

Multi-sensory Experience Design in Museums

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<p>Aim of this bachelor thesis was to resolve how multi-sensory experience can be embedded in designing new museum experience. Also, the purpose was to find out in which ways can the multi-sensory approach be utilized for museums' use, and what factors museums should consider when designing multi-sensory experience.</p> <p>In this thesis, research was focused on multi-sensory experiences in museums, from experience designing perspective. During the research, the focus was on museums, or other similar experience providers around the world, who were already executing multi-sensory experience on their services.</p> <p>The multi-sensory experience focuses on five human senses and to designed experience by utilizing them. With the multi-sensory approach, the objective is to evoke positive emotions on the customer, so the provided experience could reach memorability. The multi-sensory approach for hospitality-focused businesses is not a new operating model. However, as part of experience design, it has not yet been the topic of many types of research. Utilizing multi-sensory experience helps especially museums and other hospitality industry operators to gain leverage on their extremely competitive field of business.</p> <p>The research was executed by using a qualitative research method. Therefore desk research was used to gather essential information from several different, previously executed, multi-sensory experiences. Content analysis was then used to analyze all gathered information. Desk research and content analysis took place during spring 2020, between late April and early May. For this research, only those multi-sensory experiences were approved that had intentionally utilized more than one sense to create an experience.</p> <p>The results showed essential factors for multi-sensory experiences. Senses play the main role in multi-sensory experiences, and from there, it became clear that if all five senses were included, the experience generated more value for the customer. Most multi-sensory experiences are mainly utilizing sight from all five senses; therefore, sight should be a cornerstone for those experiences.</p> <p>Multi-sensorial marketing and branding are both highly used methods in multi-sensory centered experience providers, and these should both be utilized in the future when designing new multi-sensory experiences.</p>	
Keywords Experience, experience design, senses, multi-sensory	

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1 Introduction

Can you still remember the smell of those buttery popcorns that were only served in halftime break of a traveling circus that only came to your hometown once a year? If you can, then you have had a very successful multi-sensory experience. That specific scent has imprinted on your brain with a positive memory attached to it. You might not remember what the circus show was about. However, despite that, you would visit again just based on that positive memory of that delicious scent that is connected to the multi-sensory experience you had in that circus when you were a child. That is an example of how multi-sensory experience should affect users, and it is also the topic of this thesis.

Experience can occur in various ways, and it can mean variable things for different people. However, one thing is evident, they are all connected to attention and involvement demanding situations, and they have a common outcome of memories and learning combined with specific emotions. This is reinforcing the fact that emotions are a crucial ingredient to a successful experience. (Smit & Melissen 2018, 16.) Experience is often mixed with service, but this is not the case. They are as far from it as products are from services. When service is bought, the customer pays for a set of intangible activities that are executed on their behalf. Instead, when the customer purchases experience, they gain a memorable and personal series of events created by the provider. All this is leading to a proposition that the service economy is currently being replaced by experience economy, which makes it the greatest level of economic offering, adding significant economic value. (Pine & Gilmore 2011, 3; Bastiaansen et al., 2019.)

Our five senses are not separated from each other. They work together to provide a strong and comprehensible understanding of our surroundings. When these senses are utilized to work together to achieve improved experience, this phenomenon is called multi-sensory experience. Multi-sensory experience needs to involve two or more of five human senses. For example, if a museum provides art that customers can touch and watch, it becomes a multi-sensory experience. (Fulkerson 2011, 365-367.) Often senses are just being part of the experience by chance, and they are not actively exploited. This means that the importance of senses is often neglected when designing experiences, even though it has been shown in various studies how much sensory impressions are being part of customers' perceptions and behavior of goods and services. (Hultén 2011, 258.)

The research was done by using a qualitative research method, to desk research already executed multi-sensory experiences in museums, and this way to uncover the main factors behind multi-sensory experiences. All data collecting and material analysis took place during spring 2020, between late April and early May. Desk-research was made by using carefully designed questions based on earlier gathered material in the theoretical section of this thesis. Those questions were combined into a desk research form (appendix 1), which helped to gather material from specific topics and to make sure the collected material was relevant. This desk-research tool made it possible to collect material from multiple sources by using the same format. After desk-research was completed, the collected material was analyzed by using content analysis, to find similarities and differences, and to summarize the collected amount of the material.

This thesis aimed to develop guidelines for multi-sensory experience design, that would also be suitable for reproducible use. The results of this research can be used in connection with a new multi-sensory experience design for museums. The thesis is presenting the guidelines as a form of frames that should be taken into consideration when designing new experiences relevant to this topic. Enthusiasm for this topic came from innovation and Imagineering specialization studies in Breda, Holland.

Main research question:

- How can multi-sensory experience be embedded in designing a new museum experience?

Sub-questions:

- In which ways can a multi-sensory approach be utilized for the museum's use?
- What factors should museums consider when designing multi-sensory experience?

Research is focused on multi-sensory experience as an intangible offering by excluding the overall economic side of the experience. Only participants who used more than two of five human senses in their provided experience were accepted to take part in the research.

The most important concepts for the research are first introduced in the thesis. The theoretical part begins explaining about experiences and designing in its various forms. It is followed by multi-sensory experience and sensory branding and marketing. The theoretical part is followed by the research section. At the beginning of it, the research methods are introduced, and the implementation of the research is described. Next, the results of the study are presented, and the research questions are answered. In the results chapter,

all analyzed material is explained in correlation to research questions. The work concludes with reflection and conclusions, in which the multi-sensory frame model is presented, results are compared with previous research, reliability, suggestions for further research and development, and one's own learning are considered.

2 Building Experience in a Museum Environment

In the first part of the theoretical framework, the experience is discussed in general, and as a topic author considers it to be a foundation for this thesis. Experience is a vast topic; therefore, the author decided to use Pine and Gilmore's four realms of experience as one way to approach it. Mainly the purpose of this topic is for one to understand the whole process of designing a new experience. It is important to start the process by getting to understand what experience is and how it works.

"You can't experience the experience until you experience it." This is how late Bill Moggridge, co-founder of IDEO, global design company described experience. This quote summarizes the purpose of experience. It is all about engaging the customer in the whole process, and the means to do so. (Moritz 2005.)

Even though experiences are often mixed with services, they very far from it, like products are from services. As customer purchases the service, they pay for a set of intangible activities that are executed on their behalf. Instead, when the customer is purchasing experience, they gain a memorable and personal series of events created by the provider. All this is leading to a proposition that the service economy is currently being replaced by experience economy, which makes it to be the greatest level of economic offering and adding significant economic value. (Pine & Gilmore 2011, 3; Bastiaansen et al., 2019.)

Experiences are here to generate new value. In the book Experience Economy, Pine and Gilmore often compare creating experiences to the theatre world since staging experience has many similarities to staging a play. The essential is to enhance provided service or product in a way, that it can be developed into memorable and valuable for the customer. (Pine & Gilmore 2011) When experience is happening in the right kind of environment, it engages the guest to co-creation with the provider. Co-creation involves the guest with the process, and through that, it generates sensory stimulation. This sort of sensory stimulation evokes emotions, and that creates memorability for the experience. (Scott & Le 2017, 30-34.)

When talking about the experience economy, another important factor is that the provided experience can be sold for a customer. For customers to be willing to pay for the experience, it has to offer more than just a regular product or service; it must be something more significant. Smit and Melissen had an excellent example of this in their book. When a customer visits a theme park, they are not spending money to just go on a rollercoaster, but to have a memorable and happy time with their company. This same idea can be adapted

to museums as well. When visiting a museum, the customer who is a so-called art lover can easily throw themselves into that state where service becomes an experience. However, for others to get there as well, it is highly essential to understand how to adapt the experiences for those guests, for them to leave the museum with positive emotions, which generates positive memories. (Smit & Melissen 2018, 14-15; Falk & Dierking 2012, 24.)

2.1 Emotions as Building Blocks for Experiences

Experience can occur in various ways, and it can mean variable things for different people. However, one thing is evident; they are all connected to attention and involvement demanding situations, where they have a common outcome of memories and learning combined with specific emotions. All this reinforces the fact that emotions play an essential role in a successful experience. (Smit & Melissen 2018, 16.)

In their paper, Ma, Gao, Scott, and Ding (2017, 7) refer to previous studies which are showing how emotions do play an important role in guest experiences. All this has been noticed, especially in theme parks, where the entire experience is all about forming positive emotions to gain memorability. Museums are a very similar operator in the hospitality industry, therefore the same theory from the studies could be implemented to those. Mainly since both operators of the same industry are sharing a common goal of achieving memorability on their experiences. (Ma et al. 2017, 7.)

As mentioned, emotions are essential for creating memorable and meaningful experiences. That brings us to a conclusion that when studying experiences, it is evitable to look deeper and see how emotions occur and influence in individuals, and how the most significant level of emotions can be reached. (Bastiaansen et al. 2019.)

2.2 Four Realms of Experience by Pine and Gilmore

Pine and Gilmore (2011) approached the experience with a model of four realms (figure 1), in their book *Experience Economy*. This four-piece model engages the customer in one or multiple parts of its realms, and this way, it has multiple dimensions. The optimal experience comes when it has parts from all four realms, this sort of experience Pine and Gilmore named as "sweet spot." Four realms of experience model can be used for designing new experiences or refining a new one. (Pine & Gilmore 2011.)

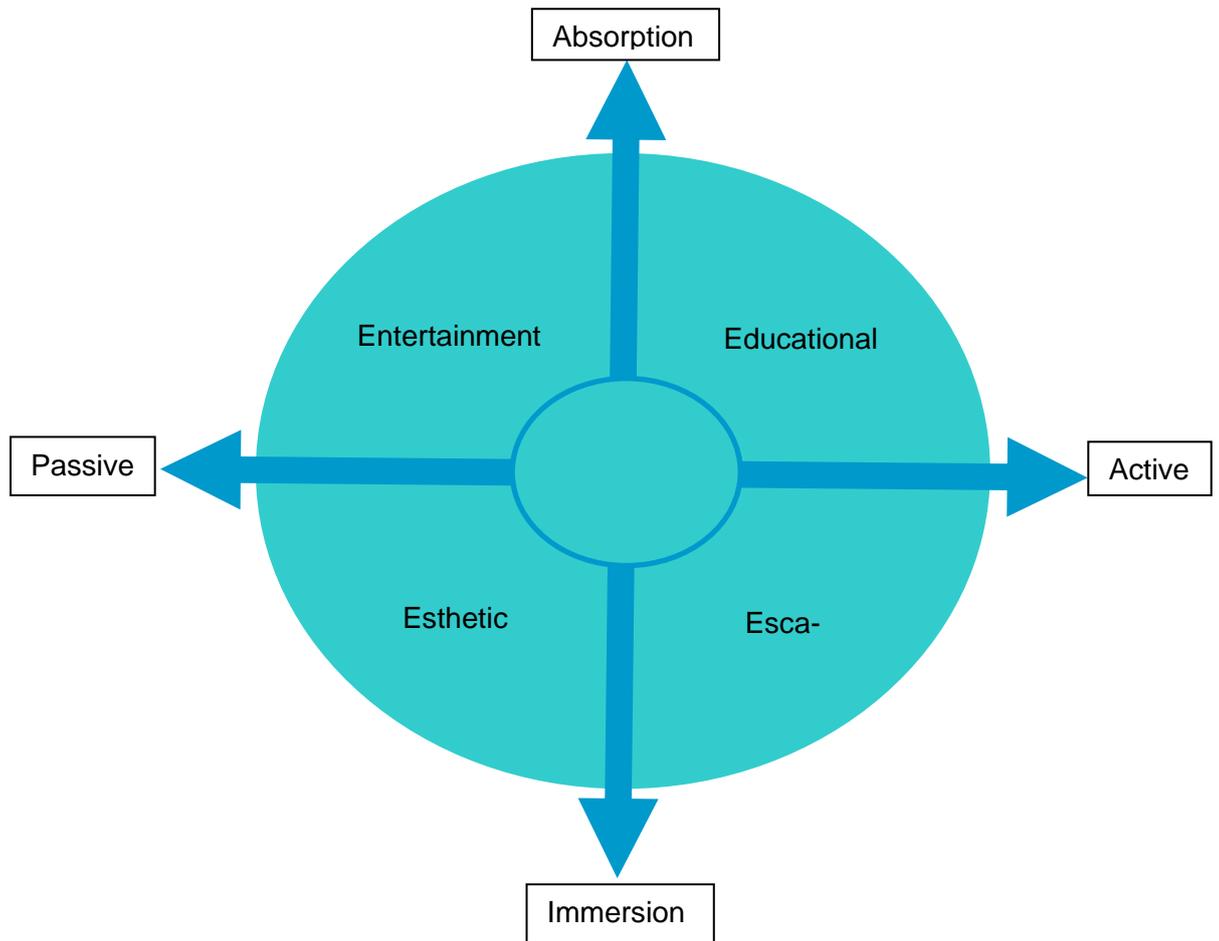


Figure 1. Four realms of experience (adapted from Pine & Gilmore 2011)

The line from passive to active participating presents the way customer is taking part in the experience. In the passive end of the line, the customer is not directly taking part or be influenced by the experience. Then in the active end of that line, the experience is taking the opposite approach. Lines from absorption to immersion are more about connection customer is having with the experience. In absorption, the customer has total awareness of the experience but is having it from further. An immersive experience, on the other hand, activates customers to be part of the experience in a physical way. (Pine & Gilmore 2011; Jurowski 2009, 1-6.)

