. (1996). Production and consumption of european cultural tourism. *Annals of Tourism Research*, 23(2), 261–283. [https://doi.org/0160-7383\(95\)00063-1](https://doi.org/0160-7383(95)00063-1)

-
- Richards, G. (2002). Tourism attraction systems: Exploring cultural behavior. *Annals of Tourism Research*, 29(4), 1048–1064. [https://doi.org/S0160-7383\(02\)00026-9](https://doi.org/S0160-7383(02)00026-9)
- Richards, G. (2007). Tourism development trajectories - from culture to creativity? *Encontros Científicos- Tourism & Management Studies*, 6, 1–15.
- Richards, G. (2011). Creativity and tourism. *Annals of Tourism Research*, 38(4), 1225–1253. <https://doi.org/10.1016/j.annals.2011.07.008>
- Richards, V., Matthews, N., Williams, O. J., & Khan, Z. (2021). The challenges of accessible tourism information systems for tourists with vision impairment. In C. Eusébio, L. Teixeira, & M. J. Carneiro (Eds.), *ICT Tools and Applications for Accessible Tourism* (pp. 26–54). IGI Global. <https://doi.org/10.4018/978-1-7998-6428-8.ch002>
- Richards, V., Pritchard, A., & Morgan, N. (2010). (Re) Envisioning tourism and visual impairment. *Annals of Tourism Research*, 37(4), 1097–1116. <https://doi.org/10.1016/j.annals.2010.04.011>
- Rieger, J., Kessler, C., & Strickfaden, M. (2019). Doing dis/ordered mappings: Shapes of inclusive spaces in museums. *Space and Culture*, 1–16. <https://doi.org/10.1177/1206331219850442>
- Rihova, I., Buhalis, D., Gouthro, M. B., & Moital, M. (2018). Customer-to-customer co-creation practices in tourism: Lessons from Customer-Dominant logic. *Tourism Management*, 67, 362–375. <https://doi.org/10.1016/j.tourman.2018.02.010>
- Rihova, I., Buhalis, D., Moital, M., & Gouthro, M. B. (2013). Social layers of customer-to-customer value co-creation. *Journal of Service Management*, 24(5), 553–566. <https://doi.org/10.1108/JOSM-04-2013-0092>
- Rihova, I., Buhalis, D., Moital, M., & Gouthro, M. B. (2015). Conceptualising customer-to-customer value co-creation in tourism. *International Journal of Tourism Research*, 17(4), 356–363. <https://doi.org/10.1002/jtr.1993>
- Ringle, C. M., Wende, S., & Becker, J. M. (2015). *SmartPLS3*. SmartPLS GmbH.
- Rioux, M. H. (2011). Disability rights and change in a global perspective. *Sport in Society*, 14(9), 1094–1098. <https://doi.org/10.1080/17430437.2011.614766>
-

-
- Ritchie, J. R. B., & Crouch, G. I. (2003). *The Competitive destination: A sustainable tourism perspective*. CAB Publishing. <https://doi.org/10.1079/9780851996646.0001>
- Rnib et Vocaleyeyes. (2003). *The talking Images research - Museums, galleries and heritage sites: improving access for blind and partially sighted people*.
- Rodgers, P. (2005). *Managing access at the museum: Disability & institutional boundaries*. Museum Studies Program. <http://www.sssp1.org/extras/SSSP Patrick Rodgers.pdf>
- Roggeveen, A. L., Tsiros, M., & Grewal, D. (2012). Understanding the co-creation effect: when does collaborating with customers provide a lift to service recovery? *Journal of the Academy of Marketing Science*, 40(6), 771–790. <https://doi.org/10.1007/s11747-011-0274-1>
- Romero, D., & Molina, A. (2011). Collaborative networked organisations and customer communities: Value co-creation and co-innovation in the networking era. *Production Planning & Control*, 22(5–6), 447–472. <https://doi.org/10.1080/09537287.2010.536619>
- Ryan, C. (2002). Tourism and cultural proximity: Examples from New Zeland. *Annals of Tourism Research*, 29(4), 952–971.
- Ryder, I. (2007). Customer experience. *Journal of Brand Management*, 15(2), 85–88. <https://doi.org/10.1057/palgrave.bm.2550127>
- Salloum, C., & Azoury, N. (2012). Corporate governance and firms in financial distress: Evidence from a Middle Eastern country. *International Journal of Business Governance and Ethics*, 7(1), 1. <https://doi.org/10.1504/IJBGE.2012.046102>
- Salloum, C., Azzi, G., & Gebrayel, E. (2014). Audit committee and financial distress in the Middle East context: Evidence of the Lebanese financial institutions. *International Strategic Management Review*, 2(1), 39–45. <https://doi.org/10.1016/j.ism.2014.09.001>
- Salmen, J. (1998). *Everyone's welcome : The Americans with disabilities act and museums*. American Association of Museums. <https://files.eric.ed.gov/fulltext/ED437754.pdf>
- Samuelsen, R. (2010). Creating experience values-producing experience spaces: A pragmatic inquiry into spatial practice and materiality of experience-based value creation. *Regional Studies Association Annual International Conference 2010*,

-
- Regional Responses and Global Shifts: Actors Institutions and Organisation*, 1–29.
- Sandell, R. (1998). *Sandell 2000: Museums as agents of social inclusion*. 17(4), 401–418.
- Sandell, R. (2002). *Museums, society and inequality*. Routledge.
- Sandell, R. (2003). Social inclusion, the museum and the dynamics of sectoral change. *Museum and Society*, 1(1), 45–62.
- Sanders, E. B.-N., & Stappers, P. J. (2008). Co-creation and the new landscapes of design. *CoDesign*, 4(1), 5–18. <https://doi.org/10.1080/15710880701875068>
- Santos-Vijande, M. L. (2012). Internal marketing as a driver of market orientation and co-creation culture in the tourism sector. *African Journal of Business Management*, 6(13), 4707–4716. <https://doi.org/10.5897/AJBM11.1717>
- Sawhney, M., Verona, G., & Prandelli, E. (2005). Collaborating to create: The Internet as a platform for customer engagement in product innovation. *Journal of Interactive Marketing*, 19(4), 4–17. <https://doi.org/10.1002/dir.20046>
- Schauble, L., Gleason, M., Lehrer, R., Bartlett, K., Petrosino, A., Allen, A., Clinton, K., Ho, E., Jones, M., Lee, Y. S., Phillips, J.-A., Siegler, J., & Street, J. (2002). Supporting science learning in museums. In G. Leinhardt, K. Crowley, & K. Knutson (Eds.), *Learning Conversations in Museums* (pp. 425–452). Lawrence Erlbaum Associates.
- Schmitt, B. (1999). Experiential marketing. *Journal of Marketing Management*, 15(1–3), 53–67. <https://doi.org/10.1362/026725799784870496>
- Schmitt, B. (2010). Experience marketing: Concepts, frameworks and consumer insights. *Foundations and Trends® in Marketing*, 5(2), 55–112. <https://doi.org/10.1561/17000000027>
- Schmitt, B., & Simonson, A. (1997). *Marketing aesthetics: The strategic management of brands, identity, and image*. Free Press.
- Scott, C. A. (2009). Exploring the evidence base for museum value. *Museum Management and Curatorship*, 24(3), 195–212. <https://doi.org/10.1080/09647770903072823>
- Scott, C., Dodd, J., & Sandell, R. (2006). *User value of museums and galleries: a critical view of the literature*. <https://le.ac.uk/rcmg/research-archive/engaging-with-museums->
-

- Scott, N., Laws, E., & Boksberger, P. (2009). The Marketing of hospitality and leisure experiences. *Journal of Hospitality Marketing & Management*, 18(2–3), 99–110. <https://doi.org/10.1080/19368620802590126>
- Selby, M. (2004). Consuming the city: Conceptualizing and researching urban tourist knowledge. *Tourism Geographies*, 6(2), 186–207. <https://doi.org/10.1080/1461668042000208426>
- Sfandla, C., & Björk, P. (2013). Tourism experience network: Co-creation of experiences in interactive processes. *International Journal of Tourism Research*, 15(5), 495–506. <https://doi.org/10.1002/jtr.1892>
- Shakespeare, T. (2018). *Disability the basics* (1st Ed.). Routledge.
- Shaw, G., Bailey, A., & Williams, A. (2011). Aspects of service-dominant logic and its implications for tourism management: Examples from the hotel industry. *Tourism Management*, 32(2), 207–214. <https://doi.org/10.1016/j.tourman.2010.05.020>
- Shaw, G., & Coles, T. (2004). Disability, holiday making and the tourism industry in the UK: a preliminary survey. *Tourism Management*, 25(3), 397–403. [https://doi.org/10.1016/S0261-5177\(03\)00139-0](https://doi.org/10.1016/S0261-5177(03)00139-0)
- Shaw, G., & Veitch, C. (2011). Demographic drivers of change in tourism and the challenge of inclusive products. In D. Buhalis & S. Darcy (Eds.), *Accessible tourism concepts and issues* (pp. 160–173). Channel View.
- Shen, A., & Ball, A. D. (2009). Is personalization of services always a good thing? Exploring the role of technology-mediated personalization (TMP) in service relationships. *Journal of Services Marketing*, 23(2), 80–92. <https://doi.org/10.1108/08876040910946341>
- Sheng, C.-W., & Chen, M.-C. (2012). A study of experience expectations of museum visitors. *Tourism Management*, 33(1), 53–60. <https://doi.org/10.1016/j.tourman.2011.01.023>
- Sheth, J. N., Newman, B. I., & Gross, B. L. (1991). Why we buy what we buy: A theory of consumption values. *Journal of Business Research*, 22, 159–170. [https://doi.org/http://dx.doi.org/10.1016/0148-2963\(91\)90050-8](https://doi.org/http://dx.doi.org/10.1016/0148-2963(91)90050-8)

