Virtually Experiencing
Museum Boijmans Van Beuningen

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Abstract

The emergence of new online communication channels and digital interactive possibilities allows cultural institutions to present themselves through versatile and effective resources. In this light, this Master thesis explores virtual museums and how are they constructed, what are their functions and feature possibilities, how to transfer the offline experience to the online realm, and which are their outcomes and drawbacks. In particular, the research question at hand is: how do audiences experience and engage with virtual art museums? A theoretical exploration is combined with a mixed methodology research, focusing on the specific case of Museum Boijmans Van Beuningen in Rotterdam. On one hand, the quantitative analysis investigates the opinion and behaviours of some virtual visitors of the museum website through a survey. On the other hand, a qualitative guided discussion is held with two professionals from the same museum, which considered the results from the survey analysis and reflected on virtual museums.

Keywords

Virtual museums, digitalization, online audiences, online engagement, art perception online, real-virtual, new museology.

Acknowledgements

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1. Introduction

Nowadays, technology is everywhere. Its strong potential and versatile possibilities lead towards the digitalization of the world in all fields. Undoubtedly, technology has affected the cultural and artistic sector as well, increasing the diversity of consumption opportunities and the efficiency of cultural production (Potts, 2014). The emergence of new online communication channels supposes versatile and effective resources for institutions such as museums, bringing up concepts such as virtual exhibitions, digital collections, or e-museums. Consequently, these new formats offer audiences new perspectives and interaction possibilities, furthering a sense of virtual community understood as an online sphere. In this light, this thesis explores virtual museums and their user experience, perception, and engagement. Both sides of this transactional model were analysed: on one hand, how museums approach the online sphere through innovative digital techniques and strategies; and, on the other hand, how do audiences participate with them. Therefore, the question I aim to resolve is: how do audiences experience and engage with virtual art museums? To develop this research, Museum Boijmans Van Beuningen is the object of study, which is currently going through an extensive renovation and relies on its virtual museum more than ever, apart from exhibitions in neighbouring institutions. Consequently, this is a great opportunity for them to evaluate and strengthen their digital strategy, interactive tools, and communication channels.

The motivation for this project lies in the importance of understanding the current technological possibilities for digital art consumption. On one hand, his study is socially important because it investigates a) the movements of virtual visitors around art museums and, b) how to improve the communication means while enhancing public perception through new dynamic modes of art experience and consumption. Additionally, as the research will focus on Museum Boijmans Van Beuningen, it will be profitable for the institution to consider how to enhance its content diffusion and be useful for other museums, galleries, or cultural institutions that want to embark on this developing digital path as well. On the other hand, this study is scientifically relevant because although virtual museology is a topic that has been explored by several authors for the past three decades, the relation between audience perception and user experience and how they influence community engagement or physical participation remains unclear.

This research starts with a theoretical foundation based on several international authors and museology experts that researched innovation in museums, digital community engagement, and online art perception amongst other topics. Besides, this thesis combines a mixed methodology with a strong emphasis on quantitative research. On the quantitative side, surveys were carried out among Museum Boijmans Van Beuningen's online visitors and followers. The

survey aimed to find out how their audience virtually perceives the museum. Consequently, on the qualitative side, a presentation of findings and guided discussion was held with two professionals from the museum itself, which work closely with the digital strategy. This conversation sought to understand how the digital has been approached in Museum Boijmans Van Beuningen in the past and the current situation, to adopt a coherent and successful perspective towards the future. Therefore, these combined sources allowed assessing to what extent the intentions of the museum are indeed realized according to the audience.

The hypotheses elaborated from the theoretical approach were tested with the results obtained from the quantitative research. According to Museum Boijmans Van Beuningen's visitors, it was found that the website engages them to a) physically participate in activities and events and b) visit the museum. These findings confirm that there is a relevant connection between online and offline environments, which subsequently affects the visitors' behaviours. In parallel, it was also found that older audiences are the most frequent museum visitors online and, younger visitors feel more interested in events and activities that happen in physical environments than in digital ones. Lastly, art education and perception were contrasted between physical and virtual museums. The participants of this research claimed their learning did not increase through the virtual resources and that they perceive fewer emotions in digital art observation. Nonetheless, the digital strategy of Museum Boijmans Van Beuningen, which includes initiatives like "Art Mediation", aims to create a bridge between visitors and institution that enhances art perception in the digital experience.

2. Theoretical framework

2.1 Defining concepts of active museology

During the past decades, museology has experienced a shift from focusing on objects towards focusing on visitors (Pastor, 2004). As a result of this *new museology*, there have been consequences in the museum communication strategies and their public role for social development, education, and community inclusion (Stuedahl, 2015). Stuedahl brings together different museum conceptions supporting this statement: the responsive museum (Lang, Reeve & Wollard, 2006), the engaging museum (Black, 2005), the participatory museum (Simon, 2010), and the connected museum (Drotner & Schrøder, 2013).

The responsive museum (Lang, Reeve & Wollard, 2006) reflects on new museology and the transformation of the relationship between the institution and the audience. A responsive museum is a place where the dialogue between both is enabled, and it inspires the visitors to even engage further and in reciprocal discussions. The participatory museum (Simon, 2010) follows a similar perspective, as its goal is that the visitors are not just cultural consumers, but cultural participants. The participatory museum aims to be a place for the community to create, share, and connect around the museum's content (Simon, 2010). The third term, the engaging museum (Black, 2005) defines the audience as the protagonist, and it requires the three basic visitor engagement pillars. First, to ensure a stimulus to visit, from an outstanding marketing campaign to leisure activities. Secondly, make the visitors feel welcome and belonging to the institution so they want to engage and become a part of it. And finally, motivate the audience to participate directly with the collection with great quality of interpretation, favourable displays, and learning possibilities (Black, 2005).

All these related concepts can be attained through the connected museum (Drotner & Schrøder, 2013). This theory stresses the crucial role of new media to achieve this development and as a key tool for visitor engagement, democratisation, social development, and activism (Stuedahl, 2015). The connectedness has consequences for the educational and social role of the museum itself and, moreover, requires new methodologies to develop new social connections. Thus, the connected museum is based on society interconnecting actively and its core is formed by user participation and collaboration. Hence, there is a need to find new ways to create and support this type of space. From this concept, Stuedahl (2015) derives the connective museum, which allows these connections to arise and to expand knowledge while rethinking new discourses together. The mediated communication in the museum supposes a new way to partner and offers new possibilities for community networks, i.e. when connecting interest groups in the collection. For instance, photography 2.0 and crowdsourcing actions through social media and shared databases allow these new forms of partnership through media, the exercise of which goes beyond participatory communication in museum discourse, but

approaching acts of community building, preservation, and celebration. Therefore, the conception of the connective museum goes beyond the walls of the museum building, having remarkable effects on a social and cultural level. On the whole, these essential concepts are a must to develop a strong base from which to build up the theoretical foundation and comprehend the roots and core values of museums today, from where do they come from and what do they strive for. Naming this chapter 'active museology' intended to reflect the importance of constant movement inside and outside the museum.

2.2 Virtual museums

2.2.1 Definition and characteristics

The concept of the virtual museum has been discussed for the past decades since the appearance of the World Wide Web. Depending on the discipline it has been called many different names, such as digital, online or electronic museum, amongst others (Schweibenz, 2004). Nonetheless, the term 'virtual museum' was established in the 1990s due to its frequent use in publications. Although the virtual museum does not have a specific definition, many authors and museologists have tried to define it: "from a collection of digitized objects available online, to an immersion experience utilizing high-tech equipment to make people feel as if they were in a museum" (Latham & Simmons, 2014, as cited in Schweibenz, 2019, p. 12). According to the definition by Britannica Online in 1996, a virtual museum is "a collection of digitally recorded images, sound files, text documents, and other data of historical, scientific, or cultural interest that are accessed through electronic media". Thus, it can be understood as a digital reflection or extension of a physical museum, or as an institution of its own (Battro, 1999, as cited in Schweibenz, 2019) that recombines resources of multiple institutions and private citizens (MacDonald & Alsford, 1997). According to Patias et al. (2008), there are three categories of virtual museums. First, the *brochure museum*, which informs the future museum visitors about practical matters. Secondly, the *content museum*, which can be seen as a consultable online database about the available museum collections. And finally, the *learning museum*, which is more oriented towards the context rather than the objects. It is focused on education and linked to additional and expanded information with the purpose to motivate the virtual visitors to discover and learn more about the topics they are interested in offered in the site (Patias et al., 2008).

Museums before used to be built from collections of bizarre, outstanding, or meaningful artefacts. However, it is not just about the beauty or the exceptionality of the pieces, but about everything else that makes such pieces relevant and worth of study and admiration. Therefore, museums are not about the physicality of the objects anymore, but about the information within them. In other words, "the museum is about information and […] the object is just a part […] of that informational culture" (Dudley, 2010, as cited by Schweibenz, 2019, p. 3). Thus,

technology allows museums to organize all this information more accurately in not only digital archives, but also accessibly for everyone in open virtual museums (Schweibenz, 2019). The accessibility of virtual museums is a structural point in the dissemination of information and knowledge held by museums and, consequently, crucial for the democratization of culture (Avenier, 1999 as cited by Schweibenz, 2019). Certainly, digital museums make their objects available to wider audiences and offer increased interaction to experience the objects in ways that would be impossible in the physical museum (Bandelli, 1999 as cited by Schweibenz, 2019).

2.2.2 Different models of displaying and accessing museum collections

Apart from educative programs and resources, many museum websites contain different types of information: how to visit the site, the agenda with the events, lectures and activities, information about the artists, temporary exhibitions, and, undoubtedly, the digitalized collection. According to Bertacchini and Morando (2003), the digital collection is composed of the artefacts a museum holds in a systemized and organized structure. Audiences can navigate the items of the collection, learn more about them, see them in their original context, in different conditions before and after conservation, see x-ray scans, look at details through augmented reality, or many more possibilities of interacting with the piece. Moreover, virtual visitors can also explore the stored artworks and pieces that are not displayed in the museum's halls. This wide range of content offered by museums increases the access and re-use of the collections, as more people can enjoy it in a more complex and complete way. Furthermore, digital artworks become non-rival and non-excluding public goods (Bertacchini & Morando, 2013). On one hand, no-rival because individual content consumption does not diminish the availability for others, and on the other, non-excluding as they are fully open to everyone.

Digitalization allows many possibilities for museums to manage and share their content. Despite the reproduction and transmission costs of all this valuable information being relatively low, it potentially threatens the intellectual property of the museum, which subsequently urges the need for a specific control. Bertacchini and Morando (2013) introduce five different models of visual artwork content access and use implemented by museums: free online access, open display, open image-licensing, proprietary image-licensing, and user-generated images. Intrinsically, the museum's goal is to expand its public mission amongst virtual audiences worldwide without commercial purposes. However, museums use methods like digital protection limits, low picture quality, watermarks, thumbnails, or banning download functions (Eschenfelder & Agnew, 2010) to control their original content. Initiatives such as Google Art Project, Europeana, or photographic stock agencies support this free access to the museum's intellectual property. Yet, although these stakeholders can increase the visibility of the museum's art pieces, they can also notably dominate the institution's original content as they

have more tools and strategies to profitably manage these virtual artworks (Bertacchini &
Morando, 2013). Other burdens can be through legal and economic mechanisms, as in the case
of proprietary image-licensing or, contrarily, open licenses such as Creative Commons.
Nonetheless, with the current online audience participation and engagement in social networks,
more visitors generate their reproduction of artworks. These are the property of the author,
however, museums can also truly benefit from this by including audiences' collaborations in
their digital resources (Bertacchini & Morando, 2013).

2.2.3 Collaboration opportunities: Google Arts and Culture

One of the most exceptional opportunities the internet brings to museums is the possibility to
connect with other institutions from around the world. So, not just visitors and art fans are
connected online but also curators, museum directors, and museology experts through initiatives
such as Google Cultural Institute. It was founded in 2011 and it is a non-profit initiative that
partners with different cultural organizations worldwide to bring heritage online (Google, 2020).
Their principal goal is to make arts and culture more accessible than ever for the public through
their tools. For cultural institutes, this initiative supposes an opportunity to digitize their
institution with high-quality technology and the spread of their collection and work on a global
platform. Cultural institutions can capture their artworks with ultra-high-resolution cameras,
offer 360º virtual tours of their museum, foster live conversations with other museum experts,
enhance their metadata management, create virtual tours with storytelling… And then make
these materials accessible through several channels such as the ones from the museum itself, but
also including the Google Cultural Institute platform, which combines all the museums that
participate with it. This is a resource that Museum Boijmans Van Beuningen collaborates in.

     It all started in 2011 with the launch of Google Art Project (now renamed as Google Arts
& Culture) which included the partnership of seventeen of the most notable museums in Europe
and the United States. Currently, over 2000 cultural institutions are part of this collective virtual
museum where paintings, sculptures, monuments, locations, documents, and intangible heritage
can be experienced and are interconnected with each other. This allows visitors to explore their
interests jumping from one museum to another, searching by style, artist, period, or even by
colour scheme. Therefore, as Proctor (2011) says in her article *The Google Art Project: A New
Generation of Museums on the Web?*, the intention of using these digital resources is not to
imitate the gallery or monument experience, but to complement it and offer a new context to
encounter art making the most of the connectedness of the Internet.

2.3 Changes in the digital public

2.3.1 The digital public sphere

The emergence of virtual public spaces could not exist without people who take part in it. Without the public, there is no activity. As Papacharissi (2008) claims, the internet is just a mean of communication, a tool, but it does not have agency itself without the individuals who give life to it. The social movements, trends, conversations, and activities are not like the technology itself. They exist because of the discourses built around them, which guide how these digital tools are appropriated by society. The public sphere defined by Jürgen Haberma**s** refers to an area of social life where people gather to publicly express their opinions in rational discourses and debates (Habermas, Lennox & Lennox, 1974). The topics, which are of concern to the public, can have effects on communities and society in general. Nowadays, with so many new communication channels, the public sphere has transitioned to new public spaces like the Internet. Thus, individuals enjoy the freedom to express themselves about public topics and engage in open discussions crossing all sorts of boundaries by using digital means.