After dividing the model with lines to present how customers interact with the experiences, Pine and Gilmore categorized experience to four realms: entertainment, educational, escapist, and esthetic.

1. Educational: This type of experience is usually seen in the absorption part of the realm. Therefore participation is necessary, and the customers are meant to actively absorb the experience in their mind. An important factor in this realm is that customers have the experience with a goal of learning. An excellent example of

- educational experience would be museums, since they often offer educational aspects in them, such as history, science, artistry, etc.
2. Escapist: In escapist experience, customer needs to be actively participating and immersing into the experience. Examples of this sort of experience would be playing golf or video games. In both activities, ' person is physically and mentally playing the game. In the museum industry, this could be a workshop or some other interactive addition.
 3. Esthetic: The customer is immersed but takes no active part in esthetic experience. The mind of the customer stays unaffected and unaltered, unlike in educational experience. Visiting the Grand Canyon in the US would be an esthetic experience. Over there, the customer would passively watch the scenery and not be actively involved. This experience can also be seen in museums where the art does not share that many educational aspects.
 4. Entertainment: In this realm customer is passively absorbing the experience with all senses and not actively taking part in it. This kind of experience can be experienced in a classical concert, where the customer is sitting down and enjoying the show, only by absorbing it. Museums also often have cinematic spaces where customers can simply watch and enjoy (Pine & Gilmore 2011; Jurowski 2009, 3-6.)

2.3 Design Process

Designing is a crucial element in this thesis, brings all the other aspects of the topic alive. Even though this thesis is not about creating a design model, one must understand the process behind the experience design and what goes into designing overall.

“Design is the development of a plan or process to achieve or create something.” This is how design is described in Salem Press Encyclopaedia (Campbell 2019). In this description of the design, it comes clear that the simple outcome of a design is a creation of tangible objects or something intangible like a service.

Often by the public, designing is related to exclusivity and luxury brands and has been related to the idea of styling and making things more beautiful. (Mager 2010) However, it is also much more. Designing is a complicated process, and it needs to be well understood before applying it. Designing can be based on science, calculations, etc., and on the other hand, to art, reputation, and such as that, meaning more creativity-based actions. It is most valuable when both worlds are combined and working simultaneously (Smit & Melissen 2018, 73).

Designing is many times mistaken to be just about creating something tangible or intangible. However, it has more aspects to it that need to be taken into consideration, such as physical characteristics, behaviors, technical aspects, and emotions. Designing is both art and science, and this means that sometimes when designing, one must take careful and logical steps forward and other times to be the crazy innovator who generates all sorts of new ideas. (Smit & Melissen 2018.)

An essential part of a design is the designing process. Sometimes it can be straight forward logical process which leads quickly to problem-solving, but other times it becomes an innovative and somewhat confusing process that gives as much on the way, as it does at the end when the problem is solved. To understand what type of designing needs to be used, it is entirely up to the problem that needs to be solved. There are many ways of doing design, and the right one needs to be created after understanding the topic. (Smith & Melsissen 2018; Mager 2010.)

There is plenty of models and methods created to be used in design when creating new products, services, or experiences. Therefore there is also a great variety of different approaches to design. Descriptive and prescriptive models are the two main types of design models. A descriptive model is more about innovation and designing something more intangible, like a service or an experience, as the prescriptive model is more calculated and logical, which is essential when designing something more tangible, like a specific product. (Smit & Melissen 2018.)

A descriptive model is more accurate and fitting for the objective of this thesis, so that model is crucial to present here for the reader. In that model, the aim is to create a solution for the main problem quite early in the design process. After the solution is found, the next step is to improve it with various methods such as analysis, evaluation, refinement, and development. When all is done, there often occurs a problem as the solution has adapted in a way it does not solve the original problem it was supposed to. Often parts of prescriptive models are added to keep the focus on the right path during the design process. (Smit & Melissen 2018.)

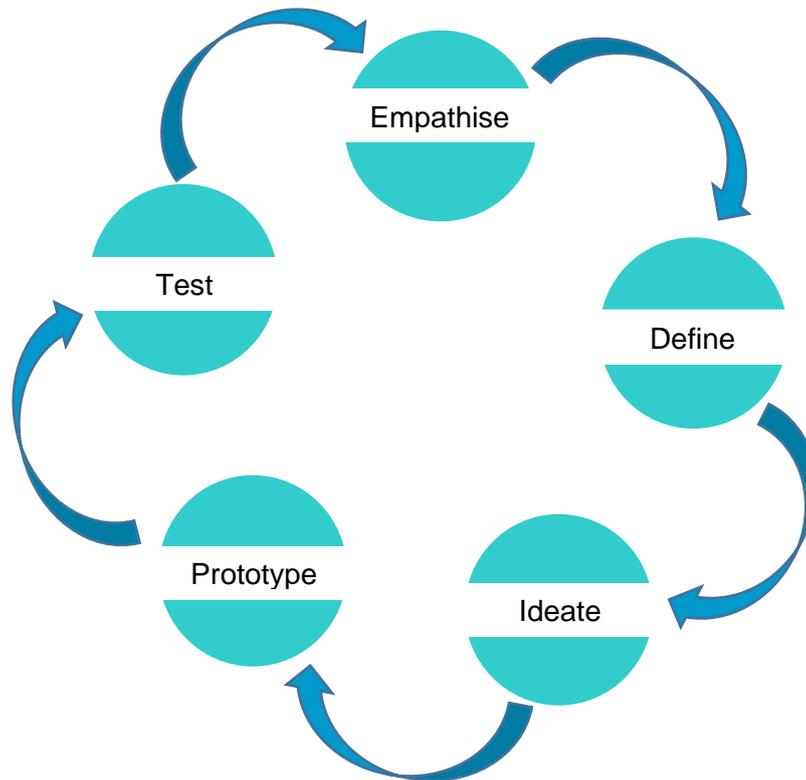


Figure 2. Descriptive design process model (Adapted from Smit & Melissen 2018)

Here is an adapted figure (figure 2) of a descriptive model of the design process. To make it more clear for the reader, the author explains this figure by using the topic of the thesis as an example, how to design multi-sensory experience?

- **Empathize:** Focus in this part is to understand the provided topic, aspects it includes, and to understand as much as possible about the problem, and what is the desirable outcome. In this museum example, the key topics are experience and multi-sensory, and deeper aspects of those. When it comes to the problem, about how to design multi-sensory experience for museums, there is no ready-made model for it, and therefore the wanted outcome would be to create one.
- **Define:** In this part of the design model, the key is to understand how to approach the problem. What can and cannot be done and how to delimit the topic. When the optimal outcome is a model to help generate new multi-sensory experiences, there should be an idea of the key prospects that need to be considered in a multi-sensory experience. Moreover, maybe to think if the museum part is limited to only exhibitions or should it be used as a whole institute.
- **Ideate:** Here, it is important to let the creativity to bloom and create many ideas based on previous steps. “Kill your darlings,” meaning do not get stuck with the first idea, but try to come up with many new ones. In this museum case, this would include an idea of how the model should be done and what should be in it.

- **Prototype:** When bringing the designed idea to life, the key is to start by prototyping it. The prototype does not need to be something tangible, but it must show the idea and functionality of it for the customer. In this thesis, ideally, this would be an appropriately made model for multi-sensory experience design.
- **Test:** For to see if the outcome of the design process truly works, it needs to be tested with the targeted customer segment extensively. The multi-sensory experience model in this example would here be given to industry professionals and students to put on use. However, the outcome of seeing if it enhances the customer experience in museums would take quite some time to find out. (Smit & Melssen 2018.)

2.4 From Service Design to Experience Design

Since the early years of service design, it has brought great value to its users and paved the way for new ways to improve the always-changing needs of customers. In many ways, service has been replaced by experiences, and this is slowly becoming the new way of business. Therefore, to understand how this more captivate way is making a difference and to knowledge where this newcomer, experience design, has found its roots. Experience design shares multiple similarities and some differences with service design, and understanding these is the critical element of this chapter. This chapter starts with a general description of service design and then comes to a comparison of it to experience design.

In experience-centric services, there is great importance on the role of how the planning of intangible and tangible service elements has been done. It all requires systematic management and design of customer experience done thoroughly. With this view, it becomes easier to understand how extensive role service design plays and how much more depth is in studying it. (Zomerdijk & Voss 2010, 67-68.)

In service design, it all begins with a desire to create something valuable for people, something that is more than just a product. It is all about innovating something new or improving something that is already existing. When service design is done simultaneously with networks of technology and people, it is possible to produce something meaningful and powerful for the customers to gain (Polaine, Løvlie & Reason 2013, 18; Moritz 2005.)

Service design is all about working with the customer. It has a purpose to offer service experience for the customer that is useful, usable, and desirable, but to make it work, it must be effective, distinctive, and efficient for the provider as well. This definition of service design presents a statement that both customers and providers need to benefit from the outcome. This apparent interdependency is a crucial point to consider in the service industry,

and this fact is supported by multiple studies and professionals. (Mager 2010; Smit & Melissen 2018, 74; Ostrom et al. 2010, 16.)

Service design has not been a relevant field of studies and company policies for a vast amount of time, but after it earned its credibility, it became a great success. This is proven by multiple success stories from major companies that started to use it as a permanent method. Companies like Virgin Atlantic that has their own department of service design, or Volkswagen, who intergrades it into their research. (Mager 2010.)

Why has service design become such a massive part of today's businesses? In their book about service design for business, Reason et al. (2016, 3) mention three trends that took our society globally towards the service design approach. These trends are:

1. Economic:

Service design shows how value in services has risen compared to manufactured goods all over the globe.

2. Social:

It can be seen in customer expectations. Today's consumers are aware of what they are looking for, and they are also willing to pay for it. This makes it essential for providers to come up with new ways to satisfy customers, always increasing individual needs.

3. Technical:

Service design is considered to be a product of today's digital revolution. This makes it important for services to stay relevant and change, along with the ongoing trend.

As a concept, service design is comprehensive and much more than just an act of designing something. However, it contains variable other fields as well, like human resources, operations, marketing, branding, organizational structure, and technology disciplines. When this comprehensive approach is taken down to earth, it also brings out those service elements which are needed to co-create and exceed customers desires, such as physical environment, other customers, employees, and service delivery process (Ostrom et al. 2010, 15; Teixeira et al. 2012, 2.)

Multiple studies have been done about effects on designing as a benefit for company strategies. In Marget's article, she concluded results from studies made by the UK Design Council in 2005. Those studies showed that 41% of delivering companies consider design to be an essential element of their company, and they also stated that when a company is using design as an essential element, they turn out to be 200% more successful on the stock market. Even though these statistics are 15-year-old, it shows already back then how meaningful role design had for companies and gives some proof of how popular it has become over time. (Mager 2010; Design Council 2007.)

When considering previously mentioned studies, it becomes evident that the most critical role is on the designing part, whether it is service or experience design.

Other studies have shown that customers are raising their expectations, and they are no longer as loyal as they used to be. This information presents that even though if the customer is mostly satisfied, it does not mean they are loyal; they might still change and use some other provider. Nowadays, customers are searching for more meaningful, relevant, and memorable experiences. All this shows how the service economy is turning into the experience economy, and service design evolves into experience design. (Marger 2010; Pine & Gilmore 2011, 252.)

The main difference between service design and experience design is the result of both functions. As service is often designed by the provider to be given for the customer to meet their needs, the experience is there to engage the customer with the process and make it more meaningful for them. Where service aims to fulfill customer's needs, the experience aims to exceed them. (Pine & Gilmore 2011, 2-3.)

The fact that the economy is transitioning from service design to experience design was also a topic in Pine and Gilmore's bible for the experience economy. They explained this as a natural continuum that happens as the world evolves. Someday same will also happen to experience the economy when it turns into a transformation economy, where the experiences are customized according to singular customer's needs. (Pine & Gilmore 2011, 252-255.)

2.5 Experience Design Model

The design model is suitable to use in multi-sensory experience design, as it guides the process and introduces all the necessary steps on the way. Design models are especially useful when designing something with more complexity and depth, just like the topic of this research. Smith and Meissen created a specific design model for experience design in their book, *Sustainable Customer Experience Design: Co-Creating Experiences in Events*. Based on their model author adapted it to share the main objectives of it.

This design model is constructed from 7 separate steps, and every one of them has its purpose. These purposes and tasks included in the steps are shortly described under the step's intention.