-
- Shulga, L., Busser, J., & Henthorne, T. (2015). Conceptual model of customer- company interaction in value co-creation. In J. Pesonen & R. Komppula (Eds.), *Tourism engagement: co-creation well-being* (pp. 304–309). University of Eastern Finland.
- Sickler, J., & Fraser, J. (2009). Enjoyment in zoos. *Leisure Studies*, 28(3), 313–331. <https://doi.org/10.1080/02614360903046649>
- Simon, N. (2010). *The Participatory museum*. Museum 2.0.
- Simonson, I. (2005). Determinants of customers' responses to customized offers: Conceptual framework and reaserch propositions. *Journal of Marketing*, 69, 32–45.
- Sirgy, M. J. (1982). Self-concept in consumer behavior: A critical review. *Journal of Consumer Research*, 9(3), 287. <https://doi.org/10.1086/208924>
- Slåtten, T., Krogh, C., & Connolley, S. (2011). Make it memorable: Customer experiences in winter amusement parks. *International Journal of Culture, Tourism and Hospitality Research*, 5(1), 80–91. <https://doi.org/10.1108/175061811111111780>
- Small, J., & Darcy, S. (2010). Tourism, disability and mobility. In S. Cole & N. Morgan (Eds.), *Tourism and Inequality: Problems and Prospects* (pp. 1–20). CABI Publishing. <https://doi.org/10.1079/9781845936624.0001>
- Small, J., Darcy, S., & Packer, T. (2012). The embodied tourist experiences of people with vision impairment: Management implications beyond the visual gaze. *Tourism Management*, 33(4), 941–950. <https://doi.org/10.1016/j.tourman.2011.09.015>
- Smith, R. W. (1987). Leisure of disable tourists. Barriers to participation. *Annals of Tourism Research*, 14(3), 376–389. [https://doi.org/10.1016/0160-7383\(87\)90109-5](https://doi.org/10.1016/0160-7383(87)90109-5)
- Song, H. J., Lee, C.-K., Park, J. A., Hwang, Y. H., & Reisinger, Y. (2015). The Influence of tourist experience on perceived value and satisfaction with temple stays: The experience economy theory. *Journal of Travel & Tourism Marketing*, 32(4), 401–415. <https://doi.org/10.1080/10548408.2014.898606>
- Song, J., & Qu, H. (2017). The mediating role of consumption emotions. *International Journal of Hospitality Management*, 66, 66–76. <https://doi.org/10.1016/j.ijhm.2017.06.015>
-

-
- Soren, B. J. (2009). Museum experiences that change visitors. *Museum Management and Curatorship*, 24(3), 233–251. <https://doi.org/10.1080/09647770903073060>
- Souca, N. (2010). Accessible tourism - The ignored opportunity. *Annals of the University of Oradea - Economic Science*, 1(2), 1154–1157.
- Stainton, C. (2011). Voices and images: Making connections between identity and art. In Gaea Leinhardt, K. Crowley, & K. Knutson (Eds.), *Learning Conversations in Museums* (pp. 213–249). Lawrence Erlbaum Associates, Publishers. <https://doi.org/10.4324/9781410606624-13>
- Stephen, A. (2001). The contemporary museum and leisure: Recreation as a museum function. *Museum Management and Curatorship*, 19(3), 297–308. <https://doi.org/10.1080/09647770100601903>
- Sternberg, E. (1997). The iconography of the tourism experience. *Annals of Tourism Research*, 24(4), 951–969. [https://doi.org/10.1016/S0160-7383\(97\)00053-4](https://doi.org/10.1016/S0160-7383(97)00053-4)
- Sthapit, E., & Björk, P. (2019). Sources of value co-destruction: Uber customer perspectives. *Tourism Review*, 74(4), 780–794. <https://doi.org/10.1108/TR-12-2018-0176>
- Streitz, N. A., Rucker, C., Prante, T., van Alphen, D., Stenzel, R., & Magerkurth, C. (2005, March). Designing smart artifacts for smart environments. *Computer*, 38(3), 41–49. <https://doi.org/10.1109/MC.2005.92>
- Suchy, S. (2006). Museum management: Emotional value and community engagement. *Museum Management: Emotional Value and Community Engagement*, 10.
- Sugathan, P., & Ranjan, K. R. (2019). Co-creating the tourism experience. *Journal of Business Research*, 100, 207–217. <https://doi.org/10.1016/j.jbusres.2019.03.032>
- Sunikka, A., & Bragge, J. (2012). Applying text-mining to personalization and customization research literature – Who, what and where? *Expert Systems with Applications*, 39(11), 10049–10058. <https://doi.org/10.1016/j.eswa.2012.02.042>
- Surprenant, C. F. ., & Solomon, M. R. (1987). Predictability and personalization in the service encounter. *Journal of Marketing*, 51(2), 86–96.
-

-
- Sweet, J. (2007). Museum architecture and visitor experience. In *Museum marketing: Competing in the global marketplace* (pp. 226–237). Butterworth-Heinemann. <https://doi.org/10.1016/B978-0-7506-3560-8.50001-9>
- Taheri, B. (2011). *Unpacking visitor engagement: Examining drivers of engagement in museums* [Doctoral dissertation, University of Strathclyde].
- Taheri, B., & Jafari, A. (2012). Museums as playful venues in the leisure society. In R. Sharpley & S. Philip (Eds.), *The Contemporary Tourist Experience: Concepts and Consequences* (pp. 201–215). Routledge.
- Taheri, B., Jafari, A., & O’Gorman, K. (2014). Keeping your audience: Presenting a visitor engagement scale. *Tourism Management*, 42, 321–329. <https://doi.org/10.1016/j.tourman.2013.12.011>
- Tan, S.-K., Kung, S.-F., & Luh, D.-B. (2013). A model of “creative experience” in creative tourism. *Annals of Tourism Research*, 41, 153–174. <https://doi.org/10.1016/j.annals.2012.12.002>
- Tan, S.-K., Luh, D.-B., & Kung, S.-F. (2014). A taxonomy of creative tourists in creative tourism. *Tourism Management*, 42, 248–259. <https://doi.org/10.1016/j.tourman.2013.11.008>
- Tanev, S., Knudsen, M., & Gerstlberger, W. (2009). Value co-creation as part of an integrative vision of innovation management. *Open Source Business Resource*, December 2009, 1–8. <http://timreview.ca/article/309>
- Tarssanen, S., & Kylanen, M. (2005). A theoretical model for producing experiences - A touristic perspective. In M. Kylänen (Ed.), *Articles on Experiences 2* (pp. 134–154). Lapland University Press.
- Tavassoli, N. T. (1998). Language in multimedia: Interaction of spoken and written information. *Journal of Consumer Research*, 25, 26–37.
- Tesoriero, R., Gallud, J. A., Lozano, M., & Penichet, V. M. R. (2014). Enhancing visitors’ experience in art museums using mobile technologies. *Information Systems Frontiers*, 16(2), 303–327. <https://doi.org/10.1007/s10796-012-9345-1>
- The World Bank. (2018). *Investing in opportunity, ending poverty*. Annual Report 2018.

<https://doi.org/10.1109/ITCS.2009.35>

- Thompson, K. (2008). Tourism decision making and the service centred dominant logic of marketing. *18th Annual CAUTHE Conference. CD-ROM, Griffith University, Gold Coast.*
- Tilden, F. (1977). Interpreting our heritage. In *Chapel Hill Books* (3rd ed.). The University of North Carolina Press. <https://doi.org/973.07 TIL>
- Tlili, A., Gewirtz, S., & Cribb, A. (2007). New labour's socially responsible museum. *Policy Studies, 28*(3), 269–289. <https://doi.org/10.1080/01442870701437634>
- Toffler, A. (1980). *The third wave*. William Morrow. <http://search.proquest.com/docview/1307457779?accountid=8330%5Cnhttp://library.anu.edu.au:4550/resserv?genre=unknown&issn=00322687&title=Policy+Sciences&volume=13&issue=3&date=1981-06-01&atitle=The+Third+Wave+%22by%22+Alvin+Toffler+%28Book+Review%29&spage>
- Trampe, D., Quoidbach, J., & Taquet, M. (2015). Emotions in everyday life. *PLoS ONE, 10*(12), 1–15. <https://doi.org/10.1371/journal.pone.0145450>
- Treaty on disability rights, European Community, March 30, 2007, Treaties and other international. https://ec.europa.eu/commission/presscorner/detail/en/IP_07_446
- Tsaur, S.-H., Chiu, Y.-T., & Wang, C.-H. (2007). The visitors behavioral consequences of experiential marketing. *Journal of Travel & Tourism Marketing, 21*(1), 47–64. https://doi.org/10.1300/J073v21n01_04
- Tsaur, S.-H., Yen, C. H., & Chen, C. L. (2010). Independent tourist knowledge and skills. *Annals of Tourism Research, 37*(4), 1035–1054. <https://doi.org/10.1016/j.annals.2010.04.001>
- Tuan, L. T., Rajendran, D., Rowley, C., & Khai, D. C. (2019). Customer value co-creation in the business-to-business tourism context: The roles of corporate social responsibility and customer empowering behaviors. *Journal of Hospitality and Tourism Management, 39*(June 2018), 137–149. <https://doi.org/10.1016/j.jhtm.2019.04.002>
- Tung, V. W. S., & Ritchie, J. R. B. (2011). Exploring the essence of memorable tourism