Papacharissi (2008) observed behaviours and discourses in the digital public sphere in the field of politics. Certainly, some aspects were found that could be paralleled with the digital public sphere surrounding virtual museums. Undoubtedly, the infinite access to information provided in the online public space is remarkable. Nonetheless, this does not automatically imply enhanced participation and engagement, as these must be sustained and motivated. This is why the reciprocity in the virtual public sphere is crucial, as a bi-directional communication model is enabled. Collective discussion must be founded in covering topics of popular interest, which are motivated by a shared commitment to a rational discourse about those themes (Papacharissi, 2008). However, the openness of the debate that breaks cultural boundaries and the possibility of relative anonymity must be taken into account. Online discussion of public topics can attract communities with similar values, but it can also enhance cultural differences (e.g., Mitra,1997a, 1997b; Schmitz, 1997 in Papacharissi, 2008).

2.3.2 Social changes in cultural consumption

Currently, we are facing not just communication shifts and technological progress, but social development as well. Digital innovation is changing the definitions of what is culture, through which media we interpret it, and how we consume it in the globalized social sphere. From a social and cognitive perspective, Benedikter and Giordano (2011) present how the ways of conceiving the world and ourselves are evolving due to new media. On one hand, new media are changing the way humans perceive, interpret, and experience their social lifestyles, leading to the transformation of our cultural consumption habits. On the other hand, the new modes of interpreting life, re-shape self-perception, and the conscious interpretation of the individual.

This significant research by Benedikter and Giordano (2011) recognizes the micro, how the human brain has shifted and there is a new individual perception, to conceive the macro, or how society as a whole is going through the same process. Being aware of this change in how contemporary audiences categorize and perceive the world cannot be ignored by museums and cultural institutions to adapt to new social and consumption trends.

Particularly, this mentality shift can be seen in younger generations. Vasile, Surugiu, Login and Anca (2015) analysed the changes in culture consumption investigating the profile of future audiences. The authors concluded that young audiences demand a new cultural consumption model that is knowledge-based and participative within the cultural institution (Papathanasiou-Zuhrt & Weiss-Ibáñez, 2014, as cited by Vasile et al., 2015). Besides, this audience is characterized by being more selective and exigent, skilled with ICT[1] devices, and interested in digital culture beyond the internet, using digital technologies daily. Moreover, they seek for unique, genuine experiences that benefit less popular local heritage sites, with clear knowledge gains and an exceptional aesthetic. Furthermore, their openness towards new types of cultural products and ways of consumption, with a strong value for emotional and personal interpretation and participation, will most likely be shared with their network via social media accounts. Nonetheless, as Dilenschneider (2017) points out, younger audiences do not prioritize arts and culture as much as older audiences. Hence, cultural organizations must approach the younger target audience and connect more to their interests. If not, cultural institutions will continue to struggle in the future when engaging with emerging audiences. Nevertheless, it is noteworthy that this is also a generalization, thus, it will never hold for an entire heterogeneous cohort, but some relevant pointers can be taken from these envisioned trends.

2.4 User experience, perception and participation

2.4.1 Perceiving art museums online

For centuries, museums were understood as respectful institutions with authority that safeguarded and legitimately presented highly valuable pieces in a sacralised space for elites. All this has changed in the past decades until today, as museums are more open, accessible and welcoming than ever. Although museums have always been essentially experiential environments (Pallud & Straub, 2014), there has been a change from focusing on the collection towards situating the visitors as the core of the museum (Anderson, 2004, as cited by Pallud & Straub, 2014). Institutions provide visitors with a handful of social and experiential opportunities, for instance, life enhancement, interactivity, enjoyment and educational resources (Falk & Dierking, 1992; Kotler, 2001, as cited by Pallud & Straub, 2014). Moreover, the connotations an art museum entails have such magnitude that, when visitors enter a museum,

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[1] ICT: information and communication technology.

they unconsciously activate their *aesthetic consciousness* (Park, 1993). They are ready to appreciate art and to enrich their knowledge, they expect to be mesmerized and seek for emotional arousal in the experience. In this aesthetic consciousness, audiences balance between affection and cognition when intellectually engaging with the museum experience. In parallel, Solso (1994) claims art is always viewed in context. Then, what happens when we take the art from its usual environment and present it in a completely new context, for instance, the cyberspace? Do audiences awake their aesthetic consciousness as well? Do emotions arise during digital aesthetic appreciation? Many authors have debated over what entails transferring a full physical art collection into a virtual one.

Walter Benjamin (1936) argued that the reproducibility of objects through technological means destroys their aura. Therefore, the photographic reproduction of the museum artworks and their diffusion online remove the aura of the authentic art piece. In a virtual museum, the collection has a digital nature, since it is formed by pieces of data, hence, the artworks are not even physical reproductions, but cyber-reproductions. Accordingly, Ann Mintz discussed the *real-virtual divide* (1998), claiming the core concept of museums is the experience of reality and, even if monitors are pleasing, hypnotic and very interesting, they will never be a substitute for the totality of the real museum experience for physical and metaphysical reasons. On one hand, from a physical perspective, screens cannot express texture in the same way as a physical object, and some elements of the piece are lost when switching from 3D to 2D. Moreover, the scale is completely different and the colour palette is not accurate, thus the visual perception and the mental processing of it will be completely different from seeing an artwork face to face from seeing it through a screen. On the other hand, although metaphysical aspects are complicated to express, people do experience very real feelings and sensations in museums. For all these reasons, according to Mintz (1998), a virtual visit is fundamentally a media experience.

Nevertheless, although in museology *virtual* is often interpreted as the opposite of *real*, it should be compared to *actual* instead (Schweibenz, 2019). *Virtual* should be understood as an intangible complement to the *real* and tangible within museums, just like technology allows digital evidence of intangible art materials such as recorded performances or dances (Keene, 2005, as cited by Schweibenz, 2019). Thus, the mediated experience should not be underestimated in comparison to the actual museum experience and, as their core and values are completely different, they cannot be contrasted under the same terms. In the same way, Perlin (1998) claimed that even if the virtual and the physical museum experiences are different, they are equally real and authentic (as cited by Schweibenz, 2019). Consequently, some authors argued that the aura is not lost through digital media, it remains with the object but in a different manner, which Hazan (2001) called 'virtual aura' and Frank (2010) expressed as a partial presence of the aura (both cited by Schweibenz, 2019).

2.4.2 Transferring the experience from offline to online

Since online and offline experiences have a different nature, they cannot be compared based on the same criteria. But what fundamental pillars do online and offline visitor experiences share that make them both complementary and enriching? What concepts from the onsite visit can be translated to the digital realm? What do on-site and online visitors appreciate the most? According to Falk and Storksdieck (2005, as cited by Sundar, Go, Kim & Zhang, 2015), visiting a museum is considered a *contextual experience* because different contexts compose together the overall museum experience perceived by its visitors. These contexts are the personal, social and physical factors that visitors sense and that define the quality of their museum experiences. As explained by Falk and Storksdieck (2005, as cited by Sundar et al., 2015), first there is the *personal factor*, which is based on the previous knowledge, experience and interest in the museum the visitors have. Moreover, the personal factor also appeals the possibility visitors have to choose and control their own museum experience. Secondly, the *social interaction* is based on the fact that the museum experience is a sociocultural experience, as visitors usually go to museums with their friends, classmates and family members, and then interact there with other individuals such as guides or other visitors. Thus, the overall museum experience is always related to the social interactions between visitors (Sundar et al., 2015). And finally, the *physical environment*: the exhibition space, lighting, temperature, objects display, the possibility to wander around the hallways and change the route, the time spent in each hall... These are the most essential grounds of a museum visit, necessary to make a visit comfortable and enjoyable.

Based on a research by Sundar et al. (2015), these three principal factors of the museum visit can be transferred to digital museums by three different affordances in communication technology, namely, customization, interactivity and navigability. First, *customization* is a must for visitors to feel freedom and in control to choose their actions and direction during the art perception process. What is more, the customization of the content and the path to explore it, allows visitors to tailor their museum experience to their particular preferences or needs (Sundar & Marathe, 2010, as cited by Sundar et al, 2015). Examples of tools that would allow experience customization would be the possibility to create your own collection by selecting your favourite art pieces, or choosing the path to explore the artworks via metadata or key words. Second, online visitors tour the virtual museum individually, hence the *interactivity* with others who are exploring the same content, for instance the same virtual tour, is reduced. To avoid the isolation of virtual visitors, features such as a comment section or a live chat could overcome this burden. And third, indeed the physicality and tangibility of the museum visit is difficult to mimic through a screen. However, it is possible to recreate similar environments via 3D technology that allow navigating through the museum halls or observing artworks from different viewpoints. Therefore, the 3D *navigability* features could allow visitors to feel present and closer to the artwork. As Sylaiou, Mania, Karoulis & White (2010) stated, users perceive

artworks as more real and have more attractive experiences in online museums with augmented or virtual reality content.

Table 1.

Summary of findings by Sundar et al. (2015) about the psychological effects of digital affordances and on-site contexts

On-site visit contexts	*Psychological benefits*	*Online visit affordances*
Personal	Sense of agency and control	Customization
Social	Reciprocity	Interactivity
Physical	Perceived reality	Navigability

The development of ICT tools and features that can be embedded in the museum website allows the creation of genuine and meaningful experienced for online visitors obtaining similar sensations to the ones needed in a physical visit, including a sense of agency and control, communication reciprocity and perception of reality. Although, when new tools and features are built, many museums tend to integrate them in their pages, more is not always better. The research by Sundar et al. (2015) demonstrated that the three different affordances are excellent to reproduce the goals of the on-site visit. Nonetheless, the researchers found that these three affordances combined together can have the reverse effect, and provide a worse user experience due to an overwhelming and complex interface. For instance, the combination of interactivity tools, e.g., a live chat, with navigability tools, such as a 3D tour, increases the cognitive complexity of the (multi)task, as virtual visitors require additional concentration to manage the navigation tools while simultaneously focussing on their social presence in the interactive features. The frequent switching between features and tools breaks the user flow through the virtual experience. Thus, in order to aim for a smoother, richer and more focused experience with defined outcomes (be it the social component, the virtual reality exploration, storytelling customization…), it is crucial to observe user patterns and to make sure to not saturate a virtual museum with dozens of attractive tools. Otherwise, the attention of the visitors could be more dispersed, and the visit could become too confusing and complicated to enjoy the essence of the virtual museum: the art.

2.4.3 Effective virtual museum design and evaluation

Undoubtedly, museums are institutions where visitors experience. Therefore, both the physical and the virtual experiences must be enriching and pleasing for the visitors to have a satisfying memory of their visit, that hopefully will induce them to return. Museum websites offer multiple

opportunities to attract people to their collections, and many museums have increasingly invested to reinforce the quality of their virtual interfaces, for instance Musée du Louvre (Pallud & Straub, 2014). Digital marketing and social networking have proven very effective as communication channels due to their big impact and the wide audience outreach, while seriously reducing the communications budget (Hume & Mills, 2011). Moreover, public reach and visitor traffic can be easily tracked with the data and statistics monitored by the digital tools used. What can be done to make the communication and information channels even more effective?

The overload of information available online makes the digital world intrinsically competitive. Thus, it is crucial to create noteworthy virtual spaces that can be distinguished amongst the others and that can be frequently visited. Using the actual online channels and staying up to date cannot only improve the digital user experience, but also improve the on-site museum experience and attract new audiences (Thyne, 2000 in Hume & Mills, 2011). This is why the museum website user experience is a key factor for visitors to be attracted and visit the virtual museum again, or even visit the physical one. In other words, the digital interface has a comparable role to the frame, glass, label or wall in the gallery, so it can either support or distract the visitor experience (Proctor, 2011). According to a research carried out by Pallud and Straub (2014), aesthetic design is crucial in experiential interfaces because it can influence the public motivations to visit the actual place.

Nonetheless, sometimes the use of technology is not that effective and the visitor interaction with the digital resources becomes complicated and museums end up losing engagement instead of gaining (Kabassi, 2017). Therefore, proper virtual museum's evaluation is also needed in order to achieve the best results possible. Kabassi (2017) claims the evaluation methods must be taken with a cyclical approach, where the purpose of each step is clearly defined, there is an effective implementation and there are results out of it. These project evaluations must be then front-end[2], formative and cumulative to succeed. There are two types of methods, both equally important: inspection and empirical. On one hand, the inspection is based on an expert analysing the website and spotting those design or coding mistakes that downgrade the user experience. On the other hand, the empirical evaluation is based on the final product and how the users interact with it (Kabassi, 2017). Therefore, museum visitors or other participants would explore the digital interface and perform some requested tasks in it, and their behaviours and opinions would be observed and analysed. The most common user analysis methods are questionnaires, interviews and data logging. Thus, both inspection and empirical

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[2] Front end [*noun*]: the parts of a computer, piece of software, or website that are seen and directly used by the user (Cambridge Dictionary, 2020).

observation are important because each method focuses on a different use of the website -one more objective, the other more subjective-, but they are connected.

2.4.4 Opening new virtual dialogues and participation

According to a study by Pulh and Mencarelli (2015), the usage of new digital techniques marks a clear shift in the relationship between visitors and museums, as it permits the audience to be involved in the museums' virtual presence. Therefore, while audiences can improve their digital and artistic abilities and knowledge, museums can also benefit from the input audiences give to the websites of the institutions. Essentially, the virtual resources offered by the participatory museum (Simon, 2010) allow visitors to create, share, and connect about the museum's content (Simon, 2010) while enabling the dialogue among visitors and the institution. These 'connected museums' (Drotner & Schrøder, 2013) use new media as a key tool to achieve visitor engagement, democratisation, social development and activism (Stuedahl, 2015). We currently face a new digital participatory revolution (Jenkins, 2006 as cited in Pulh & Mencarelli, 2015) that cannot go understated. Pulh and Mencarelli (2015) identified three different types of new audiences amongst the wide range of virtual participation: the visitors-communicators, the visitors-curators, and the visitors-artists.

To begin with, the easiest and most direct way of audience participation would be through social networks. These enable museums to control the content of the institution while allowing the visitors, or followers, to participate by commenting, liking, tagging and sharing…, which also enhances the marketing of the institution. Nevertheless, other initiatives go further than just commenting on social media platforms. For instance, some museums maintain a periodic blog where they post about the museum and also allow audiences to share their video testimonials of their visit to the museum, which ends up posted in the museum channel. An example of the practical use of audiences' contribution would be by incorporating messages of museum visitors in the museum's communication campaigns (Pulh & Mencarelli, 2015). For instance, the campaign "It's time we MET" by The Metropolitan Museum of Art (2009), where they organized a photography contest through Flickr where visitors could share their experiences in the museum.