1. Clarify objectives
 - Personas (who is purchasing this experience)
 - What experience brings for the customer
 - What experience brings for the provider
2. Establishing functions
 - How the experience reaches the objectives
3. Setting requirements
 - User requirements
 - Technical requirements
 - Managerial/organizational requirements
4. Determining characteristics
 - A clear understanding of what is suitable and what not
 - Gathering so far collected information to key characteristics
 - Starting to think design alternatives with those key characteristics in mind
5. Generating alternatives
 - Touchpoints
 - Customer journeys
 - Overall design alternatives
 - Keeping generated knowledge from previous steps in mind
6. Evaluating alternatives
 - Deciding the design from generated options
 - Steps 1 and 3 can be used as a criterion for this decision
 - Possible prototypes
7. Improving details
 - Improving details of the chosen design

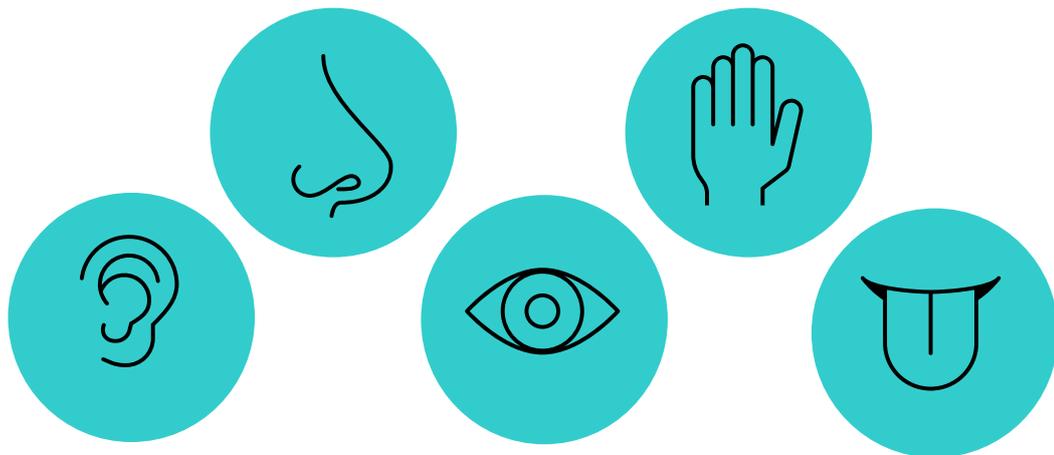
Figure 3. Experience design model (adapted from Smith & Melissen 2018, 102-127)

With the design model (figure 3.), it is essential to remember that they are only offering guidelines for the design process. Every experience is different, and for this reason, the design model should be modified to respond to those specific needs. (Smith & Melissen 2018.)

3 Multi-sensory Experience in Museums

“A faculty by which the body perceives an external stimulus; one of the faculties of sight, smell, hearing, taste, and touch.” This is the definition of senses by Lexico (2020), and it shows us what senses are there to be used when creating a multi-sensory experience. In this chapter, the author is explaining what multi-sensory experience is, why it is important, and how it can be exploited when designing experience, and what is the purpose of using multi-sensory experiences in museums. In this chapter’s sub-chapter, about five senses in experience, the author dives deeper into each sense to understand how they affect.

Our five senses are not separated from each other; they work together to provide a strong and comprehensible understanding of our surroundings. When these senses are utilized to work together to achieve improved experience, this phenomenon is called multi-sensory experience. Multi-sensory experience needs to involve two or more of five human senses. For example, if a museum provides art that customers can touch and watch, it becomes a multi-sensory experience. (Fulkerson 2011, 370.) The picture below is visualizing all five human senses. (Picture 1.)



Picture 1. Visualization of five senses

Usually, senses are just being part of the experience by change, and they are not actively exploited. This means that the importance of senses is often neglected when designing experiences, even though it has been shown in various studies how much sensory impressions are being part of customers’ perceptions and behavior of goods and services. (Hultén 2011, 258.)

A multi-sensory approach is aiming to find solutions for people of all ages, young to elderly and people with disabilities, to develop their museum experience by enriching visitors' experience. Many times, the interaction between the customer and the art is shallow, but when a multi-sensory element is added, the experience tends to improve. (Harada, Hi-deyoshi, Gressier-Soudan & Jean 2018, 2222.)

As was explained in the previous chapter, experiences are gaining their potential through emotion-based memorability. However, understanding how those emotions are being affected, it all comes back to the senses. All customers visiting the museums are experiencing service through their senses, and this enhances their emotional responses to their experience. By these emotions rising from the influence of individual senses, customers gain the memorability which they are seeking from their experiences. Different senses evoke different emotions, and through understanding how these combinations work, can multi-sensory experience be utilized more optimally. This way customer creates memorability to their experience already in their minds. (Rodrigues, Hultén & Brito 2011, 42-45; Erikson & Larsson 2011.)

There have been multiple cases around the world where museums have used the multi-sensory approach to enhance the customer experience. Some examples of these are later provided in this research. Based on those previous cases, it is suggested that the multi-sensory approach in museums can make the experience richer in ways it increases the memorability. In this light, all these previous cases are indeed proving how powerful meaning senses have in experience and how efficient it is to understand how to harvest the benefits of using all senses. (Vi, Ablart, Gatti, Velasco & Obrist 2017; Eardley, Mineiro, Neves and Ride 2016.)

The multi-sensory approach has an essential role in advanced experience design for museums, but it can be utilized from other perspectives as well. Educational systems often utilize multi-sensory communication and approach in their use. This has been proven to be efficient by many studies. For example, some research has shown that in a learning environment, when people have multi-sensorial exposure, it enhances their perceptual and memory tasking. Museum environment can also be counted to be a learning environment, and therefore multi-sensory experience can be applied in more ways than just as a pleasure and enjoyment; they can also enhance the learning part in museums. (Eardley et al. 2017.)

One other perspective for a multi-sensory experience approach is using it as a tool to enhance the quality of the museum, and other similar experiences for disabled people.

When having one sense or more weakened or non-existing, experiencing museum experience turns hard or even impossible. Therefore, by adding more than one sense to demonstrate art, it becomes possible for people with certain disabilities to experience it. (Eardley et al. 2017; Argyropoulos & Kanari 2015.)

3.1 External and Internal Use of Senses

People can experience senses in two different ways; externally or internally. When people observe the environment around them by using senses, it is called external use of them. However, when one fantasizes or thinks about senses, it is called internal use of them. An example of this would be to imagine in one's mind, how freshly grounded coffee beans smell. (Hultén 2015, 369-370.) Figure 4 shows how external and internal sense is bringing different attributes to the multi-sensory experience.

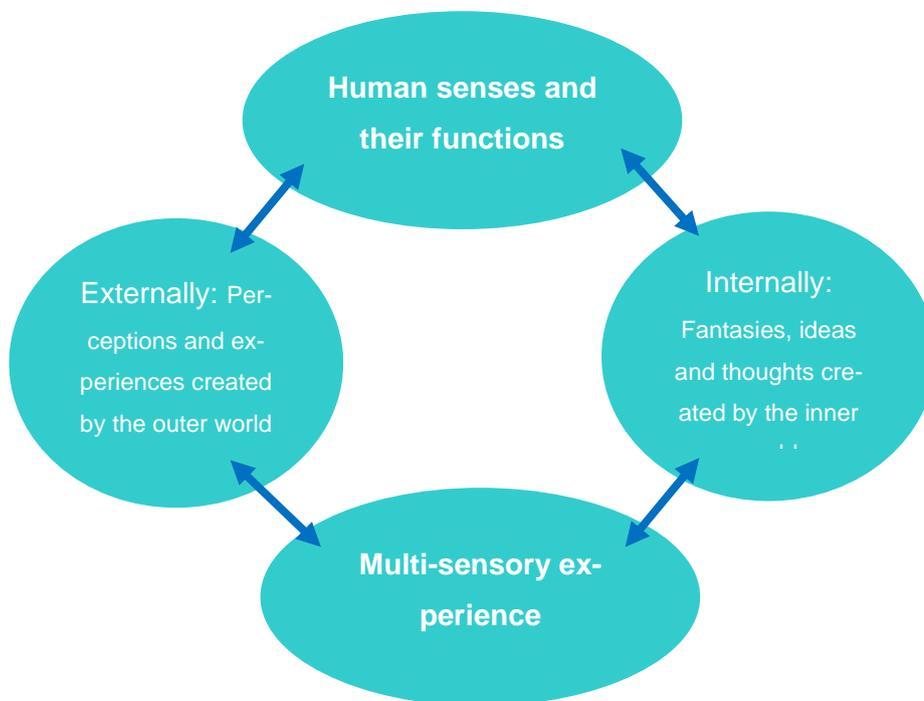


Figure 4. The function of the human senses externally and internally (adapted from Hultén 2015, 370)

3.2 Five Senses in an Experience

Sense of sight

When talking about senses, sight is the one that comes up first. It has been described to be the most important and dominant sense we have. With sight, people can understand and observe the surroundings around us, and it is the most used sense when observing goods and services. (Erikson & Larsson 2011; Hultén 2011.)

Colour has a significant role when talking about sight. Through it, we are provided with a broad range of dimensions. Different colors can also affect peoples' feelings, and that is why they are often used to set customers' minds to be more receiving by emotions.

(Barry, Hardesty & Suter 2003; Erikson & Larsson 2011.)

Light is the other significant factor when talking about sight. It affects peoples' emotions, and studies have also suggested that specific types of lighting effect consumers' minds more positively. It also draws consumers' attention to products and encourages them to touch and examine more. (Summers & Hebert 2001.)

Sense of sound

Sound is not a new thing when talking about services. It has been part of the marketing - and branding world for ages. It is an essential tool that triggers and affects peoples' moods, behavior, and preferences, meaning it is a major influencer on emotions and feelings. (Albert, Albert & Maltz 2005; Hultén 2011.)

Music is an extremely relevant tool that can turn sound to a very active part of the service experience. It has the power to awake emotions and shapes the mood and perception towards a specific good or service. Another noticeable aspect of sound is the sound of our voices. It is different from other sounds, so it easily stands out. It has a unique way to shape emotions and personality; therefore, it affects the message that is being communicated. (Erikson & Larsson 2011; Hultén 2011.)

Sense of touch

Touch is closely related to information and feelings which are emerging when it has physical and psychological interaction with something tangible. When taking the sense of touch to more practical use, as a tool for service improvement, it can have a positive impact on consumers' attitudes and intentions to use the goods or the services. Studies have shown that consumers are keen to evaluate and gather information about the products by using the sense of touch. (Erikson & Larsson 2011; Hultén 2011.) Technology has taken the use of touch to a new level by using mid-air haptics to stimulate the sense. This technology works with a focused ultrasound that can be felt by the customer in the air (Large, Harrington, Burnett & Georgiou 2019.)

Sense of smell

A sense of smell is often being neglected when talking about it in the context of sensory experience. It is in many ways linked to pleasure and well-being, and through that, it has an important connection with emotions and memories. Smell has a very powerful effect on

consumers' feelings, and it can make the experience better or worse. The atmosphere is also strongly influenced by it. Scent use in service has been proven effective in many studies by stating that the right scent can have a positive impact on consumers' behavior, and it can influence consumers' decisions to visit and return the space. (Goldkuhl & Styvén 2007; Hultén 2011.)

Sense of taste

Taste is said to be the most distinct emotional sense, and in many cases, it interacts with other senses. Using a taste is an excellent way to differentiate from the competition since a sense that is rarely used in experiences outside its natural environment. Using taste is not only limited to restaurants or other settings where it is naturally stimulated. A good example of this is found in a New York culture magazine *Visionaire* where they are telling about tasting stripes that customers are putting in their mouths for a taste experience. (Hultén, Brouweus & VanDijk 2009.)

4 Multi-sensory Branding and Marketing

When designing a multi-sensory experience, it demands more than just a design aspect. It is highly essential to understand what aspects museums can use to attract customers to visit their multi-sensory experiences. For this reason, the author wanted to dive deeper into this theoretical part of the research about sensory branding and marketing. With knowledge from this chapter, museums can change the whole way customers anticipate them in everyday life.

4.1 Sensory Branding

Before building a brand through sensory experience, it is important to understand what creating a brand brings for the museum. A brand is something that brings social and economic effects for the museum and makes consumers return and recommend it to new people, and this way increasing the number of visitors and their willingness to pay for the visits. (Camarero, Garrido & Vicente 2010.)

When creating a brand, it is crucial to understand the values of the target market and use those as a tool to make the museum unique to its visitors. This also helps it to separate from the others. Keeping up with the competition requires brave and imaginary choices. Otherwise, if the museum just keeps copying and repeating already successful tactics, it drives it to a scenario with no particular value for its consumers. (Alvarez Sainz 2012.)

Recent studies have shown that museum branding is currently a neglected issue. Branding brings massive benefits for museums as financial and societal ways, but it is still in its early stages. For now, there has not been that many studies made about it and its effects on museums. (Belenioti & Vassiliadis 2017.) When comparing museum branding to restaurant branding, they are on a different planet right now. Restaurants are efficiently using all the channels and ways to adapt their visibility and uniqueness to their customers when museums are only thinking of ways to do it. (Lee, Wall & Kovacs 2015.)