-
- experiences. *Annals of Tourism Research*, 38(4), 1367–1386.
<https://doi.org/10.1016/j.annals.2011.03.009>
- Udo, J. P., & Fels, D. I. (2010). Enhancing the entertainment experience of blind and low-vision theatregoers through touch tours. *Disability & Society*, 25(2), 231–240.
<https://doi.org/10.1080/09687590903537497>
- Uhlenberg, P. (2009). International handbook of population aging. In P. Uhlenberg (Ed.), *International Handbooks of Population 1* (Vol. 1). Springer.
- United Nations. (2006). Resolution A/RES/61/106, United Nation. In *A/RES/61/106*.
<https://doi.org/10.5463/DCID.v29i4.656>
- United Nations. (2016). The rights of persons with disabilities act 2016. In *Kerala Journal of Psychiatry*. <https://doi.org/10.30834/kjp.33.1.2020.183>
- United Nations, & Escap. (2008). *Disability at a glance: A profile of 28 Countries and Areas in Asia and Pacific*.
- Uriely, N. (2005). The tourist experience: Conceptual developments. *Annals of Tourism Research*, 32(1), 199–216. <https://doi.org/10.1016/j.annals.2004.07.008>
- Van Aalst, I., & Boogaarts, I. (2002). From museum to mass entertainment the evolution of the role of museums in cities. *European Urban and Regional Studies*, 9(3), 195–209.
- Vargo, S. L. (2008). Customer integration and value creation. *Journal of Service Research*, 11(2), 211–215. <https://doi.org/10.1177/1094670508324260>
- Vargo, S. L., & Lusch, R. F. (2004). Evolving to a new dominant logic for marketing. *Journal of Marketing*, 68(1), 1–17. <https://doi.org/10.1509/jmkg.68.1.1.24036>
- Vargo, S. L., & Lusch, R. F. (2008). Service-dominant logic: Continuing the evolution. *Journal of the Academy of Marketing Science*, 36(1), 1–10.
<https://doi.org/10.1007/s11747-007-0069-6>
- Vargo, S. L., & Lusch, R. F. (2011). It's all B2B...and beyond: Toward a systems perspective of the market. *Industrial Marketing Management*, 40(2), 181–187.
<https://doi.org/10.1016/j.indmarman.2010.06.026>
-

-
- Vargo, S. L., Lusch, R. F., Archpru Akaka, M., & He, Y. (2010). *Review of Marketing Research* (Vol. 6). Esmerald Group Publishing, Ltd. [https://doi.org/10.1108/S1548-6435\(2009\)0000006010](https://doi.org/10.1108/S1548-6435(2009)0000006010)
- Vargo, S. L., Maglio, P. P., & Akaka, M. A. (2008). On value and value co-creation: A service systems and service logic perspective. *European Management Journal*, 26(3), 145–152. <https://doi.org/10.1016/j.emj.2008.04.003>
- Vaz, R. (2020). Co-creating an integrative framework to enhance the museum experience of blind and visually impaired visitors. In C. M. Ramos, C. R. Almeida, & P. O. Fernandes (Eds.), *Handbook of research on social media applications for the Tourism and Hospitality Sector* (pp. 164–191). IGI Global. <https://doi.org/10.4018/978-1-7998-1947-9.ch011>
- Vaz, R., Fernandes, P., & Veiga, A. (2018). Interactive Technologies in Museums: How Digital Installations and Media Art Enhancing the Visitors' Experience. In *Handbook of Research on Technological developments for cultural Heritage and eTourism Applications* (pp. 30–53). IGI Global.
- Veal, A. J. (2018). *Research methods for leisure and tourism* (5th ed.). Pearson.
- Vieira, A. L. (2010). Relationship marketing and the philosophy of science: A tribal journey through relationship quality. *Journal of Relationship Marketing*, 9(2), 83–97. <https://doi.org/10.1080/15332661003768724>
- Vinzi, V. E., Chin, W. W., Henseler, J., & Wang, H. (2010). *Handbook of Partial Least Squares: Concepts, methods and applications* (Vol. 206, Issue 1). Springer. [https://doi.org/10.1016/S0021-9258\(18\)71293-3](https://doi.org/10.1016/S0021-9258(18)71293-3)
- Volo, S. (2009). Conceptualizing experience: A tourist based approach. *Journal of Hospitality Marketing & Management*, 18(2–3), 111–126. <https://doi.org/10.1080/19368620802590134>
- vom Lehn, D. (2006). Embodying experience. *European Journal of Marketing*, 40(11/12), 1340–1359. <https://doi.org/10.1108/03090560610702849>
- vom Lehn, D. (2010). Discovering “Experience-ables”: Socially including visually impaired people in art museums. *Journal of Marketing Management*, 26(7–8), 749–769. <https://doi.org/10.1080/02672571003780155>
-

-
- Voss, C. (2004). *Trends in the experience and service economy- The experience profit cycle*.
https://www.researchgate.net/publication/242274223_Trends_in_the_Experience_and_Service_Economy_The_Experience_Profit_Cycle
- Waligo, V. M. (2013). Great expectations: imagination and anticipation in tourism. *Current Issues in Tourism*, 16(5), 514–515. <https://doi.org/10.1080/13683500.2012.754846>
- Waller, D., & Waller, H. (2019). An analysis of negative reviews in top art museums' Facebook sites. *Museum Management and Curatorship*, 34(3), 323–338. <https://doi.org/10.1080/09647775.2018.1550622>
- Walliman, N. (2011). *Research methods: The basics*. Routledge.
- Walls, A. R., Okumus, F., Wang, Y. R., & Kwun, D. J.-W. (2011). An epistemological view of consumer experiences. *International Journal of Hospitality Management*, 30(1), 10–21. <https://doi.org/10.1016/j.ijhm.2010.03.008>
- Walters, D. (2009). Approaches in museums towards disability in the United Kingdom and the United States. *Museum Management and Curatorship*, 24(1), 29–46. <https://doi.org/10.1080/09647770902731759>
- Wang, B., & Liu, Y. (2019). The research on application of virtual reality technology in museums. *Journal of Physics: Conference Series*, 1302(4), 042049. <https://doi.org/10.1088/1742-6596/1302/4/042049>
- Wang, W., Hsieh, P., & Yen, H. R. (2011). Engaging customers in value co-creation: The emergence of customer readiness. *2011 International Joint Conference on Service Sciences*, 135–139. <https://doi.org/10.1109/IJCSS.2011.34>
- Watson, S. (2007). Museums and their communities. In *Museums and their Communities* (pp. 1–25). Routledge.
- Weil, S. E. (1990). *Rethinking the museum and other meditations* (S. Michelle (ed.)). Smithsonian Institution.
- Weil, S. E. (2003). Beyond big & awesome: Outcome-based evaluation. *Museum News*, 40–45.
-

-
- Wellcome Collection, & Research Centre for Museums and Galleries. (2020). *An ethical approach to interpreting disability and difference*. <http://kulttuuriakaikille.fi/doc/guides/An-ethical-approach-to-interpreting-disability-and-difference.pdf>
- WHO. (2001, May 22). *International Classification of Functioning, disability and health, WHA 54.21*. World Health Organization. <https://www.who.int/standards/classifications/international-classification-of-functioning-disability-and-health>
- WHO. (2007). *Global initiative for the elimination of avoidable blindness - Action Plan 2006-2011*. Community Eye Health Journal. https://apps.who.int/iris/bitstream/handle/10665/43754/9789241595889_eng.pdf
- WHO. (2011). *World health statistics*. https://www.who.int/gho/publications/world_health_statistics/EN_WHS2011_Full.pdf
- WHO. (2013). How to use the ICF: A practical manual for using the International Classification of Functioning, Disability and Health. In *Disability and Health Journal*. <https://doi.org/10.1016/j.dhjo.2015.03.002>
- WHO. (2015). *WHO Global Disability Action Plan 2014-2021 : Better Health for all People With Disability*.
- WHO. (2016, August 31). *Priority assistive products list*. http://apps.who.int/iris/bitstream/10665/207694/1/WHO_EMP_PHI_2016.01_eng.pdf?ua=1
- WHO. (2018a). *Sustainable Development Goals*. https://www.who.int/health-topics/sustainable-development-goals#tab=tab_1
- WHO. (2018b, February 19). *Millenium development goals*. <https://www.who.int/news-room/fact-sheets/detail/millennium-development-goals-%28mdgs%29>
- WHO. (2019). *World report on vision*. <https://www.who.int/publications/i/item/world-report-on-vision>
- WHO. (2020). *Disability and health*. <https://www.who.int/news-room/fact-sheets/detail/disability-and-health>
-

-
- WHO. (2021). World report on hearing. In *Human Rights Watch*.
<https://www.who.int/publications/i/item/world-report-on-hearing>
- WHO, & The World Bank. (2011). *Disability – A global picture*. World Report on Disability; World Health Organization.
http://www.who.int/disabilities/world_report/2011/report/en/index.html
- Wiastutu, R. D., Adiati, M. P., & Lestari, N. . (2018). Implementation of accessible tourism concept at museums in Jakarta. *IOP Conf.Series:Earth Environmental Science*, 1–9.
<https://doi.org/10.1088/1755-1315/>
- Wind, J., & Rangaswamy, A. (2001). Customerization: The next revolution in mass customization. *Journal of Interactive Marketing*, 15(1), 13–32.
[https://doi.org/10.1002/1520-6653\(200124\)15:1<13::aid-dir1001>3.0.co;2-%23](https://doi.org/10.1002/1520-6653(200124)15:1<13::aid-dir1001>3.0.co;2-%23)
- Witcomb, A. (2007). A place for all of us? Museums and communities'. In S. Watson (Ed.), *Museums and Their Communities* (pp. 133–156). Routledge.
- Witell, L., Kristensson, P., Gustafsson, A., & Löfgren, M. (2011). Idea generation: Customer co-creation versus traditional market research techniques. *Journal of Service Management*, 22(2), 140–159. <https://doi.org/10.1108/09564231111124190>
- Wong, J. W. C., Lai, I. K. W., & Tao, Z. (2019). Memorable ethnic minority tourism experiences in China: A case study of Guangxi Zhuang Zu. *Journal of Tourism and Cultural Change*, 17(4), 508–525. <https://doi.org/10.1080/14766825.2019.1600866>
- Wu, C. H. J. (2007). The impact of customer-to-customer interaction and customer homogeneity on customer satisfaction in tourism service-The service encounter prospective. *Tourism Management*, 28(6), 1518–1528.
<https://doi.org/10.1016/j.tourman.2007.02.002>
- Xie, C., Bagozzi, R. P., & Troye, S. V. (2008). Trying to prosume: Toward a theory of consumers as co-creators of value. *Journal of the Academy of Marketing Science*, 36(1), 109–122. <https://doi.org/10.1007/s11747-007-0060-2>
- Xu, Y., Marshall, R., Edvardsson, B., & Tronvoll, B. (2014). Show you care: Initiating co-creation in service recovery. *Journal of Service Management*, 25(3), 369–387.
<https://doi.org/10.1108/JOSM-11-2012-0253>
-