The second type of visitor engagement would be enabling audiences to become amateur curators of the museum collection. This could be achieved by two different types of activities. On one hand, some museums allow their audience to create their own classification systems for the art pieces. This concept was defined by Peters as *folksonomy* (2009, as cited by Pulh & Mencarelli, 2015) which essentially is considered folk classification and allows users to index digital systems parallel to the traditional classification systems by art historians and expert curators (Peters, 2009, as cited by Pulh & Mencarelli, 2015). An example would be *social*

tagging carried by the Philadelphia Museum of Art[3], which allowed visitors to help indexing collections by tagging the art pieces with their own keywords or validating tags created by other virtual visitors. This supposes a new way to perceive the museum through a more intuitive and personal approach, according to the judgment of audiences, and without the need for a specialized guide. Another example would be allowing audiences to select the art pieces that should be exhibited. For instance, the Museum of Fine Arts in Boston[4] organized a crowd-surfing exhibition where the visitors became the curators and all together voted for their favourite impressionist artworks.

The last type of audience contribution involves encouraging visitors to become artists and to create cultural objects based on a concrete project of the museum. Thus, the institution uses the collective collaboration by including the works in exhibitions, digitally or physically. An example would be the Bob Dylan exhibition in 2012 by Cité de la Musique, were virtual visitors could replay a song and post a video in Dailymotion, which at the end would be displayed in the real exhibition (Hôtels Paris Rive Gauche, 2012; Pulh & Mencarelli, 2015).

Therefore, building a tighter relationship through museums' websites not only supports the online and physical visitation of the institution, while reaching out to wider audiences, but also enhances the status of the visitors as creators, communicators, and curators of the institution, which consequently generates deeper attachment and commitment to it (Troye & Supphellen, 2012). Nonetheless, there are some conflictive issues to be considered as well. First of all, the museum's identity as an elitist sanctuary disappears, as the symbolic boundaries that prevented the public access to heritage before no longer exist. Today, virtual museums are fully open and accessible for any type of visitor from all over the world from any device with the Internet. As some authors have pointed out, the Internet has endorsed amateurs as essential for new forms of popular expertise (Leadbeater & Miller, 2004, as cited by Pulh & Mencarelli, 2015). Thus, this new ideal, and yet unsupported, crowd-knowledge could end up diminishing and weakening the museum's expertise and legitimacy. Consequently, the museum's authority and legitimacy are threatened by this democratic alternative knowledge (Cordier, Dessajan & Eidelman, 2009 as cited by Pulh & Mencarelli, 2015). Therefore, museums must take the needed precautions to control the audience's interactivity in order to obtain effective and genuine participation without being overwhelmed by a chaotic input of visitor information.

Thus, there is a need for consensual and collaborative content creation in order to attract visitors, but also keep the essence of the museum. It is crucial to find a balance amongst visitors and curators to secure the quality and coherence of the institution's virtual and physical content

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[3] [5] Both examples from the Philadelphia Museum of Art and the Museum of Fine Arts in Boston cannot be found in the actual museum websites, perhaps due to a content update. These examples were obtained from Pulh and Mencarelli (2015), but were also referenced in Foster and Rafferty (2016).

(Simon, 2010). Moreover, open virtual accessibility and collaborative audience participation desacralizes the museum's conception of *extraordinary* and becomes *ordinary* (Pulh & Mencarelli, 2015). Therefore, even if museums intend to innovate and engage audiences through new virtual strategies, this can also produce the inverse effect and break the magic in the experience. And, in consequence, the unique and unusual participation may end up becoming standardized and unremarkable.

2.4.5 Engagement for new segments of audiences and social media

The use of new technologies for artistic and cultural consumption not only has offered new experience and engagement opportunities, but also has opened the door to wider audiences, especially to young individuals (Vasile, Surugiu, Login & Anca, 2015) and those visitors who feel uncomfortable with museums. As digitalization allows to create content to be shared with the whole world, there is a mutual exchange and enrichment when sharing cultural or artistic virtual resources (Alfandari, 2014). Although websites are very useful tools for visitors and amateurs, they do not help that much to reach new audiences (Alfandari, 2014). Even if the rate of online visitors' increases, usually they are the same type of audience: visitors who are interested and know about the museum, and this is why they search for it explicitly.

However, social media sharing can reach out to more diverse audiences and drive them to enjoy the virtual resources available. The MET, The National Gallery, Louvre, Museo Nacional del Prado, The Smithsonian, Victoria & Albert are great examples of virtually active institutions that share their day-to-day through all social media channels in order to approach more people and benefit from the likes, comments, sharing and repost features. The viral effect of sharing multiplies the museum's chances to reach new audiences while enabling a friendly and sociable exchange of valuable content (Alfandari, 2014). Thus, social media serve as a communication platform, but also as an advertising and marketing campaign that attracts audiences to discover and collaborate with the museum's virtual resources. In other words, the link between social media and the website is essential. A wonderful, well-equipped website comes with an eye-catchy, inviting and interesting social media strategy that connects the users.

As social media and smartphones are extremely integrated into society's current daily life, museums must approach their new audiences and visitors through tools that they recognise and know how to use. Subsequently, audiences will feel more aligned and attracted to contribute with the museum projects online (Alfandari, 2014). For instance, as explained before, sharing pictures for the "It's time we MET" campaign, or voting through Facebook their favourite artworks. The simplicity of these acts, attainable for most people, is what will transform the virtual museum practice into an insightful, enjoyable and pleasing experience.

2.5 Outcomes and drawbacks

2.5.1 Education

Many studies have focused on all the great opportunities new technologies bring to museums as multipurpose empowering tools, especially in education, which has been renamed as *edutainment* by Addis (2005). Virtual museums combine two very fundamental elements of the museum. On the one hand, they support the educative mission of museums, as they enable public access to quality education and knowledge in a legitimate, organized and thoroughly documented way. On the other hand, they offer attractive and interactive entertainment online for all audiences. Thus, the consumption of arts and culture through virtual resources can be understood as *edutainment*, as the users enjoy themselves while learning simultaneously (Addis, 2005). Digital tools stimulate user senses by recreating content in a digital environment, generating a virtual experience. Therefore, since experience is based on the interaction between a subject and an object (Addis, 2005), traditional cultural consumption experiences can be enhanced by new digital advances in an active and stimulating way as well.

Accordingly, digital tools permit the virtual recreation of the existent educative content produced by museums or, what is more, to enrich it with more information and details. Consequently, cultural education is improved in a more complete, dynamic and valuable manner. Thus, in the *virtual edutainment environment* (VEE) defended by Addis (2005), the institution's recreated content takes a new virtual form, which is uncomplicated and manageable, that multiple users can experience at the same time while enabling the interaction with each other. Further, learning is not only improved because of the interactive, stimulating, connecting characteristics of edutainment. It is also upgraded because digital tools allow users to learn individually and to discover independently and at their own pace. Subsequently, this sense of learning freedom and control can lead to a reinforced and more elevated educative experience in the memory of the individual (Addis, 2005).

2.5.2 Cultural production and consumption

Apart from enhanced education, virtual museums bring many more outcomes as well, and some of these can be measurable. As stated above, new technologies have clearly impacted the dynamics of cultural consumption in many ways. However, the most noticeable ones are the quantities, mixes and varieties of cultural consumption, which are performed by both professionals and amateurs (Potts, 2014). We must consider the shift in the creative industries model, where technology influenced cultural consumption by reducing its costs and creating new consumption possibilities.

The digital world has a remarkable impact on the quality of cultural production and consumption. From a cultural producer perspective, while the development of interactive

resources and spaces is growing, the costs to participate in it are reducing. Therefore, both small and large institutions have the possibility to use those resources and make the most of the power of the Internet. Furthermore, not only institutions can have their artworks exhibited online, digitalization also allowed the rise of the amateur cultural producer (Leadbeater, 2008, as cited by Potts, 2014) and consumer co-creation of cultural goods, where participation and collaboration are enhanced. From a cultural consumer point of view, it has never been easier, faster and cheaper to consume culture. Now anyone can subscribe online to a cultural industries company and consume their books, films, music, newspapers, and many more cultural goods virtually, for a moderate price and in large quantities. Nonetheless, this shift in the model has drawbacks as well, as real-life production costs are rising, thus, physical consumption is becoming more expensive, leading to reduced consumer demand (Felton, 1994; Heilbrun & Gray, 2001; Preston & Sparveiro, 2009, as citen by Potts, 2014). But, more quantity and diversity does not mean better quality.

2.5.3 Display and access

Indeed, the most obvious changes that are observable in online museums are the new display and increased access to the collection. On one hand, for Patias et al. (2008), the possibility to have full collections available online solves many problems regarding lack of exhibition space in physical museum halls, the fragility of some artefacts that cannot be exhibited, and the costs of the physical exhibition, and the duration of the exhibition. Now museums can have full exhibitions online without having to face physical challenges such as designing the space, creating it, setting-up, lighting, … This contemporary display with infinite design options in a digital context explores new communication methods that are accessible and attractive to a wider audience. Besides, the lifetime of the virtual exhibitions is remarkably prolonged, remaining open for consultation and future visits just a few clicks away (Hume & Mills, 2011).

It must be considered that websites also allow museums to monitor their visitors from the distance through ticket booking and providing attendance information. This would allow better control of crowds on-site and avoid over-subscription (Hume & Mills, 2011). Anyone with internet access can visit any e-museum, anywhere in the world and at any time during the day. Virtual museums facilitate access to artworks and their content to those visitors who cannot travel or physically visit the institution. For example, during the COVID-19 pandemic in 2020, many institutions had to close their doors to the public, however, the visitors could still experience the virtual tours, visit the exhibitions, get to know the artists and collections, and explore on their own about the museum through their website. Notwithstanding, the accessibility of the museum collection to such a broad and diverse public also comes with digital dangers that must be taken very seriously.

2.6. Research question, expectations, and hypotheses

The core of this thesis is the exploration of virtual art museums and their user experience implications. Previous studies and theoretical resources in combination with the results from the qualitative and quantitative analysis aim to resolve the research question: how do audiences experience and engage with virtual art museums? The theoretical foundation discussed above is a guide for understanding the general point of view on the topic, nonetheless, this research focuses its exploration on a very specific case, Museum Boijmans Van Beuningen. Thus, although experts and authors have debated this subject for more than three decades, it cannot be assumed this is the same case for Museum Boijmans Van Beuningen's audience. In addition to the research question, the theoretical framework also leaded to diverse hypotheses that were tested through the quantitative analysis. Hence, the hypotheses at hand are:

H1. Audiences feel more engaged to physically participate with a museum if the digital resources of the institution are perceived to support community engagement online.

H2. Younger audiences explore more often the museums' digital resources and engage more with these, in contrast with the older audiences, who are the most concurrent physical visitors.

H3. The website experience influences the decision of the audience to physically visit the institution.

H4. Virtual museum visitors learn and read more than in the physical museum, due to the rich offer of additional and related content.

H5. Virtual museum visitors perceive less emotions when consuming art online.

Therefore, the first hypothesis reflects on the community engagement with these digital resources, and if enabling this active connectivity affects their decision to visit the physical site and participate with it as well. The second hypothesis focuses more on who are the online visitors and who are the physical ones. It refers to previous research, expecting that the younger audiences, who are more familiar with digital tools and communication online, are more prone to participate and engage online, despite older audiences being the most frequent visitors of Museum Boijmans Van Beuningen (Maragno, 2018). Hypothesis three is inspired on a concept explored in the literature. As researched by Pallud and Straub (2014), website design can motivate audiences to visit a museum physically. Thus, the third hypothesis intends to find out if the overall website experience, not just the aesthetic design, has an impact on the will to visit Museum Boijmans Van Beuningen. The last two hypotheses are founded on how audiences perceive art museums online and if their user experience has positive effects on their emotional perception and learning outcomes.

3. Methods

3.1. Methodology

This research aims to find out how audiences experience and engage with virtual art museums. Although virtual museums are a worldwide phenomenon, focusing on a particular case results in a more complete and specific empirical investigation. Museum Boijmans Van Beuningen has been selected as the case study. Accordingly, the perception of its digital resources from its own visitors and professionals is investigated. This research follows a mixed methodology to answer the research question and validate or reject the hypotheses. This choice is based on the desire to understand the point of view from all stakeholders, i.e., the visitors and the institution, thus different approaches will be taken for each one. On the one hand, the quantitative research was carried out with online visitors, a larger group of respondents. On the other hand, a qualitative guided discussion was held with two professionals from Museum Boijmans Van Beuningen.

Despite the development of quantitative and qualitative research, the quantitative analysis was the principal method used to test the hypotheses and to find the answer for the research question. The reason behind this choice was that, since this project aims to investigate data from a large group of respondents, a quantitative methodology allows the measurement of subjective opinions and perceptions in a more straightforward manner (Pallant, 2007a). Furthermore, quantitative methodology ensures more systematic data from which one can test (causal) relations and differences that may or may not be significant (Pallant, 2007a). This allowed for a more concise and clear presentation of results to the professionals from Museum Boijmans Van Beuningen. Subsequently, the qualitative research was partly based on the previous results from the quantitative analysis. A presentation of findings and a guided discussion were held with two of the museum professionals that work on the website and the digital strategy the museum follows. The presentation and guided discussion were held via a video-call[5] for almost one hour. Choosing this type of qualitative practice, between discussion and semi-structured interview, supported flexibility to debate the different topics and concepts that arose during the development of the conversation, which resulted in deeper and more meaningful information overall (Bryman, 2012). The reason behind this qualitative exploration was to interpret together with the museum the results from the previous quantitative research and to test to what extent these findings corresponded to the intentions of the museum.