It is important to understand how senses are connected to branding before one can use them as part of it. In the previous chapter, multi-sensory experience, external and internal senses were introduced. In branding, internal senses play an essential role. Internal senses affect the human mind by creating fantasies and ideas; that same operating model has been highly used also in branding. Therefore, the internal way of using senses is the key to sensory branding. (Hultén 2011.)

4.2 Sensory Brand Pyramid

Martin Lindstrom explains thoroughly in his book *Brand Sense: Build Powerful Brands through Touch, Taste, Smell, Sight, and Sound*, how sensory branding is constructed and in which ways it can be implemented to offerings. For this, he uses a sensory branding model called the sensory branding pyramid. Below, here the author has adapted a figure of Lindstrom's pyramid model (figure 5) and described all parts of it to demonstrate the dimensions where sensory branding can be taken.

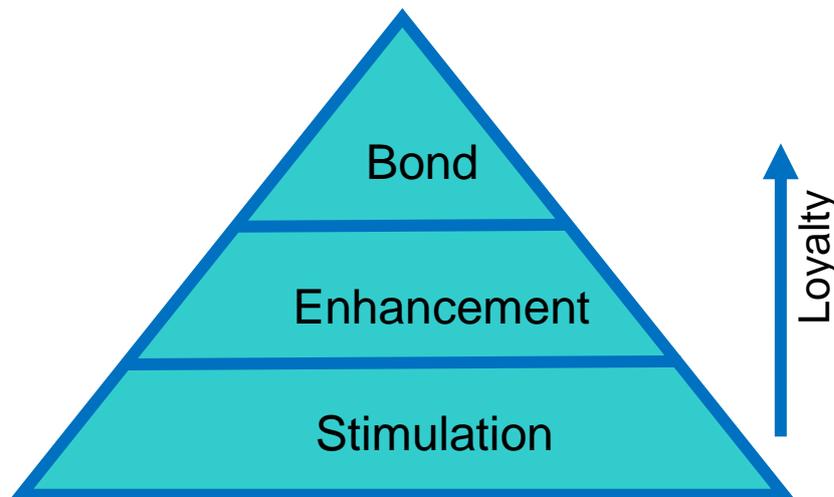


Figure 5. Sensory brand pyramid (adapted from Lindstrom 2005, 104-106)

In sensory branding, the idea is to stimulate ones' connection with the brand by using senses to do so. Martin Lindstrom had an excellent example of how the branded experience could occur.

Imagine this. You're walking down a city street on a summer's day. The air is hot, the traffic's busy, the exhaust fumes are hovering, and there on the next block you see an ice-cream shop. As you get closer, a waft of fresh-baked cones greets you. Without giving it any conscious thought, you find yourself drawn into the store. Ice cream strikes you as the perfect antidote to the heat and the traffic. Before you know it, you're continuing your journey with a cool, delicious ice-cream cone in hand. (Lindstrom 2005, 104-106.)

This example of ice cream does not directly connect to branding. Lindstrom suggests that there are two types of stimulation in these kinds of cases. One is non-branded stimuli, and the second one is branded stimuli. This ice cream experience starts as non-branded stimuli, but when the customer sees all signing outside the ice cream shop, they create bran

association with the ice cream. Then a few days later, this same customer is taking another walk, and this association may come up unasked. (Lindstrom 2005, 104-106.)

With sensory branding, it becomes possible to see one brand from different perspectives. Every sense that is being used in sensory branding is also possibly adding those new perspectives to it. This effect is also described as an enhancement, and like stimulation, it can occur as a non-branded and branded version. Non-branded enhancement can be seen in everyday life, for example, adding fresh scent to dog poo bags. This may make the product better but has very little to help with the brand. Branded enhancement, on the other hand, makes a real difference by separating the product from others. Lindstrom used Apple computers as an example of this, as they all have the Apple home key, which among the apple users is known for its purpose. (Lindstrom 2005, 104-106.)

The peak of the sensory branding pyramid is the bond, and it is also the final goal of sensory branding. The purpose of it is to make customers stay away from other brands, and stay loyal to the one it has the bond. (Lindstrom 2005, 104-106.) An example of this would surely be Apple users in general. They have such a strong bond with the brand that every phone they nearly ever own; they will and have purchased from Apple.

4.3 Sensory Marketing

Sensory marketing aims to communicate the offering of multi-sensory experience from museums to customers, and this way increase the number of visitors and overall popularity in museums. For this reason, this topic has an important purpose in this thesis. It also shows how senses are being utilized in different parts of the museum's operations. In this chapter, the author focuses on explaining the reasoning behind sensory marketing and the use of Bertil Hultén's sensorial marketing model.

Hultén is suggesting that the popularity in sensory marketing is growing because the theoretical and practical perspective of regular consumer marketing does not support today's focus on experiences. Sensory marketing is a natural continuum from previous and more controlled marketing strategies. (Hultén 2015.)

In his book *Sensory Marketing: Theoretical and Empirical Grounds*, Hultén mentions that he considers mind, five senses, sensory strategies, and sensory stimuli to affect the customers' buying process. Moreover, sensory marketing strategy being there for experience and service providers to gain knowledge and information on that (Hultén 2015.) Another bit simpler approach to sensory marketing is from Krishna (2010, 2): "I define it as marketing that engages the consumers' senses and affects their behavior." Similarities to these

both approaches are that senses are playing lead roles in them. Both also consider sensory marketing affecting customers' behavior; Hultén only describes it in more detail.

Today's focus of action in marketing is on the needs of individuals. Markets need to satisfy customers' needs in more than just material and tangible ways; therefore, sensory marketing aims to fulfill customers' emotional, intellectual, and other experience centered needs. (Hultén 2015.)

4.4 Sensory Marketing Model

The sensory marketing model demonstrates how senses can be used to create effective marketing strategies for businesses. In the sensory marketing model, each section can occur independently or together as a useful marketing model. From every part of the model, factors such as sensors, sensations, or sensory expressions can be applied as tools to improve the marketing process, allowing differentiation and diversity. The sensorial strategy is aiming to ease the use of multi-sensory brand experience to express itself. (Hultén 2011.) Below is presented Hulténs sensorial marketing model (figure 6).

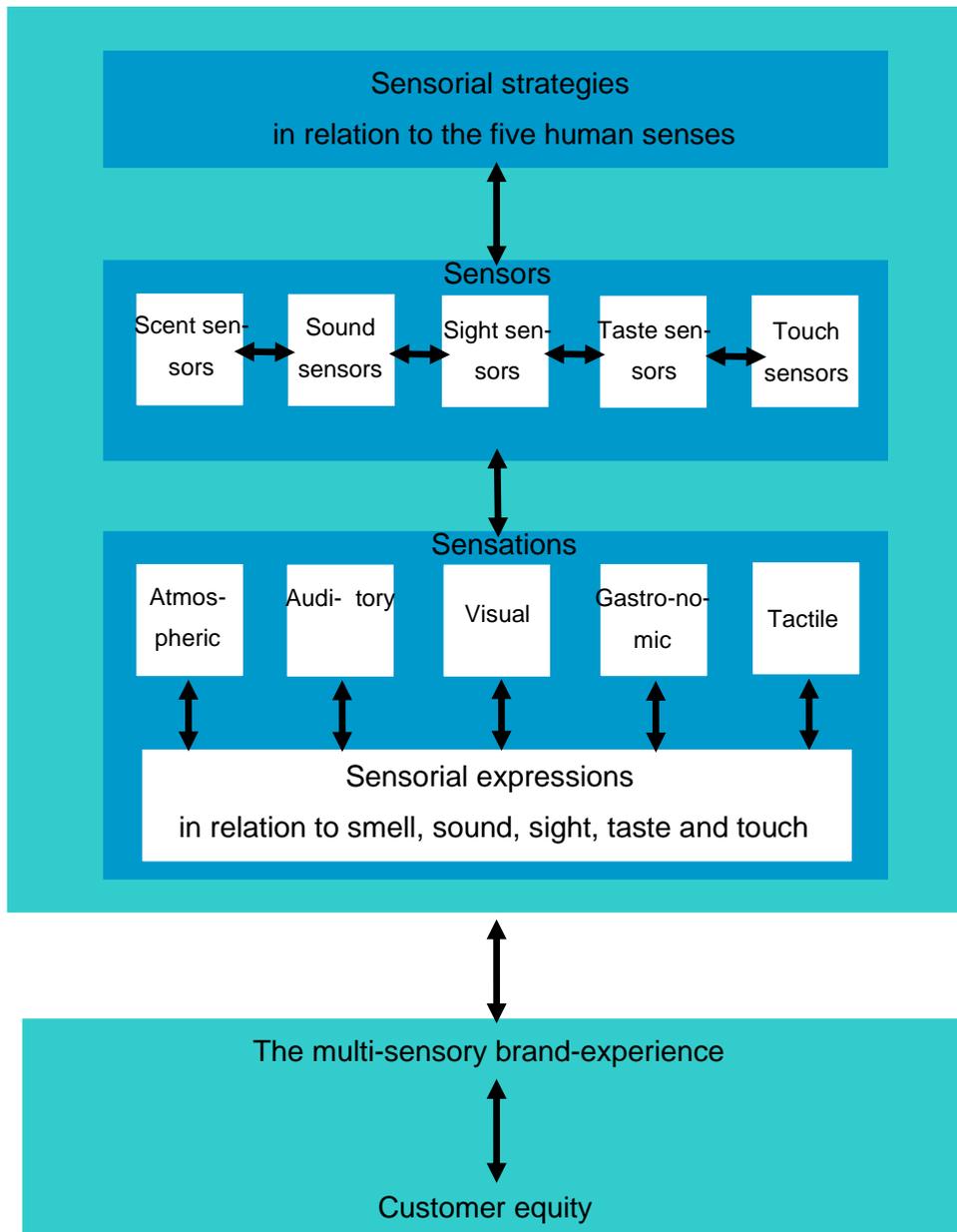


Figure 6. Sensory marketing model (adapted from Hultén, 2011)

Sensorial strategies:

This sections' primary purpose is to help the other sections of the model in connecting to the multi-sensory experience. It also aims to differentiate and express the product or service concerning the human mind and senses. Sensorial strategy becomes one when certain sense or senses is appealing in relation to the mind. Its purpose is to help service providers to make a difference compared to its competitors within the competitive market. (Hultén 2011.)

Sensors:

The sensor's purpose is to create communication between sensations and sensory expressions, which are strengthening the multi-sensory experience for the customer. Sensors are transmitting or receiving sensations and sensory expressions via devices, equipment, material, or employees to the customer. This helps the service providers to have a multi-sensory platform to use for advertising for the divergent brand. (Hultén 2011.)

Sensations:

The sensation is an emotion or feeling that intentionally connects the mind and the senses. These are extremely important since humans are observing everything around them all the time, and with this in mind, service providers can aim to affect consumers' perception by using these. Their purpose in branding is to express brand identity and values in particular and sensorial ways. (Hultén 2011.)

Sensory expression:

Sensory expression leaves an imprint on consumers' minds by being a trigger that explains the brand's identity and values. Its purpose is to describe brand identity and uniqueness concerning the five senses. (Hultén 2011.)

The Sensory Marketing model by Hultén (2011) is a great tool to help understand how senses can be used for more commercial purposes. In the first section, there is a sensorial strategy, which is the central part of the model. The next section is the sensors; they are loudspeakers, perfume, or taste stripe, something that creates the stimuli for senses. The third section is sensations, which are the emotions we are using to connect to our senses. The last section is the sensory expressions, which are the outcome of this model and the feeling of the brand that sticks in the customers' minds. (Hultén 2011.)

Further, sensory marketing creates a possibility to attract customers in a more personal way, where emotions are produced, and where memories can be both activated and created (Hultén et al. 2008). A multi-sensory brand-experience is an important factor to consider as it creates meaning by attracting the human senses, creating an experience for customers that enable them to have fun, live out fantasies, and have emotions (Rodrigues et al. 2011.)

5 Research Methods

This chapter describes how research material was gathered for this thesis and how it was analyzed. The research was done by using a qualitative research method to desk-research already executed multi-sensory experiences in museums, and this way to uncover the main factors behind multi-sensory experiences. All data collecting and material analysis took place during spring 2020, between late April and early May. Desk research was done by using carefully designed questions based on earlier gathered material in the theoretical section of this thesis. Those questions were combined into a desk research form (appendix 1), which helped to collect material accurately and to make sure the collected material was relevant. This desk-research tool made it possible to collect material from multiple sources in the same format. After desk-research was completed, the collected material was analyzed by using content analysis to find similarities and differences and to summarize collected material. The following research questions were used as a guideline for data collection and analysis.

Research question:

- How can multi-sensory experience be embedded in designing a new museum experience?

Sub-questions:

- In which ways can a multi-sensory approach be utilized for museum use?
- What factors should museums consider when designing multi-sensory experience?