-
- Yale, P. (2004). From tourist attractions to heritage tourism. In *Elm Publications*. Elm Publication.
- Yau, M., McKercher, B., & Packer, T. (2004). Traveling with a disability. *Annals of Tourism Research*, 31(4), 946–960. <https://doi.org/10.1016/j.annals.2004.03.007>
- Yen, H., Gwinner, K., & Su, W. (2004). The impact of customer participation and service expectation on Locus attributions following service failure. *International Journal of Service Industry Management*, 15(1), 7–26. <https://doi.org/10.1108/09564230410523312>
- Yoon, B., & Wang, J. (2014). *Making the invisible visible in Science Museums through Augmented Reality Devices*. 58(1), 49–55.
- Yoon, S. A., Elinich, K., Wang, J., Steinmeier, C., & Van Schooneveld, J. G. (2012). Learning impacts of a digital augmentation in a science museum. *Visitor Studies*, 15(2), 157–170. <https://doi.org/10.1080/10645578.2012.715007>
- Yoon, Y., & Uysal, M. (2005). An examination of the effects of motivation and satisfaction on destination loyalty: A structural model. *Tourism Management*, 26(1), 45–56. <https://doi.org/10.1016/j.tourman.2003.08.016>
- Zatori, A., Smith, M. K., & Puczko, L. (2018). Experience-involvement, memorability and authenticity: The service provider's effect on tourist experience. *Tourism Management*, 67, 111–126. <https://doi.org/10.1016/j.tourman.2017.12.013>
- Zeithaml, V. A. (1988). Consumer perceptions of price, quality, and value: A Means-end model and synthesis of evidence. *Journal of Marketing*, 52, 2–22. <https://doi.org/10.2307/1251446>
- Zhang, H., Gordon, S., Buhalis, D., & Ding, X. (2018). Experience value co-creation on destination online platforms. *Journal of Travel Research*, 57(8), 1093–1107. <https://doi.org/https://doi.org/10.1177/0047287517733557>
- Zizka, L., Stierand, M., Buhalis, D., Murphy, H., & Dörfler, V. (2018). In search of co-creation experts in tourism: A research agenda. *CHME 2018: Annual Research Conference*, 41(0), 1–19.
- Zouni, G., & Kouremenos, A. (2008). Do tourism providers know their Visitors? An

investigation of tourism experience at a destination. *Tourism and Hospitality Research*, 8(4), 282–297. <https://doi.org/10.1057/thr.2008.30>

Zuckerman, M. (2009). Sensation seeking. In *Individual differences in Social Behavior* (pp. 455–465). The Guilford Press.

Appendixes

Appendix 1 – Focus Group Script

Table 1 - Focus group script

Question number	Question
Q1	How many times did you visit museums in the last three years? What kind of museums do you usually visit?
Q2	Describe your last visit to a museum. What have you done while you were visiting the museum?
Q3	How have you interacted with the physical aspects of the museum - displays, objects, games?
Q4	Have you interacted with people during your last visit(s) to museums – with your visitation group, with staff? Can you describe these interactions?
Q5	Have you got in touch with technological devices during your last visit(s) to museums? With which devices and which were the objectives of these interactions?
Q6	<p>What main barriers have you faced regarding the interactions before mentioned during your last visit to museums? What features facilitated these interactions?</p> <ul style="list-style-type: none"> • Physical features: Which ones? • Social/communicational features: Which ones? • Technological features: Which ones? • Other important features?

Source: Own elaboration.

Appendix 2 – Questionnaire administered in the empirical study (English version)



Questionnaire # _____

DEGEIT – Departamento de Economia, Gestão, Engenharia Industrial e Turismo

Survey on museum experiences

This questionnaire is part of a PhD thesis from the University of Aveiro, in which it is intended to study the experiences of visiting museums for different audiences. **The questionnaire may be answered by individuals who have visited one or more museums within the last 3 years.**

This study respects the privacy rules of respondents, ensuring the security and confidentiality of the information collected and respects the general data protection regulation. The personal data collected is intended only for statistical analysis, as sociodemographic variables, within the scope of this thesis. If you have any doubt, feel free to contact Susana Mesquita (smvm@ua.pt)

Your collaboration, by carrying out this questionnaire, is very important for the completion of this study.

Thank you for your collaboration!

Susana Mesquita

I am aware of the objectives and agree to answer the questionnaire

Section A – Identifying the last museum visited

1.1 How many museums have you visited in the past three years? (approximately) _____

1.2 What was the last museum you visited? _____

1.2.1. Where is it located? Country: _____ Region: _____

Section B – Experience at the last museum visited

Please answer the following questions from Section B based on the last visit you did to a museum.

Factors that can affect the experience at the museum

2.1 – Who did you visit it with? (free to choose more than one option)

Alone Friends Social institutions that support you
Family members School Other Which? _____

2.2 – To which extent do you agree that the physical environment of the museum incorporated the following elements? (Choose one from each option) (1 – Totally disagree ... 5 – Totally agree)

Logical organisation of the venue (e.g., reception at the entrance)	1	2	3	4	5
3D models or relief maps representing the museum	1	2	3	4	5
Clear signage	1	2	3	4	5
Physical guidance to help identify pathways (e.g., handrails, labeling)	1	2	3	4	5
Systems to help identify directions and objects (e.g., sound or digital systems)	1	2	3	4	5
Floor without steps or accentuated unevenness	1	2	3	4	5
Floor without physical barriers	1	2	3	4	5
Suitable lighting in the venue	1	2	3	4	5
Suitable lighting in the exhibition	1	2	3	4	5

2.3 – To which extent do you agree that the museum tried to transmit information to the visitors through the following methods? (Choose one from each option) (1 – Totally disagree ... 5 – Totally agree)

Guided tours	1	2	3	4	5
Flyers, brochures or guides	1	2	3	4	5
Information boards and panels	1	2	3	4	5
Relief figures	1	2	3	4	5
Chance to touch / hold objects, models or replicas	1	2	3	4	5
Electronic devices for further information	1	2	3	4	5
Electronic devices for entertainment (e.g., games)	1	2	3	4	5
Interactive equipment	1	2	3	4	5
Experiences that appeal / stimulate multiple senses (e.g., sight and smell)	1	2	3	4	5
Representations (e.g., plays, historical recreations)	1	2	3	4	5
Workshops or seminars	1	2	3	4	5
Storytelling (appealing stories on themes from the museum were presented)	1	2	3	4	5

2.4 – To what extent do you agree that the information transmitted by the museum had in consideration the following aspects? (Choose one from each option) (1 – Totally disagree ... 5 – Totally agree)

Easy access to means of interpretation such as information panels, leaflets, guided tours or audio guides	1	2	3	4	5
Information in different languages	1	2	3	4	5
Easy reading texts	1	2	3	4	5
Images with good contrast and definition	1	2	3	4	5
Properly sized texts	1	2	3	4	5
Information boards and panels with good colour contrasts	1	2	3	4	5
Information in different formats (e.g., Braille, sign language, audio / sound information) adapted to your needs	1	2	3	4	5

2.5 – From your interactions with museum staff, to what extent do you agree that they had the following attitudes? (Choose one from each option) (1 – Totally disagree ... 5 – Totally agree)

Encouraged the participation in activities	1	2	3	4	5
Encouraged you to explore the objects of the exhibition	1	2	3	4	5
Provided clarifications regarding the exhibition	1	2	3	4	5
They were kind	1	2	3	4	5
Provided reliable answers	1	2	3	4	5
Sought to understand individual needs	1	2	3	4	5
Communicated in several languages	1	2	3	4	5
They were aware of how to deal with every type of visitor and had an inclusive approach (e.g., Giving attention to everyone)	1	2	3	4	5
promoted a safe visit	1	2	3	4	5

Experience at the museum

3.1 - Please indicate in the tables below to what extent you agree that the following aspects characterized your visit to the museum. (Choose one from each option) (1 – Totally disagree ... 5 – Totally agree)

During the visit (Physical context)	Level of agreement				
Saw the objects of the exhibition attentively	1	2	3	4	5
Read the information panels	1	2	3	4	5
Read a printed leaflet, brochure or guide	1	2	3	4	5
Took pictures at the museum	1	2	3	4	5
Chose the route I followed in the museum	1	2	3	4	5
Had experiences that appealed to multiple senses (e.g., sight and hearing)	1	2	3	4	5
Used common areas of the museum apart from the exhibition rooms (e.g., cafe / bar, store)	1	2	3	4	5
Handled objects or replicas of the exhibition	1	2	3	4	5
Created an object, piece or artwork to keep as a souvenir	1	2	3	4	5

During the visit (Digital context)	Level of agreement				
Used electronic devices from the museum (e.g., computers)	1	2	3	4	5
Carried out online activities related to the museum (e.g., information search, games)	1	2	3	4	5
Used interactive panels	1	2	3	4	5
Used audio guides	1	2	3	4	5
Watched videos	1	2	3	4	5
Used mobile / digital apps	1	2	3	4	5
Used social media	1	2	3	4	5
Used augmented reality or virtual reality	1	2	3	4	5

3

During the visit (Social context)	Level of agreement
Interacted with staff	1 2 3 4 5
Asked staff for help	1 2 3 4 5
Obtained information from staff	1 2 3 4 5
Interacted with specialists on a particular subject	1 2 3 4 5
Interacted with friends or family members who accompanied me on the visit	1 2 3 4 5
Interacted with other visitors	1 2 3 4 5
Interacted with the local community	1 2 3 4 5