3.2. Operationalization

Collectively, all the findings of this research together respond to the research question and bring light to the hypotheses. Thus, the combination of theoretical foundation and quantitative results

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[5] The presentation of findings and discussion were carried out remotely due to the COVID-19 pandemic measures.

was a must. The quantitative analysis was carried out via surveys[6] and tested the different hypotheses at hand through a group of independent variables based on sociodemographic characteristics –namely, age, gender, where do they live and education level–, in correlation with different dependent variables (see Tables A1 and A2 in Appendix C). The dependent variables were three categorical multiple-choice questions and 31 statements for which the respondents had to indicate on a five-point-scale how much they agreed with them. Of these statements, eight focused on motivations to visit the website, 21 were about their perception and opinion of the virtual museum, and two were about their level of participation. Hence, all these dependent variables addressed the two key concepts of the research question, namely, *perception* and *engagement*, plus the concept *participation*. In particular, for the two research question concepts, we can identify two sub-concepts (see Table 2).

Table 2.

Quantitative analysis: dependent variables coding

Concepts				
participation	perception		engagement	
participation, usage and knowledge	general museum perception	art perception	general engagement	"Boijman's Next Door" engagement

3.3. Sampling

The quantitative research was based on non-probability convenience sampling (Trochim, 2020). Thus, the 89 participants of the survey were recruited based on their willingness to take part in the research and were invited to collaborate through Museum Boijmans van Beuningen's social networks LinkedIn and Facebook. Moreover, personal acquaintances were invited to participate via social networks as well. Approximately, these were one quarter of the total respondents. The study aimed to analyse the perceptions and participation of these subjects regarding the museum's website. For this reason, this research was looking for visitors or individuals interested in virtually engaging with the institution as the sampling profile. Therefore, this is the reason behind approaching online visitors and social media followers instead of the physical visitors of the museum.

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[6] The survey was designed and distributed right before the COVID-19 confinement in 2020, which had a huge impact on virtual museums worldwide. Programs like "Boijman's Next Door" could not take place anymore. Therefore, is it remarkable to consider that if the timing had been different, topics more aligned to the impact of the pandemic on user experience for digital art museums would have been explored.

It was intended to gather around one hundred survey respondents as a representation of the overall digital museum visitors. However, only 89 participants were achieved, and from these only 42 responded to the survey questions regarding the website topic. The other 47 respondents claimed to not be familiar with the website. This research was seeking for a great diversity of respondents to share their perspective on the subject, hence, all sociodemographic profiles were equally relevant. The sociodemographic characteristics were taken into account as the independent variables from which the analysis was developed and on the basis of which the respondents were divided into different subgroups. Previous quantitative research by Ada Maragno in 2018 investigated the visitor profile of Museum Boijmans Van Beuningen, concluding that most visitors fall in the same subgroup, generally being older individuals who are wealthy, highly educated and white (Maragno, 2018). The respondents of the survey[7] of this Master thesis were quite diverse regarding age, as the respondents ranged from ages 14 to more than 61 years old. A majority of the respondents were women and half of the overall respondents lived in Rotterdam. Another big cluster of respondents lived in other locations within the Netherlands and just a few lived abroad. Regarding their educational level, the majority attained higher education, namely Bachelors, Masters or Doctorates, but participants from all education levels gave their opinion in the survey. Therefore, it is possible to say there was balanced distribution regarding age. Although the high number of college educated and female respondents could lead to biased comparisons, it must be stated that this group have been recognised as the most frequent audience group in museums (The Audience Agency, 2018; Bihagen & Katz-Gerro, 2000). Regarding location, the results are as expected: Museum Boijmans Van Beuningen is a local museum in Rotterdam, for this reason it was predicted that many respondents or social media followers were also locals.

As the sampling was based on voluntary collaboration, the sampling is not fully representative of all the visitor subgroups, for instance, children, schools or adults without digital presence. Therefore, the results do not provide a full overview of all types of audiences the museum receives. Furthermore, it was contemplated that there is an above-average probability that voluntary participants who wanted to collaborate in the research are already strongly active when virtually engaging with Museum Boijmans. Subsequently, this could lead to biased results as well, which is taken into account when interpreting the data. Notwithstanding, it is important to remark that this thesis focuses on how virtual visitors perceive the museum's online resources. Thus, even if a substantial part of the sample falls in the same visitor subgroup or consists of individuals who are already digitally active, the information about their perceptions is still valuable as well, as perhaps they are more experienced in the field, and consequently, more critical.

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[7] See section 5 for more detailed description of the sociodemographic results.

The qualitative research, analysed the perspectives on the subject from two professionals[8] who work closely with the museum's virtual resources. A presentation of results was shared with them via video-call, and it was followed by a three-way discussion about the principal topics and findings. This choice was based on the idea that these individuals have been working with the museum's virtual resources and digital strategy on a professional level, thus, can provide deeper and more compelling reflections on the topic.

3.4. Analysis

The survey of this research was carried out with the online tool Qualtrics because it allows to share and respond to the questionnaires digitally and, additionally, permits downloading the data in SPSS format. Accordingly, in order to analyse the data collected, the program SPSS was used to produce the statistics and then Excel for the graphics. The quantitative research was carried out using frequencies, descriptives, means, correlations and multiple regression analysis to explore the relationships between the variables. The benefit of using this last statistical method is that it allows the comparison of individual independent variables and helps finding which independent variables work best to predict a dependent variable through causal effects (Pallant, 2007b).

In parallel, a thematic analysis was carried out in order to analyse the information obtained from the qualitative research. Using this approach allowed for a more manageable conceptual analysis by the identification of central themes (Boeije, 2010). The results of the quantitative analysis and the principal topics, namely, participation, perception and engagement with Boijmans' virtual museum, were discussed. The thematic analysis process followed the principles described by Boeije (2010). First, to understand Museum Boijmans Van Beuningen's perspective on their virtual museum, it was necessary to transcribe the group guided discussion and to code the concurrences and most significant parts of data. Thus, the codes identified in the conversation were selected and grouped regarding the themes they appealed to, which enabled the design of a schematic table that encompassed all the concepts at stake (see Table 3). Lastly, the most relevant quotes from the guided discussion were used to represent each theme, which supported a more coherent and comprehensible data observation, which concluded with the elaboration of an analysis report.

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[8] The identities of these two museum professionals have been anonymized for privacy reasons.

Table 3.

Qualitative analysis: thematic coding in themes and subthemes

Themes	*Sub-themes*
Community building	Sense of community
	User participation
	Social media
	Museum community
Virtual museum	Website development
	Interaction possibilities
	Art perception

Table 3.

*Qualitative analysis: thematic coding in themes and subthemes*

5. Results

5.1. Quantitative Analysis

5.1.1. Results overview

This part of the thesis analyses the results obtained from the quantitative research. A total of 89 volunteers responded[9] to the online questionnaire that was shared via different social networks, namely LinkedIn and Facebook, and private communication channels, such as text messages and emails. The sociodemographic characteristics of these volunteers make the sample very diverse regarding age. To begin with, the respondents were divided into three different groups depending on how old they were. First, 42.5% of respondents are aged 14 to 25. Secondly, 32.5% of respondents are in between 26 and 35 years old. And in third place, 25% of respondents are 36 and older. These results provide three balanced and comparable categories, with special mention to younger participants. See Figure 1.

Figure 1.

Age sampling
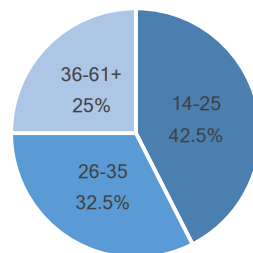
Regarding gender, the respondents are mainly women (74.1%), men accounting for only 25.9%. Half of these individuals live in Rotterdam (51.7%) and many others live in different Dutch locations (40.4%). The survey also crossed borders arriving to a 7.9% of international respondents who live abroad, as far as Australia or Taiwan. And finally, the highest level of education these respondents received ranges from elementary school to PhD level. However, a majority of the respondents (87%) attained higher education at a Bachelor level at least. For the analysis, the education was divided between lower (53.5%) –elementary school to Bachelor– and higher (46.5%) –Masters and PhDs– to obtain two balanced groups of comparable size.

Out of these 89 individuals, 55 knew the website of Museum Boijmans Van Beuningen, which represents 64.7% of the total. Despite this, only an average of 42 volunteers answered the questions regarding the museum website. Accordingly, when looking more accurately at the sociodemographic characteristics of these individuals, very similar percentages in each category are obtained. Again, three balanced age groups composed by youngsters, young adults and

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[9] As not all survey participants responded all the questions regarding the website, some have been counted as missing. Therefore, the percentages for the sociodemographic characteristics are based on the 'Valid Percentages', or only refer to those participants who actually responded.

adults, a significant female respondents cluster, most respondents from Rotterdam than other
(Dutch) locations and half of them highly educated having reached a master or PhD education
(see Table 4).

Table 4.

Sociodemographic characteristics of the website respondents

		Website respondents	Overall respondents
Age	14-25	36,8%	42,5%
	26-35	34,2%	32,5%
	36-61+	28,9%	25,0%
Gender	Woman	76,2%	74,1%
	Man	23,8%	25,9%
Location	Rotterdam	57,1%	51,7%
	Netherlands	38,1%	40,4%
	Abroad	4,8%	7,9%
Education	Lower	50,0%	53,5%
	Higher	50,0%	46,5%

Therefore, the rest of the analysis in the following pages is based on these 42 respondents who
do know the website. Regarding how often these virtual visitors explore the page, 21% claimed
to visit the website weekly or biweekly, a bit more than half of the respondents (55.8%) visit it
monthly or every few months, and 23.3% almost never visit the website (see Figure 2).

Figure 2.

Frequencies of website attendance based on number of respondents
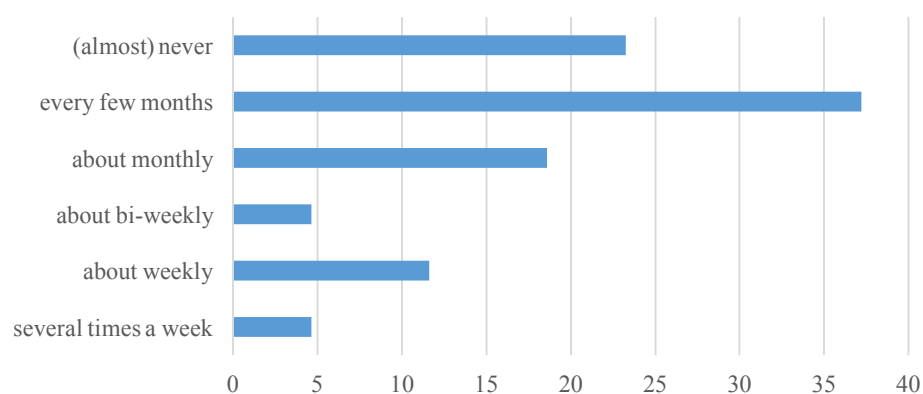
In parallel, the most frequent channel to arrive to the website for the first time was via a
search engine (50%), followed by personal recommendations (14.3%), social media links
(9.5%) and only 2.4% via news portals. Some respondents indicated other routes through which
they arrived at the website for the first time, for instance, after a museum visit. It is necessary to

pinpoint that some answers given to this question by those individuals who selected 'other' were not useful for this study. This is due to the fact that some of the given answers do not accurately respond to the question asked. Notwithstanding, since this research is already exploring a very small portion of relevant population of online museum visitors[10], it is unpractical to exclude these respondents from the research.

The third part of the survey aimed to discover the motivations that move the survey respondents to visit Museum Boijmans Van Beuningen's website. This question was proposed with a five-point scale[11] where the individuals had to indicate how much each motivation applied to them. Figure 3 shows that the most popular motivation was "seeking information about the museum or find out where exhibitions are currently taking place (for example via the program "Boijmans next Door")" with an average agreement score of 4.21. The second was "seeking for events" with a mean of 3.85, and the third "seeking specific information about an artwork/artist/collection". "Out of curiosity" is also a relevant motivation for many respondents, as they agree with an average of 3.70. Remarkably, the respondents scored a 3.56 out of 5 on interest regarding "seeking information about the construction and the depot". And finally, the less popular motivations were for vacancy searches and virtual tours.

Figure 3.

Respondents' motivations to visit the Museum Boijmans Van Beuningen website
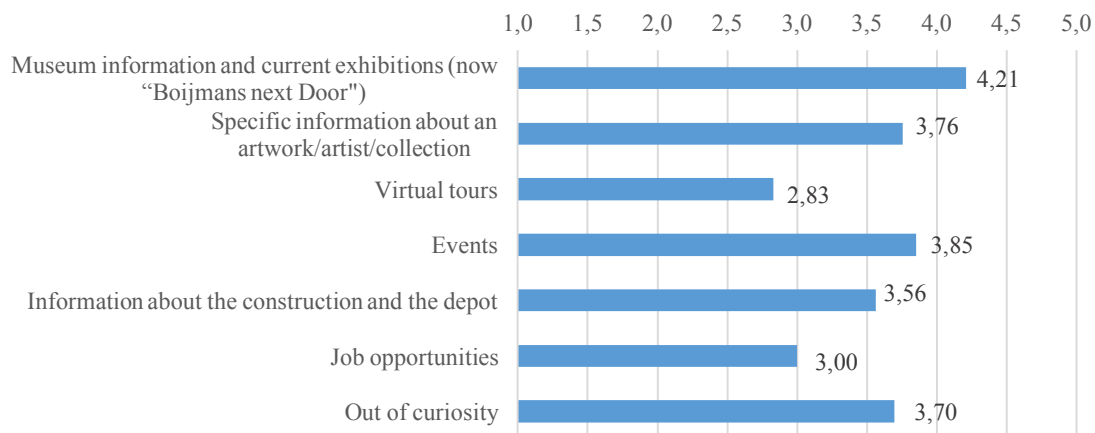
The biggest part of the data was collected in the statements section of the survey. The respondents had to indicate how much they agreed or disagreed with a set of twenty-two statements regarding the museum website focusing on the two principal concepts this research explores. On one hand, the user experience and perception, and on the other, the user engagement. The responses were measured on the same five-point scale as in the previous

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[10] Out of 89 respondents, 47 were identified as missing because they did not know the museum website and consequently did not respond to the website questions.
[11] The five-point scale was as follows: 1= strongly disagree, 2= disagree, 3=neither agree nor disagree, 4=agree, 5=strongly agree.

section. However, as this part attributed the numbers to their level of agreement, the results were interpreted as 1-2.50 disagree, 2.51-3.50 neither agree nor disagree, and 3.51-5 agree. See all the mean results for each statement in Figure 4.