5.1 Desk Research as a Research Method

The thesis was done by using qualitative desk-research as a research method. The qualitative research approach is a way of doing scientific research, and in general, it should have certain qualities:

- Answer pursuing
- Logical use of pre-planned measures to get the answer
- Based on gathered evidence
- Results which were not predicted in advance
- Results which are usable beyond the research

These all qualities mentioned above are accomplished with approaches and purposes of this research. A qualitative approach for research of this thesis was chosen to support the purpose and objective of it. (Mack, Woodson, Mac Queen, Guest & Namey 2005.)

From a wide range of qualitative approaches, desk research was chosen to be the most optimal way to achieve the objective of this thesis. Desk research, or also known as a secondary research method, is a way of researching, where already existing material and information is being used to achieve desired results. It can be executed by searching for information from webpages, industry reports, online platforms, or even from physical material such as books. (Kuhn 2016a; Kuhn 2016b.)

The topic of multi-sensory experience design is quite young in the field of experience design and has not yet been researched extensively. This is one reason why the approach of desk research was chosen, and this way became possible to take a globally more extensive range of subjects under research. Another reason behind this research method to be chosen was the fact of multiple subjects being researched, and for this reason, physically visiting them was not a possibility. Contacting all participants would also have been impossible since several of them are no longer operating.

Desk research was done on museum webpages, expert reviews, magazine publications, and social media, including Instagram, Twitter, Facebook, and YouTube. Desk research was done in a very comprehensive way, and for that reason, all informative sources were exploited if possible. If the author had chosen to use only one specific source, the material would have been defective, and therefore most of the research impossible to do.

5.1.1 Research Subjects

For this research, 11 museums were chosen to represent the current multi-sensory experiences. Participants had no regional limitations, and for that reason, museums were spread globally wide. None of the museums were currently available for customers due to the COVID-19 global pandemic. In better times, 6 out of 11 would have been open for visitation since they were currently operating museums or exhibitions in museums. The rest 5 out of 11 museums had no current activity. The author considered that 11 museums were enough to gain the desired results. If there would be a lot more participants, the results would still stay the same as repetition would start to occur. A list of museums chosen to participate can be seen below in table 1.

Table 1. List of research participants

1. Multi-sensory Met	2015, New York, US
2. MOFAD – Museum of Drink and Food	Current, Brooklyn, NY, US
3. Tate Sensorium	2015, London, UK
4. Van Abbe Museum	2019, Eindhoven, Netherlands
5. Musée du Parfum	Current, Paris, France
6. Cite Du Vin	Current, Bordeaux, France
7. Mori, Digital Art Museum	Current, Tokyo, Japan
8. Hayo, Art Center of Tokyo	2019, Tokyo, Japan
9. Amos Rex, Team Lab	2020, Helsinki, Finland
10. Museum Hotels	Current, Global
11. Ultraviolet	Current, Shanghai, China

The decision which museums would be included in the research were made based on specific criteria. The first remark was that the multi-sensory aspect of the museum should have been designed to add value to the offered experience and engage customers to it. Another remark that needed to be taken under consideration when choosing the subjects for desk research was to know that subject should knowingly offer a multi-sensory experience for its customers. Therefore subjects that were not counted as multi-sensory experiences or had an otherwise unfit presentation of it had no participation in this research. In general, museums offer sensory experiences, including two purposely used senses, for example, art and audio guides. Those sorts of museums were not intentionally included in the research.

One research subject, Amos Rex – Team Lab, had no mention of multi-sensory found through desk research. It was still kept as part of the research, since it would bring contrast to the results and had promising features noticed before desk research, such as unbelievable visual effects. Another exceptional participant was Ultraviolet restaurant in China, even though it was a restaurant, it was considered to bring valuable input to research, as it had very much mastered the use of the multi-sensory approach.

5.1.2 Desk Research Form

Method of desk research is typically used in part of market research, and for that reason, it was not suitable by itself to gain enough reliability. To transform it more suitable to be used in this thesis, the author added a desk research form to help focus the research.

The desk research form was designed to be used as an instrument to gather consistent material systematically. All questions were based entirely on the theoretical part of this thesis by considering each relevant topic in it. Generally, these topics covered themes of experience design, utilization of the senses, marketing and branding, and museum perspective. Thirteen questions in total were designed, and they can be seen in appendix 1.

5.2 Content Analysis as Analyzing Method

Analysis, interpretation, and concluding collected material, are the core sections and highly important phases when doing research. During the analysis phase researcher is noticing in which way results are coming together. (Hirsjärvi, Remes & Sajavaara 2009, 221.)

The content analysis aims to form summarized descriptions which are linked to previously done research and the broader context of the phenomenon. Researched material can be books, interviews, discussions, or just about anything else. Content analysis can be used as a method of analysis of different qualitative studies, and it can also be used to perform different studies. (Sarajärvi & Tuomi, 2018, 117.)

Content analysis is a tool and method that is used to draw reliable and replicable conclusions about the relation of research material to its context and content, as well as to generate new information and insights. Typically, content analysis involves classification and statistical processing. The aim is to be able to create content categories, either verbally or otherwise, so that they can be further processed. The content analysis contains a list of all the content categories in the study, which in turn contain smaller sections. The starting point for the classification framework can be, for example, previous studies. The material being researched is usually divided into sections, for example, to units of observation, which can be titles, main titles, or even an entire book. The idea is to proceed step by step to provide an answer to research problems that have been defined in advance. The text is divided into categories that answer the questions, so the researcher cannot change goals during the study. (Anttila 2009, 254-256.)

Content analysis refers to the verbal description of the content of documents. Content analysis is a three-step process in which the first step is to simplify, meaning that everything irrelevant to the research is left out of the material. The material can then be compressed or left out. In the next step of clustering, the original expressions of the material are carefully reviewed, and similarities or differences are sought. Similar phenomena and concepts are grouped to form subcategories. Grouping is used to form the basic structure

of research results and early descriptions of the subject. Grouping is followed by conceptualization or also known as abstraction. At this stage, theoretical concepts are formed from selected data. (Sarajärvi & Tuomi 2018, 122–125.)

6 Results and Findings

In this chapter, the research question and sub-questions are being answered. Results from the research are viewed in sub-chapters by one research question at a time. In these sub-chapters, results are viewed by topics, and these topics are based on desk research form made for desk-research. These questions can be found in appendix 1. In this part of the thesis, research subjects are mentioned as museums, even though one of the subjects identifies itself restaurant. Two questions from the form were dismissed from the results part of this thesis since the author felt they were not bringing any value to it.

6.1 Research Question

The research question of this thesis was to find out how multi-sensory experience can be embedded in designing a new museum experience. Solutions for research questions were searched by doing desk research on already executed multi-sensory experiences in museums by using pre-determined questions that were done for this research, and this way to uncover the main factors behind these experiences. In this part, questions from 1 to 8 are analyzed to support the purpose of the research question.

How was the number of senses divided into the research?

The research revealed that the majority of research subjects were utilizing five senses in their multi-sensory experience, a total of 6 out of 11, which is 55%. The remaining five subjects divided almost evenly by the number of senses being utilized. In the bar chart below, the same information is presented more statistically. It also demonstrates how big of a difference there is between the research subjects (Figure 7).

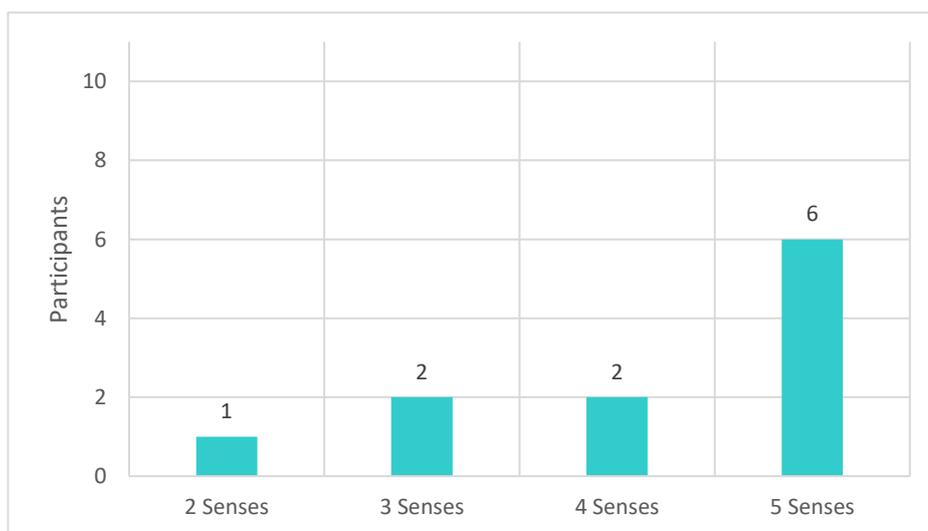


Figure 7. How was the number of senses divided?

When researching how many senses were being used in multi-sensory experiences, only senses that were purposely designed were counted in. This meaning that if a customer had to hold a banister when walking stairs up, it would not be counted as a sensory experience of touch. In case if those stairs and banister were coated with haptic stimulants to encourage customers to touch them on purpose to evoke emotions, then that would count as a sensory experience through touch.

There was no possibility to get results that only had one sense being utilized since that kind of experience are not supporting the theory behind multi-sensory experiences. In multi-sensory experience, there always needs to be at least two senses being utilized to make it valid, and here was also considered the intentional usage. This was made sure during the pre-screening of the subjects.

From this part, it comes clear that when designing multi-sensory experience typical and presumably suitable amount of senses being used would be all five of them. However, this research does not insinuate that if fewer senses are being involved, the experience does not turn out as good as with all five senses.

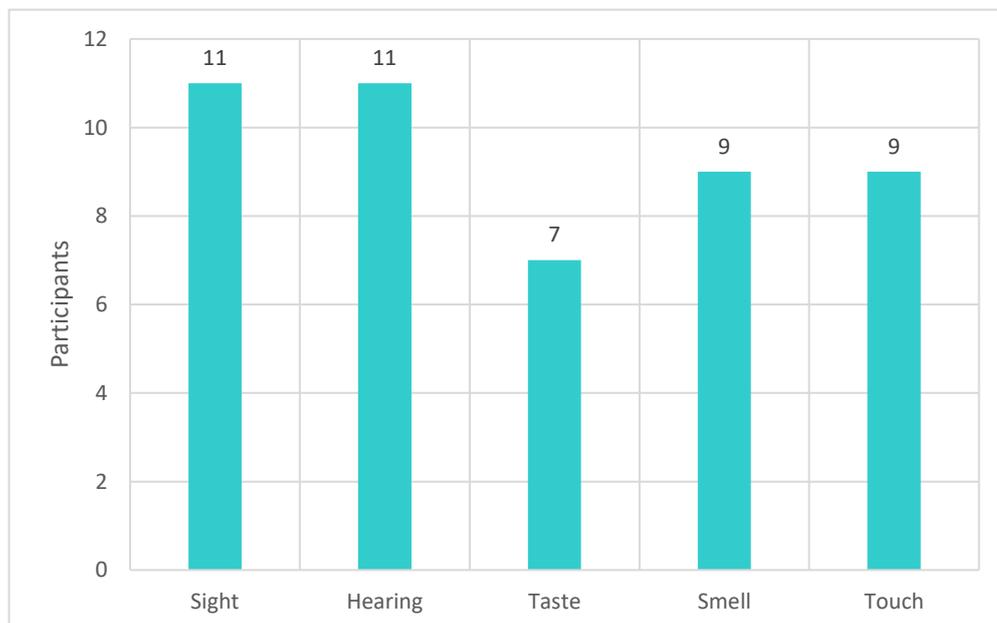


Figure 8. How involved senses divided?

This bar chart (figure 8) above demonstrates how involved each of the five senses was in researched multi-sensory experiences. Sight and hearing both were involved in every experience meaning 11 out of 11 results. Smell and touch were both having the same amount of involvement, both 9 out of 11. The least used sense was taste with 7 out of 11

results. The result seen in the bar chart was divided quite evenly, but there still is some dispersion that can be noticed.

It is vital to understand which senses are most used in multi-sensory experiences. As was suspected, sight and hearing were being the most utilized ones. This effect can be noticed in all kinds of museums, whether it offers multi-sensory experience or not. Often visual stimulations from art are supported by auditory stimulation such as an audio guide or cohesive music.

In this bar chart, the material was gathered, writing down every sense which was utilized in each multi-sensory experience. When gathering material for desk research about this topic, only senses that were purposely utilized were taken into consideration. When the selected museums were providing experience using all five senses, they would add one point for each sense, or if using only three, then that would be the number of points for individual senses.

This information is in correlation with the result of figure 6. It showed that multi-sensory experiences with all five senses were the most popular, and that can be noticed in figure 7 as well. All pillars are raising quite high due to this. What should be taken under observation in this one, is the lack of certain senses, here it insinuates that those senses are not necessarily that efficient in multi-sensory experience design or designers are not sure how to apply them.