During the visit (Others)	Level of agreement
Participated actively in the visit	1 2 3 4 5
Participated in activities	1 2 3 4 5
Participated in guided tours	1 2 3 4 5
Participated in workshops or talks	1 2 3 4 5
Saw demonstrations (e.g., seeing someone doing a craft, an experiment,...)	1 2 3 4 5
Heard stories	1 2 3 4 5
Attended an event / show	1 2 3 4 5
Participated in recreational / fun activities	1 2 3 4 5

3.2. What do you consider to be the most positive aspect of your visit? _____

3.3. What do you consider to be the worst aspect of your visit? _____

Consequences of the visit to the museum

4.1 – Please indicate in the following tables, to what extent you believe you have obtained the following benefits from visiting the museum. (Choose one from each option) (1 – Totally disagree ... 5 – Totally agree)

After the visit (Emotional benefits)	Level of agreement
Felt joy	1 2 3 4 5
Felt admiration	1 2 3 4 5
Felt proud	1 2 3 4 5
Felt confidence	1 2 3 4 5
Felt well-being	1 2 3 4 5
Relieved stress and tension	1 2 3 4 5
Had fun	1 2 3 4 5
Felt more fulfilled	1 2 3 4 5

After the visit (Learning benefits)	Level of agreement
Learnt new things from the visit	1 2 3 4 5
Became more interested in certain topics	1 2 3 4 5
Developed my knowledge	1 2 3 4 5
Became more motivated to learn	1 2 3 4 5

After the visit (Social benefits)	Level of agreement
Met other people	1 2 3 4 5
Felt accompanied	1 2 3 4 5
Socialised with other people	1 2 3 4 5
Felt more accepted by others	1 2 3 4 5
Improved the way I am perceived by others	1 2 3 4 5
Got more approval from other people	1 2 3 4 5
Led to a better impression of me on other people	1 2 3 4 5

4.2 – Please indicate to what extent you agree with the following statements. (Choose one from each option)

(1 – Totally disagree ... 5 – Totally agree)

I am sure that visiting the museum was the right decision	1 2 3 4 5
I am satisfied with the visit in general	1 2 3 4 5
It was worth visiting the museum	1 2 3 4 5

4.3 – How likely will you do the following in the future? (Choose one from each option)

(1 – Totally disagree ... 5 – Totally agree)

Recommend the museum to other people	1 2 3 4 5
Encourage other people to visit the museum	1 2 3 4 5
Returning to the museum	1 2 3 4 5

Section C – Characterisation of the respondent

5.1 – Country of residence _____

5.2 – Gender: Female Male Other

5.3 – Age _____

5.4 – Qualifications:

Has not completed secondary school Secondary school Graduate Master's Degree PhD

5.5 – Employment status

Employed Student Housekeeper/Domestic Retired Other Which? _____

5.6 – Do you have any disability? No If you have answered no then you have reached the end of the questionnaire.

Yes

5.6.1 – What type of disability(ies)? (You can choose more than one option)

Hearing Visual Physical Mental Other Which? _____

5.6.2 – What is your degree of disability (in percentage)? _____

5.6.2.1 – Do you need any of the following supports? (You can choose more than one) (Optional question)

Personal assistant, family member, friend, or

Guide dog

caretaker

Mobility aid (e.g., walking stick)

Other Which? _____

Thank you for your collaboration!

Appendix 3 – Questionnaire administered in the empirical study (Portuguese version)

**DEGEIT – Departamento de Economia, Gestão, Engenharia Industrial e Turismo****Inquérito sobre experiências em museus**

Este questionário faz parte de uma tese de Doutoramento da Universidade de Aveiro em que se pretende estudar as experiências de visita a museus, para diferentes públicos. **O questionário poderá ser respondido por pessoas que tenham visitado um ou mais museus, nos últimos 3 anos.**

Este estudo respeita as regras de privacidade dos inquiridos, garantindo a segurança e a confidencialidade das informações recolhidas e respeita o regulamento geral de proteção de dados. Os dados pessoais recolhidos destinam-se apenas à análise estatística, enquanto variáveis sociodemográficas, no âmbito desta tese. Se tiver alguma dúvida pode contactar com Susana Mesquita (smvm@ua.pt)

Tomei conhecimento acerca dos objetivos e aceito responder ao questionário

Sim _____ Não _____

A sua colaboração, através do preenchimento deste questionário, é muito importante para a concretização deste estudo.

Muito obrigada pela sua colaboração!

Susana Mesquita

Parte A – Identificação do último museu visitado

1.1 Quantos museus visitou nos últimos três anos? (Aproximadamente) _____

1.2 Qual foi o último museu que visitou? _____

1.2.1. Onde fica localizado? País: _____ Localidade: _____

Parte B – A experiência no último museu visitado

Pedimos que responda às questões da parte B com base na última visita que fez ao último museu que visitou.

Fatores que podem influenciar a experiência no museu

2.1 - Com quem visitou o museu? (pode escolher mais do que uma opção)

Sozinho(a) Amigos Instituições sociais que lhe dão apoio
Famíliares Escola Outros Quais? _____

2.2 - Em que medida concorda que o ambiente físico do museu que visitou possuía os seguintes elementos? (assinale uma opção em cada linha) (1 - Discordo totalmente ... 5 - Concordo totalmente)

Organização lógica do espaço (ex. recepção junto à entrada)	1	2	3	4	5
Maquetes ou mapas em relevo com representação do espaço	1	2	3	4	5
Sinalética clara	1	2	3	4	5
Ajudas físicas para encontrar o caminho (ex. corrimões, marcações no chão)	1	2	3	4	5
Sistemas para ajudar a encontrar o caminho e objetos (ex. sistemas de som ou digitais)	1	2	3	4	5
Piso/chão sem degraus ou desníveis acentuados	1	2	3	4	5
Piso/chão sem barreiras físicas	1	2	3	4	5
Iluminação adequada no espaço	1	2	3	4	5
Iluminação adequada nas peças que estão expostas	1	2	3	4	5

2.3 - Em que medida concorda que o museu tentava transmitir informação aos visitantes através dos seguintes meios? (assinale uma opção em cada linha) (1 - Discordo totalmente ... 5 - Concordo totalmente)

Visitas guiadas	1	2	3	4	5
Folhetos, brochuras ou guias	1	2	3	4	5
Placas e painéis informativos	1	2	3	4	5
Figuras em relevo	1	2	3	4	5
Possibilidade de tocar em /manusear objetos, maquetes ou réplicas	1	2	3	4	5
Dispositivos eletrônicos para obter mais informação	1	2	3	4	5
Dispositivos eletrônicos para diversão (ex. dispositivos eletrônicos com jogos)	1	2	3	4	5
Equipamentos interativos	1	2	3	4	5
Experiências que apelam/estimulam múltiplos sentidos (ex. visão e olfato)	1	2	3	4	5
Representações (ex. teatros, recriações históricas)	1	2	3	4	5
Workshops ou seminários	1	2	3	4	5
Storytelling (foram apresentadas histórias atrativas sobre temas do museu)	1	2	3	4	5

2.4 - Em que medida concorda que a informação transmitida pelo museu tinha em consideração os seguintes aspetos? (assinale uma opção em cada linha) (1 - Discordo totalmente ... 5 - Concordo totalmente)

Fácil acesso aos meios de interpretação como painéis, folhetos, visitas guiadas ou audioguias	1	2	3	4	5
Existência de informação em diferentes línguas	1	2	3	4	5
Textos apresentados com fácil leitura	1	2	3	4	5
Imagens com bom contraste e definição	1	2	3	4	5
Texto com letras de tamanho adequado	1	2	3	4	5
Placas e painéis informativos com bons contrastes de cores	1	2	3	4	5
Informação em diferentes formatos (ex. <i>Braille</i> , língua gestual, informação áudio/sonora) adaptada às suas necessidades	1	2	3	4	5

2.5 - Nas interações que teve com os funcionários do museu, em que medida concorda que estes tiveram as seguintes atitudes? (assinale uma opção em cada linha) (1 - Discordo totalmente ... 5 - Concordo totalmente)

Incentivavam a participar em atividades	1	2	3	4	5
Incentivavam a explorar os objetos da exposição	1	2	3	4	5
Forneciam explicações sobre a exposição	1	2	3	4	5
Eram simpáticos	1	2	3	4	5
Forneciam respostas confiáveis	1	2	3	4	5
Procuravam compreender as necessidades individuais	1	2	3	4	5
Comunicavam em vários idiomas	1	2	3	4	5
Tinham sensibilidade para lidar com os diversos tipos de visitantes e tinham uma atitude inclusiva (de dar atenção a todos)	1	2	3	4	5
Promoviam uma visita segura	1	2	3	4	5

Experiência no museu

3.1 - Indique, nas tabelas seguintes, em que medida concorda que os seguintes aspetos caracterizaram a sua visita ao museu. (assinale uma opção em cada linha) (1 - Discordo totalmente ... 5 - Concordo totalmente)

Durante a visita (aspetos do contexto físico)	Nível de concordância
Vi atentamente os objetos da exposição	1 2 3 4 5
Li as placas e painéis informativos	1 2 3 4 5
Li algum folheto, brochura ou guia impressos	1 2 3 4 5
Tirei fotografias no museu	1 2 3 4 5
Escolhi o percurso que segui no museu	1 2 3 4 5
Tive experiências que apelavam a múltiplos sentidos (ex. visão e audição)	1 2 3 4 5
Utilizei espaços do museu além das salas de exposição (ex. café/bar, loja)	1 2 3 4 5
Manuseei objetos ou réplicas da exposição	1 2 3 4 5
Criei um objeto, peça ou trabalho artístico para recordação	1 2 3 4 5

Durante a visita (aspetos do contexto digital)	Nível de concordância
Utilizei dispositivos eletrónicos (ex. computadores) existentes no museu	1 2 3 4 5
Realizei atividades <i>online</i> relativas ao museu (ex. pesquisa de informação, jogos)	1 2 3 4 5
Usei painéis interativos	1 2 3 4 5
Usei audioguias	1 2 3 4 5
Vi vídeos	1 2 3 4 5