Firstly, regarding *user experience* and *perception*, from these results we can conclude that mostly, the online visitors like Museum Boijmans Van Beuningen's website (statement 5.1) and generally have a pleasing virtual visit (statement 5.9). What is more, they believe the website is accessible for them, easy to explore and user-friendly (statements 5.2 and 5.8). Despite these responses, the means for the statement "5.7. The content organization of the museum's website is confusing" fell in a medium point between agree and disagree (mean 3.05). Therefore, it is possible to conclude that some of the online visitors who participated in this study believe the website may be confusing for them or that their navigation is not as smooth as they would like. Besides, the results indicate that respondents disagree with the statement "5.10. The museum's website is boring" (2.31 mean).

The survey participants strongly agree saying they enjoy experiencing the museum artworks via the website (statement 5.3). They also tend to agree claiming they can appreciate art well through the website (statement 5.12), and that it enhances their interest in the arts (statement 5.14) as well as allowing them to explore their personal interests (statement 5.5). Nevertheless, the respondents fell again in a neutral position when asked about the artwork information available (statement 5.13).

The survey also included a number of statements referring to the learning outcomes perceived by the virtual visitors. In general, the respondents disagree with the statement "5.4. When I experience the museum's artworks through their website, I feel I learn more than when visiting the institution by myself" (2.74 mean), which appeals directly to the theoretical background explored for this study and one of the research hypotheses: "H4: Virtual museum visitors learn and read more than in the physical museum, due to the rich offer of additional and related content". This mean result weakens the hypothesis; as virtual visitors do not feel to learn or do not read more in the museum website in comparison to the actual museum. In contrast, they tend to agree with the statement "5.6. When I experience the museum's artworks through their website, I discover more interrelated topics, artworks, artists and art movements than I would do offline" (3.57 mean), which relates positively to the same hypothesis. Finally, the statement "5.11. When I experience the museum's artworks through their website, I feel fewer emotions than when I would see them physically" scores the highest of the entire statements section, with a mean score of 4.29 on the five-point scale. This statement was purposely placed to contrast the data gathered in the theoretical exploration in comparison with the specific case for Museum Boijmans Van Beuningen's online visitors and firmly corroborates one of the research hypotheses: "H5: Virtual museum visitors perceive less emotions when consuming art online".

Figure 4.

Respondents' level of agreement or disagreement with the statements

During the period of this research, Museum Boijmans Van Beuningen was closed due to renovations and held the alternative program "Boijman's Next Door". In this light, the thesis survey asked the users about their perception on the program via the website. The reasoning behind this idea was to find out if the website experience had any influence on the user's desire to participate in the current exhibitions and activities. As a result, the users claimed to be moderately aware of the program (5.17), which can be understood as some respondents knew about it and others did not. Noticeably, the respondents said they feel neutral about "5.18. The way the program "Boijman's Next Door" is explained on the museum's website is confusing", just like what happened for statement 5.7. Therefore, it is remarkable that clearer indications in the website could help obtain more positive results in these questions. Finally, they tend to agree with the idea "The museum's website motivates me to visit the institution's exhibitions (currently "Boijman's Next Door") and the Depot".

Secondly, following the user *engagement* topic with the virtual museum, the results indicate that the respondents feel rather neutral about the engagement the website raises in them to virtually participate in online activities (5.15), namely, following social media, discussions, or community collaborations such as posting pictures. Remarkably, the respondents agree they feel engaged to participate in physical activities organized by the institution (5.16) and strongly claim to prefer participating in physical environments rather than virtual ones (5.21), also largely denying that online participation is easier for them (5.22). Last but not least, the survey respondents do not believe the museum's website makes them feel part of the museum community (5.20). This leads to the possible interpretation that the website may not be the best channel to connect with Boijmans' visitors and that other means, such as social media platforms, would be more appropriate. For this reason, the results of these question are discussed with two museum professionals in the qualitative research (see section 5.2). In the same line but separated from the statements, the final part of the survey asked the individuals to rate how high or low was their online and offline participation. For the former, respondents rated their virtual participation with a mean of 2.57 out of 5. For the latter, the respondents claimed their physical participation was neither high nor low, obtaining a mean of 3.07. These two average results are very meaningful because they reveal the level of participation of the respondents is moderate both in digital and physical environments. Hence, it refuses the possibilities considered earlier in this thesis that there was a chance the respondents of the survey were very participative online and this is why they collaborated in the research voluntarily (see section 3.3).

5.1.2. Means comparison and relations between sociodemographic characteristics and the statements

When analysing the mean results of these statements, a handful of them showed significant differences between the sociodemographic categories of age, gender, location and education. The cut-off p-value for significance was set at 0.1 because of the small sample size. Increasing the critical p-value from 0.05 to 0.1 decreases the likelihood that existing statistical relations are discarded due to the limited number of respondents (called a type 2 error, or false negative, in statistics). Remarkably, no significance was found in any of the statements regarding the level of education of the respondents. The following table (see Table 5) includes only the means comparisons that indicated relevant differences between the categories of each specific characteristic.

Table 5.

Significant means differences between age, gender and location

		Age			Gender		Location	
		14-25	26-35	36-61+	Woman	Man	Rotterdam	Other
%	1. Are you familiar with Museum Boijmans Van Beuningen's website? Yes	50%	68%	80%				
ordinal	2. How often do you visit Museum Boijmans Van Beuningen website?	4,7/6	5,1/6	3,7/6	4,7/6	3,5/6		
Five-point scale	4.2. Motivation: seeking specific information about an artwork/artist/collection	3,77	4,21	3,18				
	4.6. Motivation: seeking for job opportunities				3,35	1,90		
	5.4. When I experience the museum's artworks through their website, I feel I learn more than when visiting the institution by myself	3,00	2,79	1,91				
	5.10. The museum's website is boring				2,53	1,60	2,63	1,89
	5.11. When I experience the museum's artworks through their website, I feel fewer emotions than when I would see them physically				4,53	3,50		
	5.13. The museum's website has limited information on their artworks				3,53	2,20		
	5.19. The museum's website motivates me to visit the institution's exhibitions (currently "Boijman's Next Door") and the Depot						3,88	3,22
	5.20. The museum's website makes me feel part of the museum community				2,69	3,60		
	5.21. When it comes to art museums, I prefer to participate and engage in virtual environments rather than in physical activities / visits						2,29	1,50
	6.2. My level of physical participation with Museum Boijmans Van Beuningen is ...	2,50	3,69	2,90				

When observing the first question, which asked if the overall respondents knew the museum's website, 80% of the respondents from the oldest group -36 years old and above-, were familiar with it, versus the middle group (ages 25 to 36) which scored high as well with

68% of them being familiar with the website. This is truly relevant as younger audiences were expected to be more familiar with the website as their virtual presence is more recurrent. Nevertheless, only 50% of the youngest age group (14-25) know the website. But it is interesting to see because as Maragno (2018) indicated, the most frequent Museum Boijmans Van Beuningen visitors belong to an older age-group. This confirms that the museum does not only have an older audience at the physical museum but also in the virtual one through the website.

Question 2 was answered using ordinal categories. For "2. How often do you visit Museum Boijmans Van Beuningen website?", the lower categories indicated a higher frequency[12]. Hence, in the results, the higher the scores, the *less often* they visit the website. The results indicate that the two younger groups and women are more occasional website visitors. Therefore, knowing the website and the frequency of visiting seem to be logically related.

Regarding the motivations, three different ones showed relevant relationships in the means comparison with specific sociodemographic characteristics. First of all, "4.2. Seeking specific information about an artwork/artist/collection" was significantly related with age, with the respondents between ages 26 and 35 being the most inclined towards that motivation as a reason to visit the website, followed by the younger group. In parallel, women claimed to be more motivated to search for vacancies on the website more than men (statement 4.6). This may be indicative of the fact that the number of female employees in the museum sector has rapidly grown in the twentieth century, which used to be a masculine environment (Baldwin, 2017). The reasoning behind it can also be the higher presence of women in Arts and Culture studies who afterwards want to work in cultural institutions such as museums. Conversely, women were those to agree more with the statements "5.10. The museum's website is boring", "5.11. When I experience the museum's artworks through their website, I feel fewer emotions than when I would see them physically" and "5.13. The museum's website has limited information on their artworks". These results suggest the women who participated in this survey were a bit more critical of the website, suggesting it provided them a shallower user experience. On the contrary, men disagreed with the ideas that the website is boring and lacks information about the art pieces. Additionally, men also more recognised they feel more part of the museum community via the website (statement 5.20), while women felt rather neutral about this statement.

Regarding age, a very insightful difference was found for statement "5.4. When I experience the museum's artworks through their website, I feel I learn more than when visiting the institution by myself". The younger audiences, between 14 and 35 were the ones that rated this statement higher, nonetheless, they fall in a neutral position still. Remarkably, adults older

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[12] The categories for "2. How often do you visit Museum Boijmans Van Beuningen website?" were: 1= several times a week, 2= about weekly, 3= about bi-weekly, 4= about monthly, 5= every few months, 6= (almost) never.

than 36 years old fully disagree with the idea of learning more online than in a physical environment. The fact that younger audiences do not agree nor disagree with the statement can be understood as that they may be more used to learning in virtual environments, especially in the past years. Thus, researching information online is integrated into their learning mind-set, whereas perhaps older audiences have been more used to learning in face-to-face contexts, which is thus preferred and could even seem more effective to them. In parallel, the young adults group (ages 26 to 35) is the most involved audience with the physical museum activities, followed by the oldest group (ages 36 and above). The youngest audience cluster claims their level of participation to be medium. So, from these two past means comparisons it is possible to see that on the one hand, older audiences above 26 years old are the ones to participate the most with the institution in its physical environments, and also tend prefer the on-site learning experience, with special mention to the oldest museum visitors. However, although the youngest visitors do not participate as much physically, they do recognize higher online learning outcomes.

And finally, concerning where the respondents live, visitors from Rotterdam agree more that the museum's website motivates them to visit the current exhibitions and the Depot (statement 5.19) than respondents from other cities. This indeed could be understood as indicating that locals are more prone to visit their local museums and cultural institutions than people who are further away regarding the location. Hence, the reasoning behind it could be essentially a practical matter. Conversely, respondents from outside Rotterdam tend to prefer engaging with the institution in physical activities rather than in online environments (statement 5.21). This response is somehow contradictory with the previous one. Nonetheless, it is also possible that even if they prefer participating on site, sometimes it can be difficult to access to those events and their motivation levels are affected by the distance boundary. Lastly, all respondents disagree with the idea that the website is boring (statement 5.10), but Rotterdammers score closer to a neutral position than to strongly disagree with it. Hence, since Rotterdammers are the most frequent visitors and those who visit and know more about the website, it could be interesting to explore further the reason behind this response in order to make a very attractive and entertaining website instead.

5.1.3. Multiple regression analysis

In order to assess the causality that may exist between the sociodemographic and other variables in the means comparisons, multiple regression analysis was carried out with all sociodemographic background features entered simultaneously. Only those dependent variables that were significantly related to the specific sociodemographic characteristics were tested. From those, a following selection of the variables that remained significant was elaborated,

which are explained in depth in the next pages. See the regression analysis results of those particular relationships in Table 5.

Table 5.

Unstandardized regression effects of age, gender, location and education on statements for which relevant effects were found (p-values between brackets)

Control variables	Age	Gender	Location	Education	R Square
2. How often do you visit Museum Boijmans Van Beuningen website?	-0,667 **(.012)**	-1,165 **(.025)**	0,086 (.836)	-0,324 (.420)	0,230
4.6. Motivation: seeking for job opportunities	-0,146 (.658)	-1,434 **(.027)**	0,143 (.786)	0,276 (.586)	0,161
5.4. When I experience the museum's artworks through their website, I feel I learn more than when visiting the institution by myself	-0,603 **(.013)**	-0,626 (.175)	-0,201 (.596)	-0,187 (.610)	0,200
5.13. The museum's website has limited information on their artworks	-0,069 (.787)	-1,665 **(.002)**	0,252 (.555)	-0,800 **(.060)**	0,306
5.20. The museum's website makes me feel part of the museum community	-0,055 (.845)	1,089 **(.059)**	-0,269 (.569)	-0,351 (.445)	0,145
5.21. When it comes to art museums, I prefer to participate and engage in virtual environments rather than in physical activities / visits	0,021 (.934)	0,119 (.816)	-1,080 **(.016)**	-0,364 (.386)	0,166

Regarding the frequency of visiting the website (statement 2), there were significant negative effects of age (-0,667) and gender (-1,165). In this linear dependent variable, value 1 equalled 'several times a week' and value 6 equalled '(almost) never'. Therefore, these negative effects mean there is a causal relation between the variables, and the older the respondents are, the more often they visit the website. Additionally, men visit the website more often than women, even if many studies find that women are the most frequent (physical or on-site) museum audience (The Audience Agency, 2018; Bihagen & Katz-Gerro, 2000). For this reason, future research could analyse the differences between genders in virtual versus physical attendance, in order to find out if there are relevant linkages between environments and genders.

Accordingly, for "4.6. Seeking for job opportunities" the significance with gender persisted with a negative effect of -1,434. Therefore, the observation that women are more prone than men to search for career opportunities at Museum Boijmans Van Beuningen website can be interpreted causally; it is indeed gender that causes this differential interest in job opportunities between men and women. Nonetheless, it must be acknowledged as well that

women represent a 76,2% of the respondents of the survey, thus this result may be biased as there is not enough gender representativeness and balance amongst the respondents' gender.

Statement "5.4. When I experience the museum's artworks through their website, I feel I learn more than when visiting the institution by myself" maintained the relation with age with a negative effect (-0,603), which confirms that the negative relation between age and learning online can be interpreted causally. Hence, youngsters would be the ones who appreciate and learn more from online resources offered by Museum Boijmans Van Beuningen. As stated above, this could be due to the fact that younger audiences are more familiar with digital learning resources in comparison to older visitors.

The relationship between "5.13. The museum's website has limited information on their artworks" and gender was maintained and additionally reinforced with the variable education. Both predictors had a negative effect with the dependent variable of -1,665 for gender and -0,800 for education. Consequently, on one hand, it can be presumed that the more educated people are, the less they think the website has limited information. And, on the other hand, it can be interpreted that more women think the website has limited information than men. In parallel, "5.20. The museum's website makes me feel part of the museum community" and gender maintained a positive relationship of 1,089. This effect suggests more men than women believe the museum's website makes them feel part of the museum community.