According to collected data in figure 9, sight is the most utilized sense between the research subjects. Almost 50% of the museums were one-minded on that, and rest were divided between other senses. None of the research subjects had hearing as the most utilized sense.

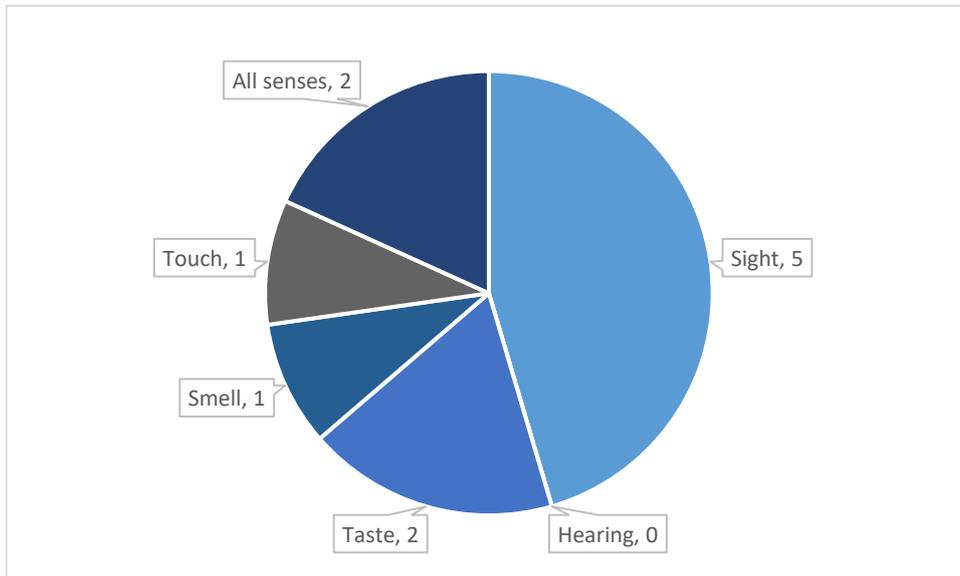


Figure 9. Which sense is mostly utilized in the multi-sensory experience?

The sight was apparent result here since it is the sense that also regular museum experience is built around. Based on this information, sight is the most important and dominant sense, and it seems that it is the primary sense to use during the experience. Two of the museums did not show noticeable differences between most utilized sense, so those were counted in as an all senses participants.

Research for these results was done, so understanding how senses can be used would become simpler to understand. From every museum, research was made of, was chosen one sense which had the lead role during the experience. This decision was made by the author based on descriptions, reviews, and marketing material about the subjects found on the internet. In some cases, this information was already somewhat obvious based on the names of the subjects.



Picture 2. Utilizing a sense of smell in the museum's name. (Musée Du Parfum 2020)

Picture 2 from Musee du Parfum’s webpage clearly shows how perfume on the name of the museum indicates that it has a sense of smell as the primary sense. This assumption was just first impressions, and all subjects were looked deeper for complete valuation.

All 11 research subjects were constructed on very different concepts from each other’s, there for the results for how senses are being used in experiences had significant dispersion. All sense which was approved by the guidelines of multi-sensory experience was shortly described on general terms. The focus was to find what different methods were used to see if these methods can be utilized in the future. The ways senses were used were relatively easy to find. Mainly this information was found on web pages, usually from sections mentioning organized activities or overall information about museum exhibitions. Some information for this was also found from expert reviews and informative YouTube videos. For this question, it was extremely beneficial to have multiple different concepts to analyze, and this way results generated a great variety of information. While collecting this material, it was surprising to notice how many perspectives this topic could be utilizing.

Here in table 2, are some examples from collected data to demonstrate how this information was constructed. This small table can also be seen as how two very different approaches create an effective multi-sensory experience.

Table 2. Collected data from analysis.

	Tate Sensorium	Van Abbe Museum
Sight	Exhibition based on three art works. Otherwise, space was made neutral for sight. This exhibition was all about visual appreciation of art.	Visual art pieces. Some art pieces also adapted to 3d versions. Visual art was not the main object. Designed for disabled.
Hearing	Ultrasound waves to direct exact sound waves across distances in an exact manner. Also, recordings from interviews about artists' inspirations.	Space, where the exhibition was held, had specially designed acoustic system for people with hearing problems.
Taste	Chocolate inspired by art pieces was offered to a visitor to enhance the effect of these art pieces.	Cake was offered during this exhibition (based on a review on experts' blog) - Not sure if entirely on multi-sensory purpose.
Smell	Smells were added via flying objects that spread precisely chosen smells in the right moments. For example, smell of hairspray from 1960. All smells were connected to artworks.	Fragrances specialist was part of the process, but no other mention about his part.
Touch	Ultra-haptic technology which works with ultrasounds and gives you tactile sensations. Connected to the hearing part.	The artwork was printed in 3D for blind people to be able to feel it.

To understand how senses are affecting experiences in this desk research, Pine and Gilmore's (2011) "four realms of experience" model was used to assist. From each research subject, the designed experience was evaluated by the author and then placed on that model.

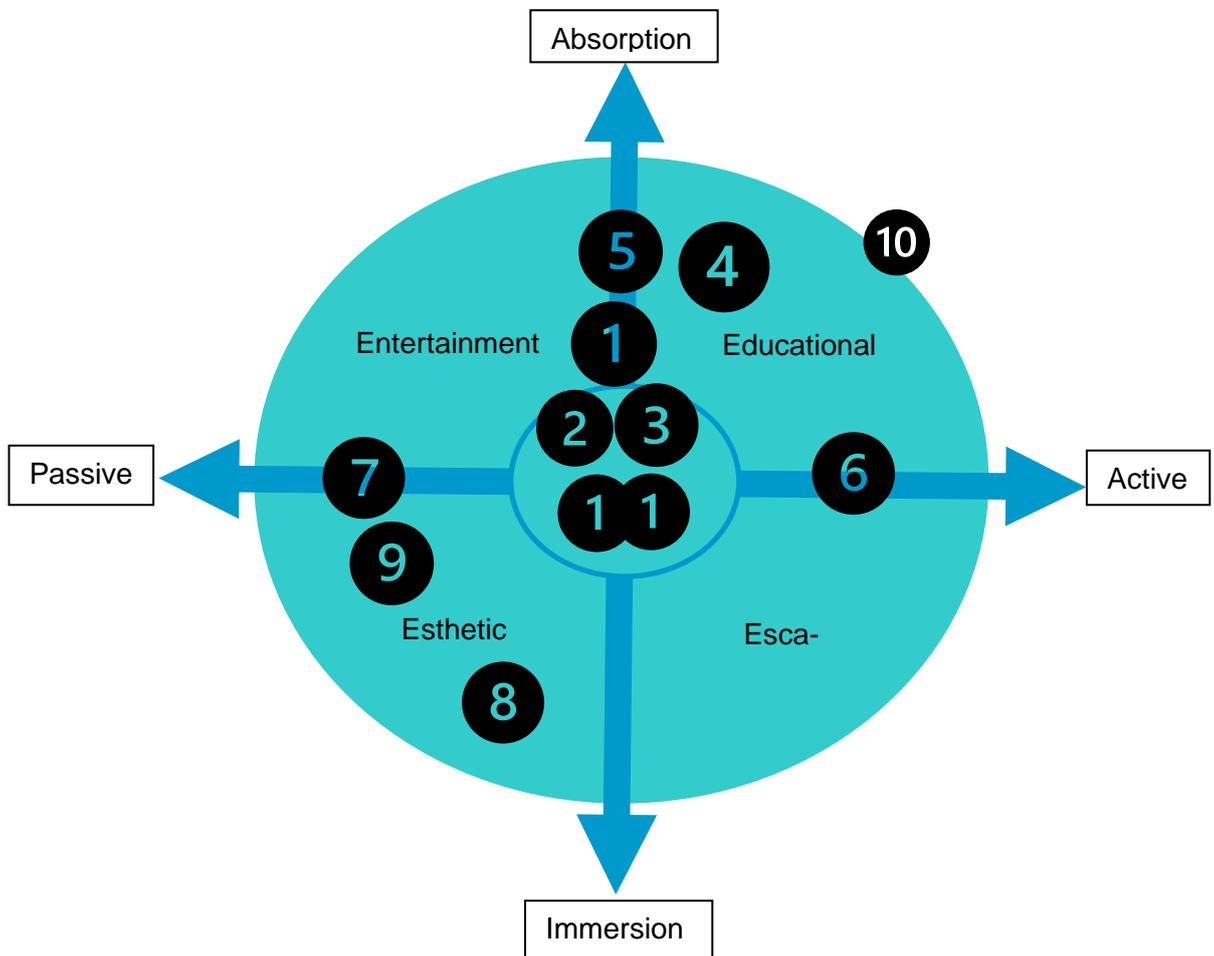


Figure 10. Findings from research. (Four realms of experience model adapted from Pine & Gilmore 2011)

To evaluate these experiences, the author used knowledge from the theoretical part of this research. All evaluations were based on material found from the internet about the research subjects. All subjects were tagged to experience realms model (figure 10) with the same number they had given in a list of them (table 1). Some experiences had the potential to be in two different sides of the realm, but in cases like that author made a choice which part of the experience realm was most suitable for them.

Tagged numbers in this experience model show how experiences are divided among each other. From this model can be seen how, for example, the number of senses influences to the experience. Most of the experiences that had all five senses included are placed in the sweet spot of the experience model. Others are scattered around it.

To understand better how to experience were designed material was about to what sort of design model had been used. Three options were given: descriptive, prescriptive, and possibility of combination of both. These two design models were selected from the theoretical part of the research since they describe the basic elements of a common design process. As was predicted, none of the experiences had signs of only using a prescriptive design model. 4 out of 11 museums were analyzed to be mainly done by a descriptive design model. Rest 7 museums had signs from both design models or signs of something that did not fit either prescriptions of design models.

6 out of 11 museums in this desk research showed signs of a connection between multi-sensory experience and interactive experience. This meaning that based on cross-examination of the answers from desk research form became obvious that when most or all the senses are involved, the experience also has interactive features. Rest 5 out of 11 museums did not have any interactive features found during desk research.

6.2 Sub-question 1

The first sub-question was to find out in which ways can a multi-sensory approach be utilized for museum use. For supporting the sub-question, questions guiding towards marketing and branding were applied to the desk research form. Through these questions, the main purpose was to figure out if the multi-sensory experience is being marketed and branded in chosen museums and seeing if the sensory marketing strategy has been somehow used in them. For this information besides the questions, screenshots were taken from museums' web pages and social media accounts to demonstrate how a multi-sensory approach was taken to use in marketing.

Table 3. Findings from research.

Can sensory marketing strategy be seen used in this museum?	Yes	No	Cannot say
	9	1	1
Is museum using multi-sensory experience as part of their branding?	Yes	No	Cannot say
	8	2	1

From table 3, it is easy to notice how sensory marketing strategy and multi-sensory branding have been part of the majority of researched museums. This information was mostly extremely well presented online and easy to find.

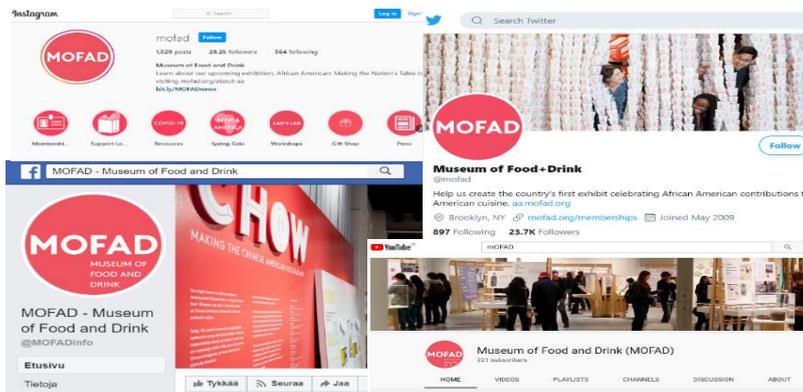
The sensory marketing strategy can occur independently through any of its three levels: sensors, sensations, sensorial expressions, or as total. The author did not name which parts of sensory marketing model museums were using since it was not relevant for the goal of this thesis. More important was to see if museums had used any parts of sensory marketing strategy; therefore, it could be realized if it is something that should be integrated when designing multi-sensory experience. These tables show that regardless of how many senses are utilized, or how the experience is, these tools are still very used.

An excellent example of sensory marketing strategy used in real life as a part of multi-sensory branding would be the MOFAD-Museum of Food and Drink (Picture 3). The arranged pop up exhibition where they made morning cereals with a Puritan Puffin Gun-cereal machine in the middle of New York City. Here customers were able to see how cereals were made back in the day, and some were able even to try out the machine. Through this MOFAD gave customers an idea of what their museums are all about and also used total sensory marketing strategy.



Picture 3. How senses are utilized in MOFAD (Museum of Food and Drink Lab 2020)

Picture 4 below is a collection from all sources where MOFAD- Museum of Food and Drink are marketing their experience. They are using the webpage, Instagram, Facebook, Twitter, and YouTube as platforms. In all their media outlets, MOFAD effectively uses multi-sensory aspects as a vital part of their brand image.