Usei aplicações móveis/digitais	1	2	3	4	5
Utilizei as redes sociais	1	2	3	4	5
Usei realidade aumentada ou realidade virtual	1	2	3	4	5

Durante a visita (aspetos do contexto social)	Nível de concordância				
Interagi com os funcionários	1	2	3	4	5
Pedi alguma ajuda aos funcionários	1	2	3	4	5
Obtive informações junto dos funcionários	1	2	3	4	5
Interagi com especialistas sobre um determinado assunto	1	2	3	4	5
Interagi com amigos ou familiares que me acompanharam na visita	1	2	3	4	5
Interagi com outros visitantes	1	2	3	4	5
Interagi com pessoas da comunidade local	1	2	3	4	5

Durante a visita (outros aspetos)	Nível de concordância				
Participei ativamente na visita	1	2	3	4	5
Participei em atividades	1	2	3	4	5
Participei em visitas guiadas	1	2	3	4	5
Participei em <i>workshops</i> ou palestras	1	2	3	4	5
Assisti a demonstrações (ex. ver uma pessoa a fazer uma peça de artesanato ou a fazer uma experiência)	1	2	3	4	5
Ouvi histórias	1	2	3	4	5
Assisti a algum evento/espétaculo	1	2	3	4	5
Participei em atividades recreativas/ de divertimento	1	2	3	4	5

3.2. Qual considera ter sido o aspeto mais positivo da visita ao museu? _____

3.3. Qual considera ter sido o aspeto mais negativo da visita ao museu? _____

Consequências da visita ao museu

4.1 – Indique, nas tabelas seguintes, em que medida considera que obteve os seguintes benefícios com a visita ao museu. (assinale uma opção em cada linha) (1 - Discordo totalmente ... 5 - Concordo totalmente)

Depois da visita (benefícios emocionais)	Nível de concordância				
Senti alegria	1	2	3	4	5
Senti admiração	1	2	3	4	5
Senti orgulho	1	2	3	4	5
Senti confiança	1	2	3	4	5
Senti bem-estar	1	2	3	4	5
Aliviei o stress e a tensão	1	2	3	4	5
Diverti-me	1	2	3	4	5
Senti-me mais realizado(a)	1	2	3	4	5

Depois da visita (benefícios de aprendizagem)	Nível de concordância				
Aprendi coisas novas na visita	1	2	3	4	5
Fiquei com mais interesse por determinados assuntos	1	2	3	4	5

Aumentei os meus conhecimentos	1	2	3	4	5
Fiquei mais motivado(a) para aprender	1	2	3	4	5

Depois da visita (benefícios de sociais)	Nível de concordância				
Conheci outras pessoas	1	2	3	4	5
Senti-me acompanhado(a)	1	2	3	4	5
Convivi com outras pessoas	1	2	3	4	5
Senti-me mais aceite pelos outros	1	2	3	4	5
Melhorou o modo como sou percebido pelos outros	1	2	3	4	5
Obtive maior aprovação por parte das outras pessoas	1	2	3	4	5
Causei uma melhor impressão nas outras pessoas	1	2	3	4	5

4.2 – Indique em que medida concorda com as seguintes afirmações. (assinale uma opção em cada linha)
(1 - Discordo totalmente ... 5 - Concordo totalmente)

Estou certo(a) de que visitar este museu foi a decisão certa	1	2	3	4	5
Em geral, estou satisfeito(a) com esta visita	1	2	3	4	5
Valeu a pena visitar este museu	1	2	3	4	5

4.3 – Qual a probabilidade de, futuramente, fazer o seguinte? (assinale uma opção em cada linha).
(1 – Muito improvável ... 5 – Muito provável)

Recomendar o museu a outras pessoas	1	2	3	4	5
Encorajar outras pessoas a visitarem o museu	1	2	3	4	5
Voltar a visitar o museu no futuro	1	2	3	4	5

Parte C – Caracterização do(a) inquirido(a)

5.1 – País de residência _____

5.2 – Género: Feminino Masculino Outro

5.3 – Idade _____

5.4 – Habilitações literárias:

Não completou o ensino secundário Ensino secundário Licenciatura Mestrado Doutoramento

5.5 - Situação perante o trabalho

Empregado(a) Estudante Doméstico(a) Aposentado(a) Outra Qual? _____

5.6 – Tem algum tipo de incapacidade? Não Se respondeu não, terminou aqui o seu questionário.

Muito obrigada pela sua colaboração!

Sim

5.6.1 – Qual(is) o(s) tipo(s) de incapacidade que possui? (pode escolher mais do que uma opção)

Auditiva Visual Motora Mental Outra Qual? _____

5.6.2 Qual é o seu grau de incapacidade (em percentagem)? _____

5.6.2.1. Necessita de algum dos seguintes apoios? (Pode escolher mais do que uma opção) (Pergunta opcional)

Assistente pessoal, familiar, amigo ou cuidador Cão-guia
Equipamento para deslocação (ex. bengala)..... Outro Qual? _____

Muito obrigada pela sua colaboração!

Appendix 4 – Questionnaire administered in the empirical study (French version)



Questionnaire n°. _____

Département de l'économie, de la gestion, de l'ingénierie industrielle et du Tourisme

Enquête à propos d'expériences en musées

Ce questionnaire fait partie d'une thèse de doctorat de l'Université d'Aveiro dans laquelle il est destiné à étudier les expériences de visite des musées, pour différents publics. **Le questionnaire peut être rempli par les personnes qui ont visité un ou plusieurs musées au cours des trois dernières années.**

Cette étude respecte les règles de confidentialité des répondants, en assurant la sécurité et la confidentialité des informations recueillies et en respectant les règles générales de protection des données. Les données personnelles collectées sont uniquement destinées à l'analyse statistique, en tant que variables sociodémographiques, dans le cadre de cette thèse. Si vous avez des questions, vous pouvez contacter Susana Mesquita (smvm@ua.pt)

Votre collaboration, par le remplissage de ce questionnaire, est très importante pour la réalisation de cette étude.

Merci beaucoup pour votre coopération !

Susana Mesquita

J'ai pris connaissance des objectifs et j'accepte de répondre au questionnaire

Partie A - Identification du dernier musée visité

1.1 Combien de musées avez-vous visités au cours des trois dernières années ? _____

1.2 Quel a été le dernier musée que vous avez visité ? _____

1.2.1 Où se trouve-t-il ? Pays : _____ Localité : _____

Partie B - L'expérience dans le dernier musée visité

Nous vous demandons de répondre aux questions de la partie B en vous basant sur votre dernière visite au dernier musée que vous avez visité.

Facteurs pouvant influencer l'expérience au musée

2.1 - Avec qui avez-vous visité le musée ? (Vous pouvez choisir plus d'une option)

Seul(e) Amis Institutions sociales qui vous soutiennent
 Famille École Autres Lesquels ? _____

2.2 - Dans quelle mesure convenez-vous que l'environnement physique du musée que vous avez visité présentait les éléments suivants ? (Cochez une option sur chaque ligne) (1 - Pas du tout d'accord ... 5 - Tout à fait d'accord)

Organisation logique de l'espace (ex. accueil à l'entrée)	1	2	3	4	5
Maquettes ou cartes en relief avec représentation de l'espace	1	2	3	4	5
Une signalisation claire	1	2	3	4	5
Aides physiques pour trouver le chemin (ex. rampes, marquages au sol)	1	2	3	4	5
Systèmes d'aide à la recherche du chemin et des objets (ex. systèmes sonores ou appareils de technologie digitale)	1	2	3	4	5
Plancher/étage sans marches ni pentes raides	1	2	3	4	5
Plancher/étage sans barrières physiques	1	2	3	4	5
Un éclairage adéquat à l'espace	1	2	3	4	5
Un éclairage adéquat sur les objets qui sont exposées	1	2	3	4	5

2.3 - Dans quelle mesure reconnaissez-vous que le musée a tenté de transmettre des informations aux visiteurs par les moyens suivants ? (Cochez une option sur chaque ligne) (1 - Pas du tout d'accord ... 5 - Tout à fait d'accord)

Visites guidées	1	2	3	4	5
Dépliants, brochures ou guides	1	2	3	4	5
Panneaux d'information	1	2	3	4	5
Figures en relief	1	2	3	4	5
Possibilité de toucher/manipuler des objets, des maquettes ou des répliques	1	2	3	4	5
Dispositifs électroniques pour plus d'informations	1	2	3	4	5
Dispositifs électroniques de divertissement (ex. appareils électroniques avec jeux)	1	2	3	4	5
Équipements interactifs	1	2	3	4	5
Expériences qui font appel à/stimulent de multiples sens (ex. la vue et l'odorat)	1	2	3	4	5
Représentations (ex. théâtres, récréations historiques)	1	2	3	4	5
Ateliers ou séminaires	1	2	3	4	5
Mise en récit (des histoires attrayantes sur des thèmes muséographiques ont été présentées)	1	2	3	4	5

Questionnaire n°. _____

2.4 - Dans quelle mesure convenez-vous que les informations transmises par le musée ont pris en compte les aspects suivants ? (Cochez une option sur chaque ligne) (1 - Pas du tout d'accord ... 5 - Tout à fait d'accord)

Accès facile aux moyens d'interprétation tels que panneaux, dépliants, visites guidées ou audioguides	1	2	3	4	5
Existence d'informations dans différentes langues	1	2	3	4	5
Textes présentés avec une lecture facile	1	2	3	4	5
Des images avec un bon contraste et une bonne définition	1	2	3	4	5
Texte en lettres de taille appropriée	1	2	3	4	5
Panneaux d'information et panneaux avec de bons contrastes de couleurs	1	2	3	4	5
Informations sous différents formats (ex. braille, langue des signes, informations audio/sonore) adaptés à vos besoins	1	2	3	4	5

2.5 - Dans vos interactions avec le personnel du musée, dans quelle mesure êtes-vous d'accord pour dire qu'ils ont eu les attitudes suivantes ? (Cochez une option sur chaque ligne) (1 - Pas du tout d'accord ... 5 - Tout à fait d'accord)