And finally, "5.21. When it comes to art museums, I prefer to participate and engage in virtual environments rather than in physical activities / visits" indicated a negative relationship with location (-1,080). As stated above in the means comparison, those individuals who live outside of Rotterdam or abroad, actually prefer to participate and engage in the museum's physical activities more than in digital ones, which is very interesting as it may be more difficult for them to attend to those happenings and participate due to the distance.

5.1.4. Correlations between motivations and statements

The last analysis executed with the results from the survey consisted in correlating all the motivations and statements with each other in order to find any possible relevant links between them. The reasoning to do so was to find our which opinions or motivations were paralleled within the respondents. Correlation was applied to all statements and from those who indicated significance, the most remarkable relationships are disclosed in this part of the thesis following the order of the survey questions. See Table 6.

Table 6.

Correlations between motivations and statements [13]

	4.2.	4.3.	4.4.	4.5.	5.14.	5.15.	5.16.
4.3. Motivation: to take a virtual tour	.486						
5.6. When I experience the museum's artworks through their website, I discover more interrelated topics, artworks, artists or art movements than I would do offline	.515						
5.7. The content organization of the museum's website is confusing	-0,282						
5.8. I believe the museum's website is easy to explore and user-friendly	.392						
5.12. When I visit the museum's website, I can appreciate art well		.364					
5.15. The museum's website engages me to virtually participate in online activities					.361		
5.16. The museum's website makes me want to physically participate in activities by the institution			.339	.436		.309	
5.17. I am familiar with the program "Boijman's Next Door"				.607			
5.19. The museum's website motivates me to visit the institution's exhibitions (currently "Boijman's Next Door") and the Depot				.540		.331	.577
5.20. The museum's website makes me feel part of the museum community				.448	.388	.425	.446
5.22. When it comes to art museums, it is easier for me to participate in virtual environments than in physical activities/visits		.346				.300	
6.1. My level of online participation with Museum Boijmans Van Beuningen is…						.313	.349
6.2. My level of physical participation with Museum Boijmans Van Beuningen is...							.327

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[13] 4.2. Seeking specific information about an artwork, artist or collection
4.3. To take a virtual tour
4.4. Seeking for events
4.5. Seeking information about the construction and the Depot
5.14. The museum's website enhances my interest in the arts
5.15. The museum's website engages me to virtually participate in online activities
5.16. The museum's website makes me want to physically participate in activities by the institution

Motivations

Regarding the reasons to visit the website, motivation "4.2. seeking specific information about an artwork, artist or collection" showed significant correlations with four different variables. First, the motivation "4.3. to take a virtual tour" (.486) which indicates that the more motivation they claim to have to take a virtual tour, the more likely they are to seek specific information about artworks and artists as well. Hence, it can be understood that those respondents who are more curious and interested in researching online about art, feel more attracted to those types of resources, namely, virtual tours and digital catalogues. Secondly, motivation 4.2 also has a significant correlation with statement "5.6. When I experience the museum's artworks through their website, I discover more interrelated topics, artworks, artists or art movements than I would do offline" (.515). Thus, the more they discover interrelated topics/artworks through the website, the more motivated they are to seek specific information. In this case, it seems that both motivation and statement have a logical correlation between them. In other words, the more visitors successfully search and discover, the more connected they feel to the information found. This can lead to enhanced navigation with even more satisfactory findings, which most likely will be aligned with the interests of the virtual visitor.

In third place, motivation 4.2 has a negative correlation with "5.7. The content organization of the museum's website is confusing" (-0,282). As expected, this negative relationship means that when virtual visitors find the museum website more understandable, they search for specific information about artists or artworks more frequently. Hence, this suggests that a confusing user flow or interface may discourage the usage of some features, like exploring the collection. Notably, this relationship stresses the fact that everything about the website is interconnected and that the usage of some tools or features depends on other factors, such as a seamless user experience that induces visitors to easily play with the virtual resources. Lastly, motivation 4.2 also showed a positive correlation with "5.8. I believe the museum's website is easy to explore and user-friendly" (.392). These two last correlations allow the reasonable interpretation that the more user-friendly visitors think the website is, the more they visit it to search for information about an artist, artwork or collection; whereas the more confusing it appears to them, the less they will be motivated to do so. Once again, this correlation has a clear and undeniable reasoning as well: the easier the digital catalogue is, the more it can be used.

Equally important, the motivation "4.3. To take a virtual tour" positively correlates with the statements "5.12. When I visit the museum's website, I can appreciate art well" (.364) and "5.22. When it comes to art museums, it is easier for me to participate in virtual environments than in physical activities/visits" (.346). Therefore, it is possible to conclude that the quality of the art exploration is positively linked to their will to take a virtual tour, and it depends as well on how easy it is for each individual to participate via digital resources. Besides, motivation

"4.4. seeking for events" showed a correlation with "5.16. The museum's website makes me want to physically participate in activities by the institution" (.339). Probably, people who specifically search for events are already driven individuals who are willing to participate, because this motivation was what brought them to the website in the first place.

Notably, motivation "4.5. seeking information about the construction and the Depot" is correlated with many other variables. First, with "5.16. The museum's website makes me want to physically participate in activities by the institution" (.436), "5.17. I am familiar with the program "Boijman's Next Door"" (.607) and "5.19. The museum's website motivates me to visit the institution's exhibitions (currently "Boijman's Next Door") and the Depot" (.540). From these three correlations it is possible to conclude that those online visitors who are motivated to seek information about the construction of the Depot are familiar with the program, which indeed motivates them to engage physically and provokes interest to visit "Boijman's Next Door" exhibitions. These relations between statements indicate that one action can motivate the other: investigating the construction updates leads to finding out about the current alternative program, which sparks interest to visit it. Accordingly, motivation 4.5 is also significantly correlation with statement "5.20. The museum's website makes me feel part of the museum community" (.448). Hence, it is conceivable that people who feel more part of the Boijmans' community are interested in the development of the construction and the depot.

Statements

The variable "5.14. The museum's website enhances my interest in the arts" has positive relationships with the statements "5.15. The museum's website engages me to virtually participate in online activities" (.361) and "5.20. The museum's website makes me feel part of the museum community" (.388). The reasoning behind these correlations could be that as visitors' art interest is partly sustained by these virtual resources, the connection and interaction with them is stronger, and consequently makes visitors feel part of the museum community.

Statement "5.15. The museum's website engages me to virtually participate in online activities" is correlated with "5.16. The museum's website makes me want to physically participate in activities by the institution" (.309) and "5.19. The museum's website motivates me to visit the institution's exhibitions (currently "Boijman's Next Door") and the Depot" (.331). These two results suggest that the more they feel engaged to physically participate or visit the institution, the higher is their motivation level to virtually participate. Remarkably, it must be considered that probably people who feel very motivated to participate online and offline are people who are already very active and who enjoy taking part of the museum initiatives no matter what is the environment.

The same statement 5.15 also is correlated with "5.20. The museum's website makes me feel part of the museum community" (.425). This suggest that feeling part of the museum

community is tied to how engaged they feel to participate via digital means. And, it can be interpreted that the more they participate online, the more they feel part of the community because their presence in virtual happenings is bigger. Statement 5.15 and "5.22. When it comes to art museums, it is easier for me to participate in virtual environments than in physical activities/visits" have a positive relationship (0,300). This suggests a strong logic underlying this correlation, as perhaps the people who participate more often in virtual environments do so because it is their channel preference. Finally, another correlation with statement 5.15 is with "6.1. My level of online participation with Museum Boijmans Van Beuningen is..." (.313). Therefore, there is a clear relationship between the museum website engaging visitors to virtually participate and the level of their participation. Obviously, the more engaged they are, the more they will participate, and vice versa.

In parallel, statement "5.16. The museum's website makes me want to physically participate in activities by the institution" has positive relationships with statement 6.1 (.349) and "6.2. My level of physical participation with Museum Boijmans Van Beuningen is..." (.327). These correlations similarly indicate that the desire of digital visitors to participate in physical environments has a relationship with their level of online and offline involvement. Thereupon, as mentioned above, it could be presumed that those individuals claiming to feel strongly motivated to participate in both environments are just very active and cooperative in general, hence their positive responses. Besides, statement 5.16 is also strongly correlated with "5.19. The museum's website motivates me to visit the institution's exhibitions (currently "Boijman's Next Door") and the Depot" (.577), which reinforces the idea that the museum website not only strengthens the interest in participation, but also in visiting. And finally, the last correlation is between statement 5.16 and "5.20. The museum's website makes me feel part of the museum community" (.446). This shows how visitors who feel more attracted to participating in the physical museum environments, feel more strongly they are part of the museum community. In sum, as seen in this section of the research, the visitors' motivations to visit the website are strongly tied to their opinions or behaviours with the online and offline museum, which can lead to increased visiting and engagement in both environments. Thus, as there is an undeniable connection between the reasons that bring the visitors to the website and their experience there, it is crucial to satisfy the motivations and interests of the visitors while offering the best user experience possible[14].

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[14] The survey carried with the visitors of Museum Boijmans Van Beuningen not only focused on the website. A second part of the survey was elaborated and investigated by another peer who was researching specifically about social media engagement. Unfortunately, there was not enough time to research and correlate the findings from one part of the survey with the other, thus, further research is strongly encouraged. For example, it was found that question "2. How often do you visit Museum Boijmans Van Beuningen website?" and statement "32.20. They don't post enough on their social media" were negatively correlated (-.420). This result suggests that the most frequent website visitors also believe that the museum does not post enough often. In this case, usual website visitors provide a valuable

5.2 Qualitative research

5.2.1. Guided discussion

For the qualitative research of this thesis, a presentation of findings and a following guided discussion was carried out with two professionals from Museum Boijmans Van Beuningen. These individuals work closely with the museum's website and the education strategy. Hence, they are experts on all the topics discussed in this thesis. Due to the COVID-19 social distancing measures, the one-hour meeting was held via a video-call. In this discussion, the results from the quantitative research were presented and lead towards a compelling three-way conversation. For the qualitative analysis, the topics discussed were categorized in sub-themes and then assigned to broader themes that englobed them, which were related to the ones explored in this thesis. Thereupon, the two principal themes identified in the conversation were community building and virtual museums. On the one hand, regarding the *community building* debate, four sub-themes were determined, namely, sense of community, user participation, social media and museum community. On the other hand, the *virtual museum* topic opened up diverse sub-themes as well, which were identified as website development, interaction possibilities and art perception. Some quotes from the discussion were chosen to illustrate the perspective of Museum Boijmans Van Beuningen about these themes and sub-themes.

Certainly, community building is a very relevant topic explored in this thesis. Nonetheless, for the museum sector, "*community* is a big word in this context" said one of the professionals. Both staff members agreed that the community is a crucial aspect for cultural institutions because, as mentioned in the literature of this thesis, the visitors are the core of new museology (Pastor, 2004). However, even if community is vital for museums, the survey participants gave a neutral response to the sense of community they feel from the Boijmans' website. Notwithstanding, one of the participants did not find this response alarming, on the contrary, he considered it was fair respondents were honest and declared their indifference. To him, websites do not make him feel part of communities from institutions or collectives because other actions have a stronger power to define his sense of belonging to a community.

In a similar line, the museum professionals discussed the user participation. They recognised they do not support a lot of participation on their website and that most virtual visitors use the interface just to search for specific information: "80% of our visitors just visit the website for opening hours but that's a large group that is not interested in participating or in the community". This is due to the fact that they do not have such powerful 'community' and 'participation' factors in the website. Thus, the informants commented they "should involve the

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opinion that could be taken into account when planning the social media strategy, and subsequently, could potentially increase the website users traffic and the social media engagement. For that reason, comparing the connection between digital resources, namely, social media and website, is crucial in order to see in what ways can they complement each other.

public more than we do now" to strengthen those aspects, and even to help developing the website by giving their point of view like in a panel. However, even if they want to build a stronger community with their digital visitors, the Boijmans' professionals doubt the website is the best tool to achieve this: "[We] want to build more of a community with our users, but I'm not sure if the website is the way to go, perhaps it's the social media or something else".

Consequently, the social media relevance was discussed at several points of the meeting. The survey showed that not many virtual visitors use social media to arrive at the website resources offered by the museum. Whereas one professional claimed "we would really want to have a higher figure there", the other informant disagrees. In his opinion, in social media the consumed content does not really have the 'call to action' the website needs. From this it is possible to interpret that, in other words, the website covers a different part of the museum in the virtual environment. Social media can be targeted for quick content consumption and latest updates, and the website is a more complex and informative resource with richer and categorized content. Despite the differences between the functions or essences of social media and website resources, the professionals pointed out that social network presence is indeed a must. As claimed in the discussion, Museum Boijmans Van Beuningen uses social media "because our users, our community, is there and we need to go where our community is".

On another note, concerning the community topic, the museum community was discussed as well. As pinpointed in the literature of this thesis, the internet offers several opportunities for museums to be interconnected through different paths, for instance the Google Art Project (Proctor, 2011). Since Museum Boijmans Van Beuningen is part of this initiative, it was questioned how the museum experiences that project. For them it was a one-time activity, nonetheless, they believe "it is interesting for all museums to engage in such projects" and that "it would be great if we could develop such things with other museums and perhaps all cultural institutions in the Netherlands". Therefore, it is very important to continue doing these collaborations specially with other museums in order to support each other and enrich their contents together. Connecting with other institutions or other knowledge platforms can increase the information in their website: "you shouldn't have to write everything by yourself, why not connect to Wikipedia or other platforms? It's a way to enrich your website and create more crossed links".

These ideas lead to the continuous development of museum's websites and digital resources. The museum website has changed a lot over time, but not only the one for Museum Boijmans Van Beuningen but also for all institutions. As one of the professionals explained, "websites in general have gone through a functionality that is expected from them, the kind of image of what a website is has changed so drastically over the past years and the past decades" that could be divided in three phases. First, at the beginning of the internet, institutional websites tended towards an encyclopaedic style, and they were "kind of an open archive setting,

[…] almost like a type of catalogue online". Secondly, "marketing aspect websites […] tended to become much more like means for people to visit the physical museum. The prime objective was to get people to the physical museum through the website". And now, there is the last phase were the website is understood as an "online complement experience, which is not a replacement of the physical experience, but complementary to it. Which allows best use of the tools that it provides, so you can do different things online that you cannot do offline".