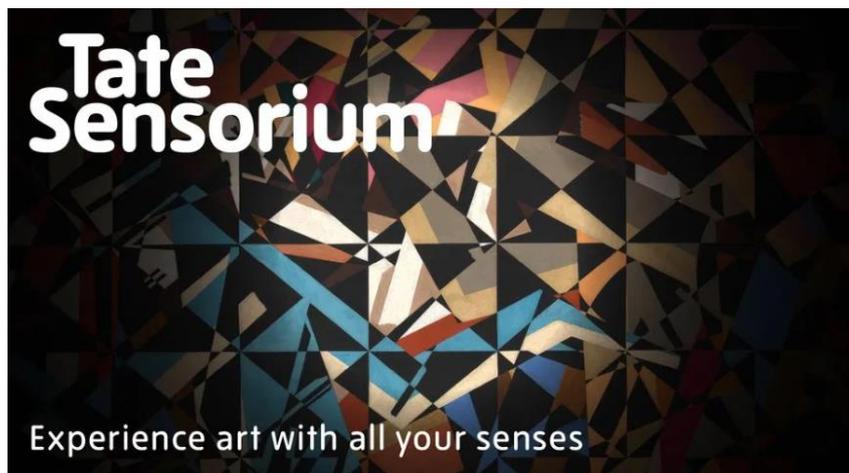
Picture 4. Examples of social media usage (Museum of Food and Drink Lab 2020)

One restaurant was also part of desk research since it showed many attributes that participating museums did as well. On brand and marketing, this restaurant was indeed a forerunner. It offers multi-sensory experience in the form of a dinner, but it is more like an exhibition of senses. This restaurant had also taken this multi-sensory experience to its website by adding theme-appropriate music on the background of very visual and artistic photos. They had also described their experience through short writings on their webpage, and these writings on itself were enough to build the idea on consumers' minds about the multi-sensory experience—below a demonstrative collage (picture 4) of some writings from their webpage.



Picture 4. Experience promises of Ultraviolet (Ultraviolet 2020)

Tate sensorium had designed advertisements and wrote an experience promise on it. It was to invite customers to visit the Tate museum and in its multi-sensory exhibition, where art could be experienced with all senses. This sort of advertisement signals for the customer what to expect. Abstract background evokes visual sensations, and through that, the sensory expression is implemented to a customer's mind. Here sensory expression evokes a question of how that sort of abstract art could be experienced with all senses.



Picture 5. Advertisement of Tate Sensorium (Tate Sensorium 2015)

6.3 Sub-question 2

The second sub-question is about taking a more practical approach to the topic. Its purpose is to find out what factors museums should consider when designing a multi-sensory experience.

To gain knowledge about this was important to understand where all multi-sensory experiences were located and were they designed by creating new art that never existed before. Another topic on desk research if they were build based on already existing artwork that

was used as a base for these multi-sensory experiences. Another important point was to see if the way the museum was designed to impact customers had differences between the experiences.

In desk research was discovered that placement of multi-sensory experience was almost equally divided into two categories (Table 4). 4 out of 11 multi-sensory experiences were arranged in one exhibition, meaning that the experience was arranged in separate space, and there were other exhibitions on display at the same time. Five other research subjects had used the entire museum for their multi-sensory experience. Therefore they had no other objects of interest to offer, and the experience was designed as part of their business plan. Two remaining research subjects did not fit in either of the descriptions mentioned above, because one operated as a restaurant and one part as a hotel.

Table.4 Findings of research.

Where is the multi-sensory experience placed?		
Exhibition	Entire museum	Other
4	5	2

For example, the perfume museum in Paris was designed to have multi-sensory experience throughout the entire museum visit, by inserting different scents and visual things on display while customers are listening guided tour. While in Tate Sensorium in London, they arranged complete multi-sensory experience in one exhibition where only four people were let in at once. The rest of the Tate museum was displaying other irrelevant exhibitions.

This information is important to consider when creating a new multi-sensory experience since it shows that both ways are working and have been used almost equally according to research results. Still, some aspects need to be considered when designing the placement of the experience. These two different ways of implementing multi-sensory experience to museums evoke the question of customers' primary purpose for a visit. Meaning that in theory, they might have come seen other exhibitions instead but ended up there by accident, which changes the way they receive the experience.

The author wanted to see if there was a difference between building multi-sensory experience on old artwork or building it from scratch. Table 5 below shows that results divided evenly, five were built as new, and six museums used already existing artwork. When cross-examining these answers with the number of senses used in experience, the results divided evenly to both sides. Therefore the number of senses did not have any effect on

this point. This led to the conclusion that when designing multi-sensory experience, it does not have an evident effect on it.

Table 5. Findings from research.

Was multi-sensory experience built on already existing artwork or a new one?	New	Already existing	Other
	5	6	0

7 Conclusion and Discussion

This chapter starts with a summary of the results. After this, results are compared to previous researches, and the reliability of this research is being discussed. At the end of this chapter, future research opportunities are reviewed, and the author's own learning journey is evaluated.

7.1 Summary of Results

Figures 11 and 12 are both created based on material gathered from the content analysis. They cover most essential views from the research in purpose to create a guiding frame for multi-sensory experience designers to utilize later in their own work.

Figure 11 is a model made based on material gathered from the research of this thesis. This material was gathered to understand what factors need to be taken into consideration when designing multi-sensory experiences. This model is called the multi-sensory experience model, and it gives the user helpful advice and frames which to use when designing multi-sensory experience. This model is designed to be used together with the experience design model. The multi-sensory design model is explained here from step by step while demonstrating it with examples. These examples are marked with white dots.

1. The first steps are to follow the experience design model until generating alternatives began, in step 5 of the design model.
 - In our example, the steps of the experience design model have been followed in the correct ways. They are not the main point of this model; therefore, the author is not going to go more into them.
2. New art or old
 - These two are representing physical factors that are important to take into consideration in this experience design. New art means that multi-sensory experience is built on new art innovation. Old art means the opposite. There the experience is based on already existing artwork. The purpose is to choose one of the options.
 - An imaginary museum called museum Z chose to build an experience based on old artwork.
3. Entire museum or one exhibition
 - These two are also representing physical factors, more precisely the placement of the experience. Museum means that the experience takes over the entire museum, and in case the exhibition is chosen, it takes over just one exhibition space.
 - Here Museum Z is interested in doing this experience in one exhibition space.

Now that all external remarks are gone through, it is time to look at the frames of this model.

4. Five senses
 - All five senses should be, if possible, utilized in a multi-sensory experience.
 - Museum Z is planning to make utilizing all five senses possible.
5. Experience sweet spot
 - Sweet spot refers to the middle point of Pine and Gilmore's four realms of experience-model. That sweet spot is the ultimate experience, and that is also the goal of this designing.
 - Museum Z is looking to get to the sweet spot of experience by using all five senses and making the experience interational.
6. Sight as foundation
 - Sight is the most utilized sense in all experiences, and for this reason, it should be a smooth start to build multi-sensory experience.
 - Since the exhibition is based on old artwork, it already has the foundation of sight in the sensory matter.
7. MS branding & marketing
 - Multi-sensory branding and marketing are both important factors to utilize in a multi-sensory experience since they are the factors that connect the customer with the museum.
 - The museum is efficiently going to apply sensory marketing and branding strategy. They are planning to use extremely visual appearance in their marketing combined with theme-appropriate sounds.

Now the frames of multi-sensory experience are clear, and the next step is to begin the actual designing of the experience. During the next steps, figure 12 will be in closer re-view. Figure 12 is a list of ideas to help generate memorable multi-sensorial experiences.

8. What to do with all senses?
 - At this point in designing multi-sensory experience is time to generate actual ideas of how different senses could be utilized. For this, what to do with all senses list can be used to help ideate.
 - Museum has three artworks included in this exhibition, meaning these are stimulating the sense of sight.
 - They are planning to use flying objects to spread theme-appropriate scents, like, for example, the smell of oil color paint if the artist has used that to paint the artwork.
 - Hearing is being stimulated by the narrator in the background telling a story about the artworks.
 - For touch, they are putting fake grass on the ground and ask customers to take their shoes off, so while walking around, customers can feel the grass ground. Grass can also be seen in the theme of those artworks.
 - Taste is being utilized by offering snacks tasting like seaweed since the sea is also one of them in the artworks.
9. Now all the steps utilizing a multi-sensory design model are done, and it is time to continue with steps from the experience design model. The next step would be step number 6, evaluating alternatives.

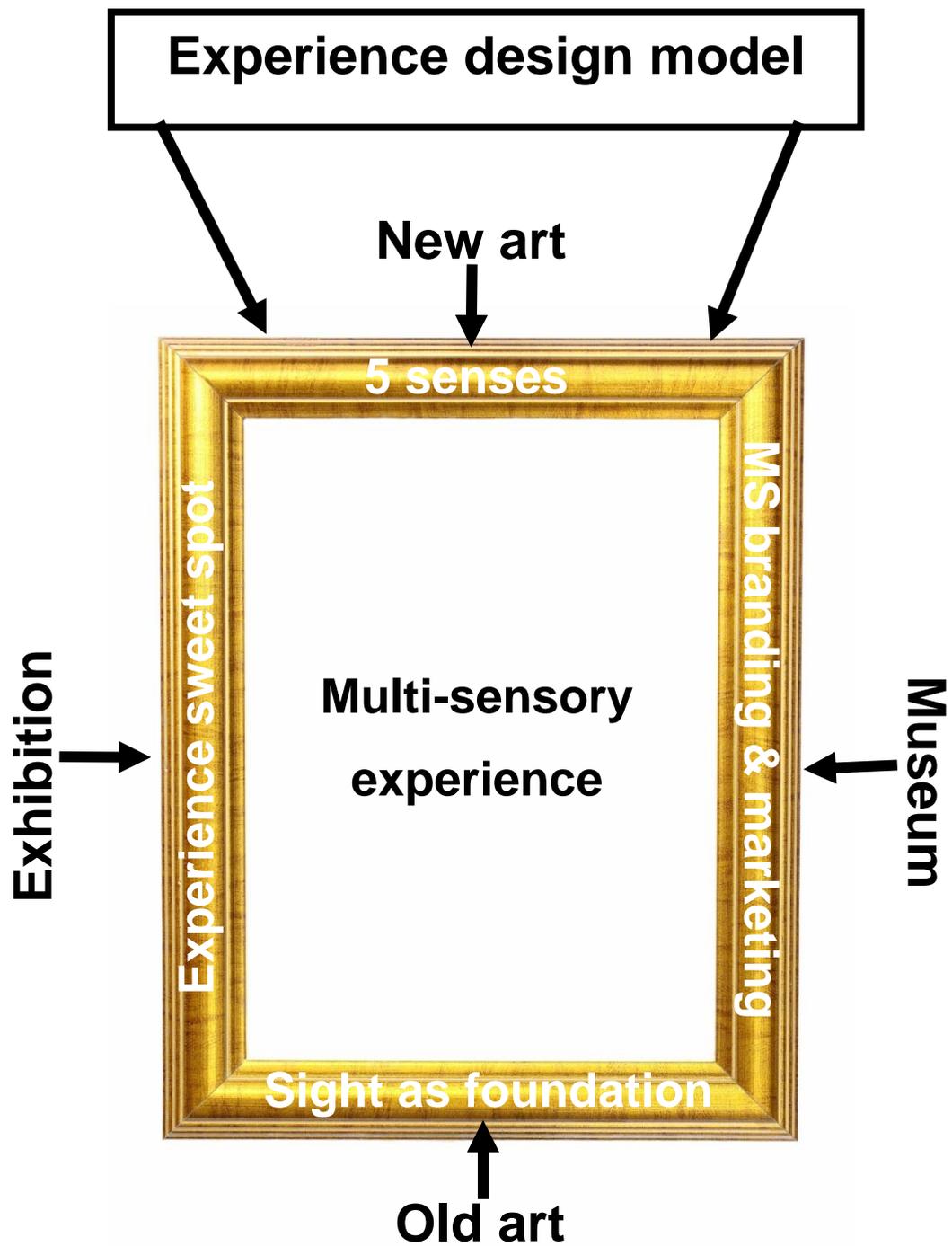


Figure 11. Multi-sensory experience model.

In figure 12 are listed the most effective ways to bring the multi-sensory experience alive at a sensory level. All this material is gathered from research subjects that were utilizing these as parts of their multi-sensory experiences. The idea of this list is just to help designers to generate new ideas based on these examples and to evoke their innovative side.