Ils ont encouragé à participer à des activités	1	2	3	4	5
Ils ont encouragé à explorer les objets de l'exposition	1	2	3	4	5
Ils ont fourni des explications sur l'exposition	1	2	3	4	5
Ils étaient gentils	1	2	3	4	5
Ils fournissaient des réponses fiables	1	2	3	4	5
Ils ont cherché à comprendre les besoins individuels	1	2	3	4	5
Ils ont communiqué en plusieurs langues	1	2	3	4	5
Ils ont eu la sensibilité nécessaire pour traiter avec les différents types de visiteurs et ont eu une attitude inclusive (de prêter attention à tout le monde)	1	2	3	4	5
Ils promouvaient une visite sûre	1	2	3	4	5

L'expérience au musée

3.1 - Indiquez, dans les tableaux suivants, dans quelle mesure vous convenez que les aspects suivants ont caractérisé votre visite au musée. (Cochez une option sur chaque ligne) (1 - Pas du tout d'accord ... 5 - Tout à fait d'accord)

Pendant la visite (aspects du contexte physique)	Échelle de satisfaction				
J'ai regardé attentivement les objets de l'exposition	1	2	3	4	5
J'ai lu les plaques et panneaux d'information	1	2	3	4	5
J'ai lu des dépliants, brochures ou guides imprimés	1	2	3	4	5
J'ai pris des photos au musée	1	2	3	4	5
J'ai choisi le chemin que j'ai pris dans le musée	1	2	3	4	5
J'ai vécu des expériences qui faisaient appel à de multiples sens (ex. la vue et l'ouïe)	1	2	3	4	5
J'ai utilisé les espaces du musée à part des salles d'exposition (ex. le café/bar, la boutique)	1	2	3	4	5
J'ai manipulé des objets ou des répliques de l'exposition	1	2	3	4	5
J'ai créé un objet, une pièce ou une œuvre d'art comme souvenir	1	2	3	4	5

Pendant la visite (aspects liés au contexte digital)	Échelle de satisfaction
J'ai utilisé des dispositifs électroniques (ex. des ordinateurs) du musée	1 2 3 4 5
J'ai fait des activités <i>sur ligne</i> liées au musée (ex. recherche d'informations, jeux)	1 2 3 4 5
J'ai utilisé des panneaux interactifs	1 2 3 4 5
J'ai utilisé des audioguides	1 2 3 4 5
J'ai vu des vidéos	1 2 3 4 5
J'ai utilisé des applications mobiles/digital	1 2 3 4 5
J'ai utilisé les réseaux sociaux	1 2 3 4 5
J'ai utilisé la réalité augmentée ou la réalité virtuelle	1 2 3 4 5

Pendant la visite (aspects liés au contexte social)	Échelle de satisfaction
J'ai interagi avec le personnel	1 2 3 4 5
J'ai demandé de l'aide au personnel	1 2 3 4 5
J'ai obtenu des informations avec le personnel	1 2 3 4 5
J'ai interagi avec des experts sur un sujet particulier	1 2 3 4 5
J'ai interagi avec mes amis ou ma famille qui m'ont accompagné lors de la visite	1 2 3 4 5
J'ai interagi avec les autres visiteurs	1 2 3 4 5
J'ai interagi avec les personnes de la communauté locale	1 2 3 4 5

Pendant la visite (autres aspects)	Échelle de satisfaction
J'ai participé activement à la visite	1 2 3 4 5
J'ai participé à des activités	1 2 3 4 5
J'ai participé à des visites guidées	1 2 3 4 5
J'ai participé à des <i>ateliers</i> ou des conférences	1 2 3 4 5
J'ai assisté à des démonstrations (ex. voir une personne fabriquer un objet d'artisanat ou faire une expérience)	1 2 3 4 5
J'ai écouté des histoires	1 2 3 4 5
J'ai participé à un événement ou spectacle	1 2 3 4 5
J'ai participé à des activités récréatives / ludiques	1 2 3 4 5

3.2. Quel a été, selon vous, l'aspect le plus positif de la visite du musée ? _____

3.3. Quel a été, selon vous, l'aspect le plus négatif de la visite du musée ? _____

Conséquences de la visite du musée

4.1 - Indiquez, dans les tableaux suivants, dans quelle mesure vous estimez avoir obtenu les avantages suivants de la visite du musée. (Cochez une option sur chaque ligne) (1 - Pas du tout d'accord ... 5 - Tout à fait d'accord)

Après la visite (avantages émotionnels)	Échelle de satisfaction
J'ai ressenti de la joie	1 2 3 4 5
J'ai ressenti de l'admiration	1 2 3 4 5

Je me suis senti(e) fier(e)	1	2	3	4	5
Je me suis senti(e) confiant(e)	1	2	3	4	5
Je me suis senti(e) bien	1	2	3	4	5
J'ai soulagé le stress et la tension	1	2	3	4	5
Je me suis amusé	1	2	3	4	5
Je me suis senti(e) plus épanouie	1	2	3	4	5

Après la visite (avantages de l'apprentissage)	Échelle de satisfaction				
J'ai appris de nouvelles choses lors de cette visite	1	2	3	4	5
Je me suis de plus en plus intéressé(e) à certains sujets	1	2	3	4	5
J'ai augmenté mes connaissances	1	2	3	4	5
J'étais plus motivé pour apprendre	1	2	3	4	5

Après la visite (bénéfices sociales)	Échelle de satisfaction				
J'ai rencontré d'autres personnes	1	2	3	4	5
Je me suis senti(e) accompagné(e)	1	2	3	4	5
J'ai vécu avec d'autres personnes	1	2	3	4	5
Je me suis senti(e) plus accepté(e) par les autres	1	2	3	4	5
Cette visite a amélioré la façon dont je suis perçu par les autres	1	2	3	4	5
J'ai obtenu plus d'approbation de la part d'autres personnes	1	2	3	4	5
J'ai fait une meilleure impression sur les autres	1	2	3	4	5

4.2 - Veuillez indiquer dans quelle mesure vous êtes d'accord avec les déclarations suivantes. (Cochez une option sur chaque ligne) (1 - Pas du tout d'accord ... 5 - Tout à fait d'accord)

Je suis sûr(e) que la visite de ce musée a été la bonne décision	1	2	3	4	5
D'une manière générale, je suis satisfait(e) de cette visite	1	2	3	4	5
Avoir visité ce musée a valu la peine.	1	2	3	4	5

4.3 - Quelle est la probabilité de, à l'avenir, faire le suivant ? (Cochez une option sur chaque ligne).
(1 - Très improbable ...5 - Très probable)

Recommander le musée à d'autres personnes	1	2	3	4	5
Encourager d'autres personnes à visiter le musée	1	2	3	4	5
Revenez visiter le musée à l'avenir	1	2	3	4	5

Partie C - Caractérisation du/de la répondant(e)

5.1 – Pays de résidence _____

5.2 – Genre: Féminin Masculin Autre

5.3 – Âge _____

5.4 – Niveau d'études:

Sans avoir complété le lycée Lycée complet Licence Maîtrise Doctorat

5.5 – Situation face au travail

Employé(e) Etudiant Travail domestique à la maison Retraité(e) Autre
Laquelle? _____

5.6 – Avez-vous un handicap ? Non Si vous avez répondu non, vous avez terminé votre questionnaire ici.
Oui

5.6.1 – Quel(s) type(s) de handicap avez-vous ? (vous pouvez choisir plus d'une option)

Auditif Visuel Moteur Mental Autre Laquelle? _____

5.6.2 Quel est votre taux d'incapacité (en pourcentage)? _____

5.6.2.1. Avez-vous besoin de l'une des aides suivantes ? (Vous pouvez choisir plus d'une option) (Question facultative)

Assistant personnel, membre de la famille, ami ou aide-soignant Chien d'Aveugle
Matériel d'aide au déplacement handicap (ex. canne) ... Autre Lequel? _____

Merci beaucoup pour votre coopération !

Appendix 5 – Questionnaire administered in the empirical study (Spanish version)

**DEGEIT – Departamento de Economía, Gestión, Ingeniería Industrial y Turismo****Encuesta sobre experiencias en museos**

Este cuestionario forma parte de una tesis de Doctorado de la Universidad de Aveiro, en la cual se pretende estudiar las experiencias de visita a museos para diferentes públicos. **El cuestionario podrá ser respondido por personas que hayan visitado uno o más museos durante los últimos 3 años.**

Este estudio respeta las reglas de privacidad de los encuestados, garantizando la seguridad y confidencialidad de la información recogida y respeta la normativa general de protección de datos. Los datos personales recogidos se destinan, únicamente, al análisis estadístico, como variables sociodemográficas, en el ámbito de esta tesis. Si tiene alguna duda, puede contactar con Susana Mesquita (smvm@ua.pt)

Su colaboración, mediante la realización de este cuestionario, es muy importante para la concretización de este estudio.

¡Muchas gracias por su colaboración!

Susana Mesquita

He leído los objetivos y acepto responder al cuestionario

Parte A – Identificación del último museo visitado

1.1 ¿Cuántos museos ha visitado en los últimos tres años? (aproximado) _____

1.2 ¿Cuál fue el último museo que ha visitado? _____

1.2.1. ¿Dónde se sitúa? País: _____ Localidad: _____

Parte B – La experiencia en el último museo visitado

Pedimos que responda a las cuestiones de la parte B con base en la última visita que realizó al último museo que ha visitado.