Museum Boijmans Van Beuningen's website has gone through these same stages as well, as the website they have today has actually been renewed about two years ago. Before that, the museum had around "20 different websites for different purposes". This new version came from the idea that the museum "wanted to have an integrated website so the museum website is about the collection but also about events, and it's also about knowledge, education… So, no separate websites, but a website where you can find anything" as one of the staff members commented. Therefore, the website today follows the envisioned infrastructure by the museum "where everything is connected", for instance, the collection or the administration among other departments. This new structure provides a "smooth environment with a good user experience but also more efficiency at the back office", which is key for the museum.

Regarding the user experience, another sub-theme appearing in the guided discussion were the interaction possibilities the digital museum offers the virtual visitors. Everything departs from the point that "the vision of the digital strategy and the mission [of Museum Boijmans Van Beuningen] is to be open. Open online also". Hence, they consider a few milestones in their roadmap in order to enhance that openness towards the public. As one of the museum professionals explained in the discussion, the overall goal of the website is to offer an open museum and also to work as a "knowledge platform" for the public and for researchers. The museum also aims at improving the "connection between physical and online, in a way that you can use the information that you have online in your museum building". In sum, the virtual museum presented by Museum Boijmans Van Beuningen is a 360º platform where information about the museum, the events, the artworks and the collection are together in one space for not only the museum's public but also for artists, professionals, schools and researchers.

Aiming to cover the needs of all the different stakeholders, the museum is considering multiple possibilities to support this active interaction, such as digital exhibitions, subscriptions, an online store… Aside from the current means to discover the museum, for instance, the virtual tours, the Depot webcam, the in-depth art stories and all the rich audio-visual material available a few clicks away. Additionally, the staff members commented the previous website offered a space called *MyBoijmans*. The structure of *MyBoijmans* was that "you create a profile with us, you collect your own art". Nonetheless, not all engagement ideas work out as desired because even if this feature sounds very interesting, "if you don't do anything with it, people won't use it" explained the museum professional. Hence, a clear purpose that sustains the continuity of the

activities is needed to maintain the participation and the periodic call to action. In contrast, other initiatives like the option to "Ask us anything" on the collection is a very popular functionality of the website. So, trial and error and also recurrent evaluation, as stated in the literature of this thesis by Kabassi (2017), is a must for all institutions in order to adapt to the public taste and usage of the digital resources. Nevertheless, the staff members claimed the website is a project in process and that their intention is to continue improving the user experience even more.

Since this thesis was elaborated during the COVID-19 pandemic, the guided discussion also addressed this subject. The confinement measures caused that all institutions around the world had to rely on their virtual museums to continue their mission and offer their knowledge to the visitors through the internet. Although Museum Boijmans Van Beuningen was closed due to renovations before the confinement, their program "Boijmans Next Door"[15] suffered from the measures too. As a solution, the museum offered the alternative program called "B home"[16]. One of the museum professionals explained the goal of the program: "[B home] is an effort to give and offer temporary, sometimes improvised, ways to still be in touch with our visitors". He added: "we love to talk about art and meet with our audiences and if this is not possible in Boijmans' neighbours, then we make it possible in other ways". Therefore, the museum's mission is not stopped by boundaries made out of brick, and even if their exhibitions cannot be enjoyed in a physical environment, they find other ways to transmit their artworks, artists and knowledge while following the strategy mentioned above: to be open.

For the professionals, their virtual museum is "a pavilion that is online, that exists digitally, that it is not physically a museum part but that it is also part of the museum". Or in other words, a complementary resource that adds to everything the whole museum conveys. The online environment allows "new types of ways of sharing the art we have and making experiences possible". Thus, Boijmans focuses towards developing a strong digital strategy which aims towards "defining how can we manifest the museum and our collection online in a way that is fitting to the online realm not replacing the physical, but also not just promoting the physical neither. Just being complementary". In order to enrich the art observation and perception via their website, the current project Museum Boijmans Van Beuningen is piloting is called "Art Mediation"[17]. The idea behind this project is finding out what are the fundamentals to create "valuable art experiences in an online context" which once again would not be a replacement of the real-life art perception, but a parallel and completely different art experience.

From this guided discussion and conversation about the findings from the quantitative research of this thesis, it is possible to conclude that Museum Boijmans Van Beuningen is an

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[15] The "Boijman's Next Door" program can be found here: https://www.boijmans.nl/en/boijmans-next-door-1

[16] The "B home" program can be found here: https://www.boijmans.nl/en/bhome

[17] The "Art Mediation" pilot can be found here: https://www.boijmans.nl/nieuws/art-mediation-en-de-digitale-tentoonstellingsruimte

example of an institution that looks forward towards the new possibilities offered by the digital realm and that embraces them. Moreover, it is crucial that the professionals who work closely with the digital strategy and offer acknowledge that for them this is a work in progress. Also, having a clear idea that museum websites have changed over time and will continue to do so, and that the key is to adapt with these global phases just to fulfil the core mission of the museums: to spread their knowledge and content while offering insightful and entertaining experiences for everyone. Regarding the results of the survey, some of the ideas expressed by the respondents were foreseen by the informants, and others were unexpected findings. For example, the type of respondents of the survey were not a surprise, they were expecting this sampling as it is part of their virtual public. Also, they agreed with the participants about not feeling part of the community through the website, as for now their website is not really structured to sustain a strong community engagement and participation, hosting only the "Ask us anything" functionality. Museum Boijmans Van Beuningen enjoys the popularity of social media to reach out and connect to their users, nonetheless, divergent points of view came from the discussion informants. One was surprised so little respondents accessed to the website for the first time via social media links, whereas the other professional was aligned with the survey participants claiming "stronger calls to action" were needed to trigger visitors click in the links. In this light, it can be said that the survey respondents and the museum professionals were in the same page for the most part, but that they had contradictory perspectives at some points.

It was also very relevant to discuss that the community engagement via the website is a quite difficult path, as the essence of the website is to be informative and present organized content, and that in the end, the institution must go where the audience is in order to approach them: in social media. Despite there being interesting initiatives, very engaging activities and appealing calls to action in the website, perhaps if what the museum wants is more constant input with their audience, social media could cover this process more casually and easily. The reason behind this idea is that most visitors and potential visitors are present in social media channels, and they have these tools and communication channels fully integrated in their day to day, it could be easier for them to contribute in the museum's digital happenings.

However, this does not mean that everything has to stay within the social network boundaries. As it was stated in the literature by Proctor (2011) and by one of the Museum Boijmans Van Beuningen experts, connecting with other platforms and institutions by links is a way to enrich the content offered. Therefore, it could be possible that stronger calls to action via social media and even more interconnectivity between resources could result in a more complete museum website and social networks. Comparable to the argument that virtual art observation is not incompatible with physical art perception, it is important to see the diverse digital resources in the same way as well: they are complementary and each one offers a different type of experience because their essence is founded by different principles.

6. Discussion

The theoretical framework of this thesis raised different hypotheses relating to the principal research question of this project: how do audiences experience and engage with virtual art museums? This thesis focuses on the specific case of Museum Boijmans Van Beuningen, thus, the two most important key terms of this project, namely, *experience* and *engagement* were observed within the visitors of this specific museum. Hence, five different hypotheses regarding these two concepts were explored with the data gathered through the quantitative research.

To begin with, the first hypothesis was "H1. Audiences feel more engaged to physically participate with a museum if the digital resources of the institution are perceived to support community engagement online". This hypothesis tested the level of online engagement coming from the website experience and how it could be transferred to the actual offline participation and visiting. When observing at the correlations between statements (see Table 6), in particular those variables that claim the museum website engages visitors to virtually and physically participate (statements 5.15 and 5.16 respectively) many positive relationships come up. Certainly, there is a positive relationship between these two statements, and moreover, both statements have a positive correlation with the idea that the museum website makes visitors feel part of the community (statement 5.20). Additionally, the positive relationships between statements 5.15 and 5.16 with the level of online participation (statement 6.1) and, statement 5.16 with the level of physical participation (statement 6.2), support the belief that online resources strengthen the motivations to physically participate with the museum. Therefore, these results lead to the conclusion that for the case of Museum Boijmans Van Beuningen and the respondents of the survey, there is a remarkable connection between the online and the offline environments and that they do affect the visitors behaviours: the website engages the visitors to physically participate in the museum activities, confirming the first hypothesis.

The second hypothesis was based on a previous research on Museum Boijmans Van Beuningen audience that stated older audiences tend to be the most frequent physical visitors (Maragno, 2018). Nonetheless, the digital audience and how it relates to the physical audience was unexplored. Therefore, "H2: Younger audiences explore more often the museums' digital resources and engage more with these, in contrast with the older audiences, who are the most concurrent physical visitors" was analysed by observing the means of some dependent variables in contrast with the age sociodemographic characteristic. The results indicate that younger audiences (age groups 14-25 and 26- 35) explore less frequently the museum website, and that the oldest group (ages 36-61) are the most concurrent digital visitors. Therefore, older audiences are not only the most frequent visitors to the actual museum, but also to the virtual one as well, which refuses this hypotheses, as it was expected younger audiences were more digitally active. Notwithstanding, if only observing not only physical visitation but physical

participation with the institution, neither the youngest nor the oldest visitors are the most
participative ones. The young adults cluster (ages 26-35) are significantly more engaged with
the museum's activities and happenings.

Surprisingly, when observing their specific opinions on the statements, the oldest group
scored higher than the youngest group in "5.15. The museum's website engages me to
virtually participate in online activities" (oldest group obtained a mean of 3,27, whereas the
mean of youngest group was 2,57). And, concerning physical participation, the youngest
group scored the highest result in "5.16. The museum's website makes me want to physically
participate in activities by the institution" (mean 4,00). Thus, the outcome of this comparison
is that although youngsters were expected to be the most motivated about online interactivity
and older visitors to be the most engaged to participate physically, the results claim the
contrary. Younger people feel more interested in physical events and activities and older
respondents feel rather neutral (but still higher than younger audiences) to virtually interact.
Nevertheless, all age groups claim to prefer engaging with the museum on-site, and that it is
even easier for them (statements 5,21 and 5.22 respectively).

The third hypothesis "H3: The website experience influences the decision of the audience
to physically visit the institution" was analysed by observing the result from the correlation
between the statement "5.9. Discovering the museum through their website is a pleasing virtual
visit" and "5.19. The museum's website motivates me to visit the institution's exhibitions
(currently "Boijman's Next Door") and the Depot". The positive relationship between these
statements (0.265 value), confirms that those visitors who have a pleasing virtual visit are more
prone to visit the institution. Moreover, the will to physically participate in the museum
supported by the digital resources (statement 5.16) also has a strong and positive correlation
with the motivation to visit the current exhibitions at the institution (statement 5.19). In
conclusion, the website experience and the motivation to physically participate and visit the
institution are positively correlated, confirming the third hypotheses.

The fourth hypothesis "H4: Virtual museum visitors learn and read more than in the
physical museum, due to the rich offer of additional and related content" was explored by
focusing on the learning perception statements. These were "5.4. When I experience the
museum's artworks through their website, I feel I learn more than when visiting the institution
by myself" and "5.6. When I experience the museum's artworks through their website, I
discover more interrelated topics, artworks, artists or art movements than I would do offline" in
correlation with "5.13. The museum's website has limited information on their artworks". The
results indicate there is no significant correlation between the amount of information offered on
the website and believing to learn or discover more online than offline, which consequently
refused this hypothesis.

And finally, hypothesis number five "H5: Virtual museum visitors perceive less emotional feelings when consuming art online" was investigated focusing on the statement: "5.11. When I experience the museum's artworks through their website, I feel fewer emotions than when I would see them physically" (mean 4,29). This mean result was the most noteworthy of the whole survey, since it obtained the maximum agreement by the participants in the five-point scale, which consequently confirms this hypothesis. Despite for this hypothesis there was no relation nor effect to be contrasted with other variables, the mean result obtained such an outstanding rate that it supports this hypothesis. Thus, the visitors of Museum Boijmans Van Beuningen feel less emotions when experiencing art virtually in comparison to physically. Nonetheless, stressing initiatives such as "Art Mediation", the virtual tours, or tools that reinforce the art observation and interpretation could shift the balance and help visitors connect with the art in a deeper emotional level.

7. Conclusion

All things considered, this Master thesis explored several aspects relating to virtual museums. Indeed, the constantly developing technology had a tremendous impact on the Arts and Culture field by changing not just the way to produce cultural content, but also to consume it. The several virtual display and communication channels the Internet hosts allow for art museums to embrace new perspectives and interaction possibilities for all museum enthusiasts: professionals, artists, visitors, creatives, local neighbours, students, researchers, tourists… The digital resources enjoy the flexibility and capability to cover the needs and interests of all these different publics, turning online visiting into online experiencing. Because museums are not anymore about the beauty or the peculiarities of objects, but about what the information within the object (Schweibenz, 2019) and the public (Pastor, 2004).

The phenomena researched were art experience, engagement, and perception through the museum website or virtual museum. In particular, the specific question at hand was: how do audiences experience and engage with virtual art museums? Regarding experience, despite the prevalent debate on the loss of the aura of the art pieces online (Benjamin, 1936), the digital art experience and perception must be understood as a completely different experience, as it could never be paralleled to physical art observation because their nature is essentially different. To enhance the art experience and perception, similar contexts experienced in physical museums can be mimicked digitally. For example, these would be a) solving the social aspect of museums by enabling interactivity with other users, b) covering the personal factor by customization of virtual visits and content, or c) reproducing the physical sensations, volumes, and environments through navigability or 3D features.