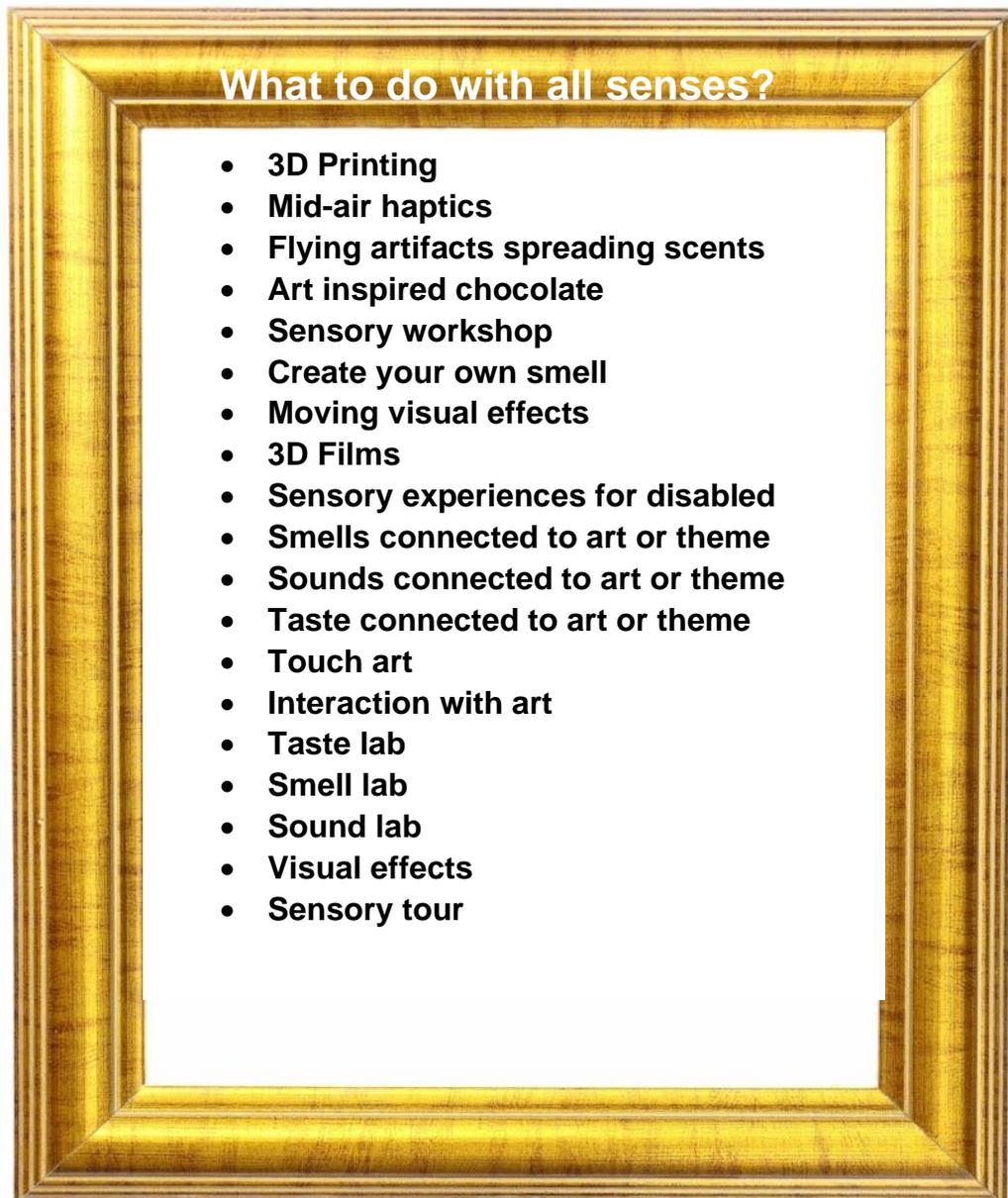


Figure 12. List of examples of how to use the senses

7.2 Comparing the Results with a Previous Research

In this chapter, the author reflects the result of the research to previously done researches. All comparison was taken from the theoretical part of this study since one of their primary purposes was to support the aim.

Research showed how all participants were providing an experience by influencing the customers' emotions with sensory stimulation to gain memorability for the customer. As Pine and Gilmore have taught, memorability is a key to the experience. This information was used to be sure that all participants were representing experience in the research.

According to the results, sight is the most used sense in a multi-sensory experience. This was proved by listing all the senses separately that were used in all 11 research subjects. Another part of the thesis research also proves this point; when picking the primary sense from each participants' multi-sensory experience, sight came first there as well. This fact was seen all over the desk research material. These results are supported by two different pieces of research, both Hultén (2011) and Erikson and Larsson (2011) are suggesting how sight is the most important and dominant of the five senses. They also added that it is the most used sense when observing goods and services.

After careful examination of the results, the author found out that when more senses are utilized in experience, more intense the experience becomes. This was proven by the fact that when placing experiences from the participants to four realms of experience, there was a correlation between experiences experienced with five senses and the experiences which reached the sweet spot of experience realms. Eardley et al. (2016) have also noticed similar remarks on their research. They insinuate that when the experience is introduced to the multi-sensory approach, it becomes richer in ways that memorability of the experience will improve.

The research proved that sensory branding and marketing are highly utilized in most of the participant museums. This was presented in many advertisement videos, carefully thought webpages, and even in postcard size flyers for Tate Sensorium's multi-sensory exhibition. In his book about sensory branding and marketing, Hultén (2015) considering sensory marketing to be a natural continuum from more controlled marketing, and for that reason, it has become that popular today.

7.3 Reliability of This Research

The reliability of the research is evaluated in all researches, and it is possible to do so in different ways. For example, reliability is often evaluated in terms of its reliability and validity. Reliability refers to the repeatability of the measurement results and validity evaluates the ability of the research method to measure what is intended. These criteria for reliability are the most valid for quantitative research. In qualitative research, the most crucial observation in reliability is its quality. When qualitative research is completed, it should help the reader to understand a situation which, in other cases, would be mysterious or confusing. (Bashir, Azeem & Tanveer 2008; Eisner 2017, 5.)

All stages of qualitative research should be carefully reported throughout the research process. The circumstances and places where the study was carried out, should be clearly demonstrated, in addition to the time spent on the study. Possible distractions, misinterpretations, and self-assessment of the researcher should also be mentioned. (Hirsjärvi et al. 2009, 231-232.) In qualitative research, the researcher must be able to prove that, by using that specific research setting and by studying that target group, it is possible to answer the question of the study (Anttila 1998, 408).

This research material was gathered by using a desk research method, and for analyzing method, content analysis was applied. The desk research form was used to gain focused information on the topic. All material was gathered by the researcher, who purposely took a very objective approach when gathering the material to ensure an objective view on the topic. The objective view was used to gain reliability for this research and to ensure that the author's own values and opinions would not affect the results.

The research was done in an organized manner to ensure that all needed views would be taken into consideration. This included that the gathering of the material was timed to happen in 5 days. All material was gathered in a short time to ensure that external factors like environmental stimuli had as little effect as possible. During this time, the author made sure that his own alertness was on its peak, to focus his attention and energy on research.

To get the correct targeting of the material for analysis, the author designed a desk research form. With this form, the material was gathered in a more organized and targeted way. This helped to leave out all irrelevant information from this research. Questions to form were all based on research questions and theoretical base of this thesis.

One factor that had a significant impact on the reliability of this thesis was the decision to do all research in English even though that was not the author's native language. English was chosen since this topic is very poorly studied in Finnish; therefore, the outcome of the study would not be as comprehensive. For this same reason, most of the vocabulary used in this thesis was only in English, meaning that the author would need to translate it himself. The designed desk research form makes this research possible to repeatability in case that comes relevant.

One remark in reliability is that if this research would be repeated, the new research might not get the same results as the original research got. This is simply because the material gathering and analysis is, in many ways, prone to influences from the researcher's background. This meaning that the level of knowledge and capability, to analyze and understand the topic, is changing the way research is succeeded. Even though this thesis was done in an objective way, there always is some ways that authors own perspective shines a little bit through.

This research would be more reliable if other research methods would have also been used. Desk research is only concentrating on gathering material from already existing sources, and for that reason, the area it covers is not very extensive. This meaning that the results are not enough to cover the entire topic in the most suitable way. One reason for this is the global pandemic of COVID-19 that was intensely ongoing during the making of this thesis. Due to this unfortunate effect author could not execute a thesis with the original plan of visiting museums on site and interviewing professionals.

In conclusion, this thesis is considered to be reliable, but it also offers opportunities to continue the process and take the research further.

7.4 Suggestions for Improvements and Future Research

In this thesis, the primary purpose was to come up with important factors to consider when designing a new multi-sensory experience for museums. This aim was approached by choosing a global range of museums or similar spaces that were utilizing multi-sensory experience. From these research subjects, the focus points were gathered. In this light, a good idea would be to continue research by adding more research methods. When research is done only by using already existing information, the results are not covering that wide perspective. An excellent method for supporting the topic of this thesis would be to do observation in these chosen museums to see how much of the internet corresponds to reality. This way also more detailed information about these multi-sensory experiences could be done. Also, a questionnaire for customers of multi-sensory experiences would be

extremely useful, since it would tell how customers experience those experiences and what are their roles in those experiences are. The author thinks that interviews from professional multi-sensorial experience designers and other similar could open new dimensions to take this research further.

Another interesting improvement for this research would be taking a more technical approach to multi-sensory experiences. When the author was gathering the theoretical part of this study, some material about very futuristic like technology came up. It was approaching, that author would have liked to include more but had to delimit out.

The third fascinating improvement would have been using the multi-sensory experience model, which was created from this research and experience design model, to create a prototype of a multi-sensory experience. This way, the functionality of the multi-sensory experience model could have been tasted. This multi-sensory design sprint could have been guided to a test group, so both objective and subjective views of its operations would have been provided.

The multi-sensory experience is a very current topic, and for that reason, it should get a lot more research on its way. For future research purposes, an excellent idea would be to do research, where the topic of multi-sensory is researched from the point of purposely leaving out one of the senses. The sight would be good sense to leave out since it usually is the dominant and most utilized one. This kind of research would give an entirely new perspective on the topic of multi-sensory experience design.

Another idea of new research on this topic would be concentrating the research on the level of senses working separately for multi-sensory purposes. This research would share more detailed information on how each sense is working separately.

The third multi-sensory future research idea is to design a multi-sensory experience for disabled people. This minority is often neglected when designing museums. For example, people with limited vision cannot enjoy many of the museum experience provided today, but with a multi-sensory approach, this could be changed. The current topic is relevant as long as there are disabled people, and the problem is still being neglected.

7.5 One's Own Learning

The topic for this thesis got the spark from innovation and imagineering specialization studies in Breda, Holland. After the topic was precise, it took some time to begin the actual process of doing this thesis. The thesis was scheduled to be ready at the end of spring 2020.

Preparing for this thesis began in January 2020 when the idea of the topic became certain. When the thesis plan was executed at the beginning of May, everything started to flow as planned from there. Writing of thesis began from the theoretical framework, and it turned out to be more time consuming than was expected, and for this reason, the quite strict timing took a little slip. After the theoretical part became clear, it was time to start the research.

Methods for this research were simultaneously adapted while the writing of the theoretical part. At this time, global pandemic COVID-19 was at its peak, therefore initially planned research methods had to be adapted to work during the time of social distancing. After this rest of the thesis began to take shape, and timing was coming to its end. Therefore lots of hours in a short time were used to finish the thesis.

While doing this thesis, a lot was learned from all aspects of it. Most interesting teachings came from the theoretical part where the author got to truly dive deep with this topic to find the right kind of material. Along the way doing this thesis became somewhat frustrating for the author since it felt taking much more time than was suspected. One reason for this was also the challenge of doing this thesis in a foreign language, as when writing in English, it takes more time to outline the words than in one's native language. Despite the negative effect of choosing to write a thesis in a foreign language, it gave a lot more in the form of learning professional vocabulary and usage of words to a greater extend.

Even though most of the topics used in this thesis were somewhat familiar, the author was able to learn a lot more from those topics. While writing this thesis author also learned a lot of himself as a writer and person.

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Appendices

Appendix 1. Desk Research Form

Name and Location:

1. Where does this experience locate?

Exhibition	Entire Museum	Somewhere else, where?

2. How does this multi-sensory experience contribute to the purpose of the museum?

Educational	Human and social capital	Perspective	Inspiration	Economic development	Public awareness	Community building	Societal change

3. Which design model was used to create a multi-sensory experience?

Descriptive	prescriptive	Both

How? _____

4. How many senses are included?

5. Which senses are involved?

	Sight	Hearing	Taste	Smell	Touch
Which senses are involved?					

6. How are those senses being involved?

a. Sight: _____

b. Hearing: _____

c. Taste: _____

d. Smell: _____

e. Touch: _____

7. Which senses are utilized the most?

8. Is the sensory marketing strategy used in this museum?

Yes	No	Cannot say

How? _____

9. Was multi-sensory experience build on already existing artwork or for a new one?

New	Already existing	Both

10. Is the museum using multi-sensory experience in their branding? (Web pages, social media, etc.)

Yes	No	Cannot say

How? _____

11. Where in four realms of experience could this museum experience be placed?



12. How are the emotions increasing the memorability of this experience?

13. Did experience become interactive after multi-sensory stimulants were added?

Yes	No	Cannot say