Factores que pueden influenciar la experiencia en el museo

2.1 - ¿Con quién visitó el museo? (puede seleccionar más de una opción)

Solo(a) Amigos Instituciones sociales que le dan apoyo
Familiares Centro educativo Otros ¿Quién? _____

2.2 - ¿En qué medida está de acuerdo con que el ambiente físico del museo que visitó disponía de los siguientes elementos? (señale una opción en cada línea) (1 – Totalmente en desacuerdo ... 5 – Totalmente de acuerdo)

Organización lógica del espacio (ej. recepción en la entrada)	1	2	3	4	5
Maquetas o mapas en relieve con la representación del espacio	1	2	3	4	5
Señalética clara	1	2	3	4	5
Ayudas físicas para encontrar el camino (ej. pasamanos, señalización en el suelo)	1	2	3	4	5
Sistemas para ayudar a encontrar el camino y objetos (ej. sistemas de sonido o digitales)	1	2	3	4	5
Piso/suelo sin escalones o fuertes desniveles	1	2	3	4	5
Piso/suelo sin barreras físicas	1	2	3	4	5
Iluminación adecuada del espacio	1	2	3	4	5
Iluminación adecuada de las piezas expuestas	1	2	3	4	5

2.3 - ¿En qué medida está de acuerdo con que el museo intentaba transmitir información a los visitantes a través de los siguientes medios? (señale una opción en cada línea) (1 – Totalmente en desacuerdo ... 5 – Totalmente de acuerdo)

Visitas guiadas	1	2	3	4	5
Folletos, trípticos o guías	1	2	3	4	5
Placas y paneles informativos	1	2	3	4	5
Figuras en relieve	1	2	3	4	5
Posibilidad de tocar en /manipular objetos, maquetas o réplicas	1	2	3	4	5
Dispositivos electrónicos para obtener más información	1	2	3	4	5
Dispositivos electrónicos para el entretenimiento (ej. dispositivos electrónicos con juegos)	1	2	3	4	5
Equipamientos interactivos	1	2	3	4	5
Experiencias que apelan/estimulan múltiples sentidos (ej. vista y olfato)	1	2	3	4	5
Representaciones (ej. teatros, recreaciones históricas)	1	2	3	4	5
Talleres o seminarios	1	2	3	4	5
Narraciones de historias (fueron contadas historias atractivas sobre temas del museo)	1	2	3	4	5

2.4 - ¿En qué medida está de acuerdo con que la información transmitida por el museo tenía en cuenta los siguientes aspectos? (señale una opción en cada línea) (1 – Totalmente en desacuerdo ... 5 – Totalmente de acuerdo)

Fácil acceso a los medios de interpretación como paneles, folletos, visitas guiadas o audioguías	1	2	3	4	5
Presencia de información en diferentes idiomas	1	2	3	4	5
Textos con fácil lectura	1	2	3	4	5
Imágenes con buen contraste y definición	1	2	3	4	5
Textos con letra de tamaño adecuado	1	2	3	4	5
Placas y paneles informativos con buen contraste de color	1	2	3	4	5
Información en diferentes formatos (ej. Braille, lengua de signos, información audio/sonora) adaptada a sus necesidades	1	2	3	4	5

2.5 - ¿En la interacción que tuvo con los trabajadores del museo, en qué medida está de acuerdo con que ellos tuvieron las siguientes actitudes? (señale una opción en cada línea) (1 – Totalmente en desacuerdo ... 5 – Totalmente de acuerdo)

Incentivaban a participar en actividades	1	2	3	4	5
Incentivaban a saber más sobre los objetos de la exposición	1	2	3	4	5
Ofrecían explicaciones sobre la exposición	1	2	3	4	5
Eran simpáticos	1	2	3	4	5
Ofrecían respuestas de confianza	1	2	3	4	5
Intentaban comprender las necesidades individuales	1	2	3	4	5
Hablaban en varios idiomas	1	2	3	4	5
Tenían sensibilidad para tratar con los diferentes tipos de visitantes y tenían una actitud inclusiva (de dar atención a todos)	1	2	3	4	5
Promovían una visita segura	1	2	3	4	5

Experiencia en el museo

3.1 - Indique, en los cuadros siguientes, en qué medida está de acuerdo con que estos aspectos caracterizaron su visita al museo. (señale una opción en cada línea) (1 – Totalmente en desacuerdo ... 5 – Totalmente de acuerdo)

Durante la visita (aspectos del contexto físico)	Nivel de acuerdo				
Vi atentamente los objetos de exposición	1	2	3	4	5
Leí las placas y paneles informativos	1	2	3	4	5
Leí algún folleto, tríptico o guía impresos	1	2	3	4	5
Hice fotografías en el museo	1	2	3	4	5
Escogí el recorrido que seguí en el museo	1	2	3	4	5
Tuve experiencias que apelaban a múltiples sentidos (ej. vista y audición)	1	2	3	4	5
Utilicé otros espacios del museo, además de las salas de exposición (ej. cafetería, tienda)	1	2	3	4	5
Manipulé objetos o réplicas de la exposición	1	2	3	4	5
Creé un objeto, pieza o trabajo artístico como recuerdo	1	2	3	4	5

Durante la visita (aspectos del contexto digital)	Nivel de acuerdo				
Utilicé dispositivos electrónicos (ej. ordenadores) pertenecientes al museo	1	2	3	4	5

Realicé actividades <i>online</i> relativas al museo (ej. búsqueda de información, juegos)	1	2	3	4	5
Usé paneles interactivos	1	2	3	4	5
Utilicé audioguía	1	2	3	4	5
Vi videos	1	2	3	4	5
Usé aplicaciones móviles/digitales	1	2	3	4	5
Utilicé las redes sociales	1	2	3	4	5
Usé realidad aumentada o realidad virtual	1	2	3	4	5

Durante la visita (aspectos del contexto social)	Nivel de acuerdo				
Hablé con los trabajadores	1	2	3	4	5
Solicité alguna ayuda a los trabajadores	1	2	3	4	5
Recogí información a través de los trabajadores	1	2	3	4	5
Hablé con especialistas sobre algún asunto	1	2	3	4	5
Hablé con los amigos o familiares que me acompañaban en la visita	1	2	3	4	5
Hablé con otros visitantes	1	2	3	4	5
Hablé con miembros de la comunidad.	1	2	3	4	5

Durante la visita (otros aspectos)	Nivel de acuerdo				
Participé activamente en la visita	1	2	3	4	5
Participé en actividades	1	2	3	4	5
Participé en visitas guiadas	1	2	3	4	5
Participé en talleres o palestras	1	2	3	4	5
Asistí a demostraciones (ej. ver a alguien creando una pieza de artesanía o realizando una actividad)	1	2	3	4	5
Oí historias	1	2	3	4	5
Asistí a algún evento/espectáculo	1	2	3	4	5
Participé en actividades recreativas	1	2	3	4	5

3.2. ¿Cuál considera que haya sido el aspecto más positivo de la visita al museo? _____

3.3. ¿Cuál considera que haya sido el aspecto más negativo de la visita al museo? _____

Consecuencias de la visita al museo

4.1 – Indique, en los cuadros siguientes, en qué medida considera que adquirió estos beneficios con la visita al museo. (señale una opción en cada línea) (1 – Totalmente en desacuerdo ... 5 – Totalmente de acuerdo)

Después de la visita (beneficios emocionales)	Nivel de acuerdo				
Sentí alegría	1	2	3	4	5
Sentí admiración	1	2	3	4	5
Sentí orgullo	1	2	3	4	5
Sentí confianza	1	2	3	4	5
Sentí bienestar	1	2	3	4	5
Alivié el estrés y la tensión	1	2	3	4	5
Me divertí	1	2	3	4	5
Me sentí más realizado(a)	1	2	3	4	5

Después de la visita (beneficios de aprendizaje)	Nivel de acuerdo
Aprendí cosas nuevas en la visita	1 2 3 4 5
Me interesé más por determinados asuntos	1 2 3 4 5
Amplíé mis conocimientos	1 2 3 4 5
Sentí mayor motivación para aprender	1 2 3 4 5

Después de la visita (beneficios sociales)	Nivel de acuerdo
Conocí a otras personas	1 2 3 4 5
Me sentí acompañado(a)	1 2 3 4 5
Conviví con otras personas	1 2 3 4 5
Me sentí más aceptado por las otras personas	1 2 3 4 5
Mejoró el modo como me perciben los demás	1 2 3 4 5
Conseguí mayor aprobación por parte de las otras personas	1 2 3 4 5
Causé una mejor impresión en los demás	1 2 3 4 5

4.2 – Indique en qué medida está de acuerdo con las siguientes afirmaciones. (señale una opción en cada línea)
(1 – Totalmente en desacuerdo ... 5 – Totalmente de acuerdo)

Estoy seguro(a) que visitar este museo fue la decisión correcta	1 2 3 4 5
En general, estoy satisfecho(a) con esta visita	1 2 3 4 5
Valió la pena visitar este museo	1 2 3 4 5

4.3 – ¿Cuál es la probabilidad de, en un futuro, hacer lo siguiente? (señale una opción en cada línea).
(1 – Muy improbable ... 5 – Muy probable)

Recomendar el museo a otras personas	1 2 3 4 5
Animar a otras personas a que visiten el museo	1 2 3 4 5
Volver a visitar el museo	1 2 3 4 5

Parte C – Caracterización del (de la) encuestado(a)

5.1 – País de residencia _____

5.2 – Género: Femenino Masculino Otro

5.3 – Edad _____

5.4- Nivel de estudios:

Sin completar la educación secundaria Educación secundaria Licenciatura Master Doctorado

5.5 -Situación laboral

Empleado(a) Estudiante Amo(a) de casa Jubilado(a) Otra ¿Cuál? _____

5.6 – ¿Tiene algún tipo de discapacidad? No Si ha respondido no, ha terminado aquí su cuestionario.

¡Muchas gracias por su colaboración!

Sí

5.6.1 – ¿Qué tipo(s) de discapacidad tiene? (puede seleccionar más de una opción)

Auditiva Visual Motora Intelectual Otra ¿Cuál? _____

5.6.2 ¿Cuál es su grado de discapacidad (en porcentaje)? _____

5.6.2.1. ¿Necesita alguno de los siguientes apoyos? (Pode seleccionar más de una opción) (Pregunta opcional)

Asistente personal, familiar, amigo o cuidador Perro guía
Equipamiento para desplazarse (ej. bastón) Otro ¿Cuál? _____

¡Muchas gracias por su colaboración!