Concerning how do audiences engage with virtual museums, the theoretical and methodological research disclosed that new media performs as a bridge between institution and community, supporting connectedness, fostering dialogues, participation, and visitor engagement. New museology, the increased presence of online communication channels like social media, and enhanced public participation changed the relationship between institutions and visitors. Visitors can impact the content the virtual museum offers by becoming communicators, creators, or even curators of the institution, which subsequently creates more intense attachment and commitment to the museum (Troye & Supphellen, 2012). This co-creation of content and knowledge by amateurs or fans via digital means like the museum website is certainly engaging for the public and inspiring for the museum. However, the institution must also ensure to a) maintain its essence, authority, and legitimacy (Cordier et al., 2009 as cited by Pulh & Mencarelli, 2015) and b) boost meaningful and effective user participation and engagement. On the contrary, the museum's conception of 'extraordinary', even if it is via innovative and engaging digital strategies, would become 'ordinary' (Pulh &

Mencarelli, 2015). Undoubtedly, many potential visitors are online, but how to engage them if they will not search for the museum website by themselves? Using social media as a communications and marketing platform, benefiting from the sharing feature that allows for a wider outreach, can be a way to invite the audience to participate or visit physically and virtually.

For the particular case of Museum Boijmans Van Beuningen, their virtual visitors experience a pleasing visit to the museum's website, as it is accessible, easy to explore, and user friendly. The website generally enhances the interest in the arts and covers the personal interests of the virtual visitors, and as they mostly agree they can appreciate art well, they claim to have a good experience as well. Nonetheless, they claim to perceive fewer emotions when observing art through the website, and that they feel to learn more in the physical museum than in the virtual one. Regarding the engagement and participation with the website, the survey respondents claim to have a moderate level of participation with the museum in online and offline environments. Most respondents claim to visit the website monthly or every few months, and that the most frequent channel to arrive through it for the first time is via a search engine or by personal recommendations. The motivations behind the visiting the website rely on seeking general information about visiting the museum and the exhibitions, as well as events and targeted information about the collection. In general, the results of the survey indicate that the website encourages virtual visitors to participate in offline activities or events organized by the institution more than engaging online. Overall, the visitors claimed they prefer to participate in physical environments before in digital ones. Moreover, collaborating or exploring the museum physically is easier for them, in comparison to the virtual one. And finally, the museum website does not remarkably strengthen the sense of community perceived by the visitors.

The theory used for this research explored several points of view by many international authors that are experts in topics englobing new museology, for example, virtual museums, digitalization, online audiences, online community engagement, digital art perception, social media, and the digital public sphere. These authors' findings were combined with several examples from diverse institutions around the world, from their websites or their social media pages. Thus the combination of research findings with empiric engagement and perception examples that have been experienced by actual audiences creates a very strong foundation well sustained both by theory and actual use cases. It must be stated that the amount of theory regarding virtual museums, in general, is quite abundant. Many authors have talked about it, however, museology is constantly changing to continue its public mission to ensure social development, enhanced learning, and community inclusion (Stuedahl, 2015). The constant social, political, and economic changes that the world goes through require constant research on the field, as new trends and recent game-changing happenings can shift the Arts and

Culture sector very rapidly. For example, the COVID-19 pandemic forced almost all museums from all over the world to close for several weeks for safety reasons. This situation, which happened during the development of this research, caused museums to rely only on their digital resources to spread their knowledge and disseminate their content. Despite there was a considerable amount of theory available to explore regarding experience and perception, not enough theory related to how the user experience and art perception can impact the actual participation with the institution, be it in virtual or physical environments. Authors like Alfandari (2014), Falk and Storksdieck (2005), Hume and Mills (2011), Pallud and Straub (2014), or Pulh and Mencarelli (2015) have been crucial to getting insight on the topic. Thus, with this project, I aim to contribute with my grain of sand to the virtual museum theory, specifically, concerning the relationship between online and offline and how can they impact each other. The theoretical foundation brought upon a handful of hypotheses that were contrasted with the quantitative findings of the research. These were:

1. Audiences feel more engaged to physically participate with a museum if the digital resources of the institution are perceived to support community engagement online.
2. Younger audiences explore more often the museums' digital resources and engage more with these, in contrast with the older audiences, who are the most concurrent physical visitors.
3. The website experience influences the decision of the audience to physically visit the institution.
4. Virtual museum visitors learn and read more than in the physical museum, due to the rich offer of additional and related content.
   Virtual museum visitors perceive less emotions when consuming art online.

1.

   On balance, three of these hypotheses were validated and two were refused based on the results obtained from the survey respondents. To begin with, it was confirmed that the website engages the visitors to physically participate in the museum activities, thus, there is a connection between all the environments of the museum, both physical and virtual, and they do affect the visitors' behaviors. Secondly, young audiences are not those that explore more often the virtual resources. Against all expectations, older audiences are the most frequent museum visitors both online and offline, refusing the second hypothesis. Additionally, the results indicate that younger people feel more interested in physical events and activities, whereas older respondents feel rather neutral (but still higher than younger audiences) to virtually interact. In third place, it is confirmed that the website experience does affect the

decision to physically participate or visit the institution. Thus, this strengthens once again the crucial importance for the museum website to offer a smooth and pleasing experience, to obtain higher rates of participation and visitation in the physical institution. The fourth hypothesis was refused, as the results did not demonstrate any significant correlation between the additional amount of content on the website and believing to learn more online than offline. And lastly, it is confirmed that museums visitors perceive fewer emotions in art observation online in comparison to offline.

The methodology used to attain these conclusions was purely based on quantitative research, namely, the virtual visitors' survey. This Master thesis followed a mixed methodology, which was for the most part entirely quantitative, and a small part of qualitative research. The quantitative analysis founded by data obtained from a survey was truly convenient as it allowed to consider the points of view of 89 respondents, from which 42 of them collaborated in the part of the survey that appealed to the website in particular. Thus, choosing this methodology was crucial for the type of target that was intended to analyse, as it was a very big cluster of virtual visitors, and the survey asked specific questions for particular topics. Therefore, the results were more manageable, comparable, and structured than if a different method was used. It must be stated that the dissemination of the survey fell on a delicate period in time, as it was right when the confinement for the COVID-19 pandemic started. Despite it was expected that people would engage and collaborate more with the survey because of the situation, it was the contrary: it was truly difficult to approach the public and motivate them to respond to the survey, or even fill out all the questions. For example, out of 89 survey participants, 55 knew the website of Museum Boijmans Van Beuningen, but only 42 of these collaborated responding to the respective questions. For that reason, the sampling was reduced to a very small portion of virtual visitors, and consequently, not fully representative of all the actual virtual visitors.

Regarding the analysis method, the software SPSS was used to analyse the data obtained from the survey. This tool, which is very complex and complete, includes several features and functions to analyse very accurately all types of data. Nonetheless, it must be stated that familiarizing with the tool and elaborating the analysis was a challenging process. Despite the difficulties, choosing quantitative research was the best choice for this specific use case and project and a truly enriching learning process. The combination of this method with the qualitative one intended to connect Museum Boijmans Van Beuningen with the results. In other words, merge and link the opinions and points of view of the museum professionals and the museum visitors, to see in what points they agreed or disagreed on, and what ideas by the visitors are most relevant for the institution itself. What is more, having this conversation also brought great insight into the structure and strategy of their virtual museum and, their perspective on how they transfer the offline experience to the online one, especially when the

museum is under construction or in a crucial moment like the 2020 COVID-19 confinement. It was a pleasure being able to discuss these topics and the results with the two museum professionals, and the most meaningful conclusion obtained from this talk was the idea that a museum is constantly in movement. Adapting not only to new publics, but also new educative methods, display structures, interpretation possibilities, global happenings, social trends, and technological development. Thus, museums will always have to evolve and transform to stay up to date, representative of their community, and meaningful for the history of the world.

Despite both research methods were truly suitable and applicable for the context, indeed the research also contemplated some limitations. First of all, the timing was crucial for this research, as it was carried in a very short and certainly complicated period. Thus, with a bit more time and less external circumstances that affected the whole world, I believe this project could have gone even further. For example, the survey carried did not only contemplate the museum website, but also its social media. Therefore, an analysis of how social media and website can be positively or negatively connected could have been carried, to analyse to what extent do they complement each other. Besides, despite the project focused on user experience, it would have been truly interesting to analyse more deeply not only the user experience regarding perception but also which facets of user experience design can increase or decrease the quality of the virtual museum visit. The second limitation of this project came from the difficulties to obtain engagement for the survey. Certainly, a bigger amount of sampling would have given a better and broader overview of all the Museum Boijmans Van Beuningen online visitors. Thus, despite the current analysis came up with some interesting findings, especially in the hypotheses validation and refusal, it must be taken into account that they apply just to a particular reduced group of volunteers.

For those reasons, further research is certainly desirable, bringing outcomes both for the particular case of Museum Boijmans Van Beuningen and for virtual museums around the world. On one hand, regarding Museum Boijmans Van Beuningen, deeper research on their specific users would be encouraged. This research could be elaborated considering a handful of groups: website visitors, social media followers, physical visitors, and non-visitors. Including different groups would allow contrasting the different perspectives and the ideas that come from the type of audience they have in each group and allow a more accurate, targeted, and specific communication and collaboration strategy that fits with the trends of each group. Researching on how non-visitors of the museum see their digital resources, namely, website and social media accounts, would also be truly insightful and important to take into account. Those individuals who never explored the website, followed or visited the museum have a completely fresh and unbiased perspective about the museum. Thus, the opinion of non-visitors, or people who are not even interested in art, can be fully objective and purely focused on the user experience design features and the art perception.

On the other hand, further research on the topics mentioned above, for instance, if the tandem between social media and website has identifiable effects in physical and virtual participation. In that case, it could be analysed a point mentioned by the Museum Boijmans Van Beuningen professionals: if strong calls to action posted on social media that are linked to the website have the desired effects or not, thus, observing if any steps break the communication-engagement-participation dynamic, or if they are positively reinforced. For that reason, perhaps a deeper data observation would be needed, which means analysing how many virtual visitors participate with the targeted activities on the website are accessed to from social media embedded links. Additionally, it would be compelling to research more on user experience design, and perhaps comparing and evaluating the website of Museum Boijmans Van Beuningen with the websites from other institutions, trying to find out which resemblances or features are the most successful (being popular and with high engagement rates) and which are less attractive to the public. Last but not least, another research that could benefit museology worldwide would be investigating the before and after COVID-19 and how it affected museums. Which resources and strategies did they come up with, how did they transfer their exhibitions from offline to online, which features did they use to supplant the on-site experience, and how did the audience interact and engage with them. I believe this research would be truly relevant and necessary because COVID-19 caused a massive impact on the Arts and Culture sector, and probably it will have a crucial effect on the digital strategy of most institutions from now on.

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Appendices

A. Quantitative analysis: Survey on Museum Boijmans Van Beuningen's website

    a. Dutch version

    b. English version

B. Quantitative analysis: Survey coding tables

C. Qualitative analysis: Guided discussion

    a. Informants profile

    b. Discussion guide

D. Qualitative analysis: Concept mapping

A. Quantitative analysis: Survey on Museum Boijmans Van Beuningen's website

a. Dutch version

Dit onderzoek gaat over Museum Boijmans van Beuningen in Rotterdam. We willen graag weten wat je van het museum vindt en hoe het zich volgens jouw online presenteert via de website, Instagram en Facebook. De vragenlijst begint met een paar algemene vragen over je persoonlijke achtergrond die nodig zijn om de uitkomsten van het onderzoek goed te kunnen interpreteren. Daarna volgen vragen over de online – of virtuele communicatiekanalen van het museum. In totaal duurt het invullen van de vragen ongeveer 10 minuten. De resultaten van het onderzoeken zullen anoniem worden verwerkt, zodat je gegevens nooit aan jou persoonlijk gekoppeld kunnen worden. Ook zullen we de gegevens uiteraard niet delen met derden. De gegevens worden alleen gebruikt voor onderzoeksdoeleinden: twee Master studenten van de opleiding Kunst- en Cultuurwetenschappen van de Erasmus Universiteit Rotterdam zullen hun eindwerkstuk schrijven op basis van de via dit onderzoek verzamelde gegevens. Mede namens hen, hartelijk dank voor je medewerking aan dit onderzoek.

Achtergrondkenmerken

0.1. Wat is je leeftijd?

    a) 14-18

    b) 19-25

    c) 26-35

    d) 36-45

    e) 46-60

    f) 61+

0.2. Wat is je geslacht?

    a) Vrouw

    b) Man

    c) Anders, nl...

0.3. Waar woon je?

    a) Rotterdam

    b) Netherlands

    c) Buitenland

0.4. Wat is je hoogst behaalde opleidingsniveau? Of als je momenteel nog onderwijs volgt: welk opleidingsniveau volg je nu?

    a) geen onderwijs

    b) basisschool

c) lager en middelbaar voortgezet onderwijs (VMBO, MAVO)

d) middelbaar beroepsonderwijs (MBO)

e) hoger middelbaar onderwijs (HAVO)

f) atheneum, gymnasium (VWO)

g) hoger beroepsonderwijs (HBO)

h) universitair onderwijs, Bachelor

i) universitair onderwijs, Master

j) Doctoraat (gepromoveerd)

k) anders, namelijk: _____

Website van het museum

De volgende paar vragen gaan over de website van Museum Boijmans Van Beuningen

1. Ben je bekend met de website van Museum Boijmans Van Beuningen? (www.boijmans.nl)?

   a) Ja

   b) Nee

2. Hoe vaak bezoek je de website van Museum Boijmans Van Beuningen?

   a) Een paar keer per week

   b) Ongeveer wekelijks

   c) Ongeveer elke twee weken

   d) Ongeveer eens per maand

   e) Om de paar maanden

   f) (Bijna) nooit

3. Hoe kwam je voor de eerste keer op de website van het museum terecht?

   a) Via een zoekmachine (vb. Google, Yahoo, Bing, ...)

   b) Een link via sociale media

   c) Via een nieuwssite

   d) Doordat een bekende het mij persoonlijk aanraadde

   e) Anders, namelijk…

4. Mensen kunnen verschillende motieven hebben om de website van Museum Boijmans Van Beuningen te bezoeken. Welke van onderstaande motieven gelden voor jou? Klik het vakje aan dat het beste jouw mening weergeeft (1= zeer mee oneens / 5= zeer mee eens)

   a) Informatie zoeken over het museum of uitvinden waar tentoonstellingen momenteel plaatsvinden (vb. via het programma "Boijmans Next Door")

   b) Specifieke informatie zoeken over een kunstwerk, artiest, of collectie

   c) Om een virtuele tour door het museum te maken

   d) Om informatie over evenementen te vinden

   e) Om informatie te vinden over de bouw en toekomst van het depot

    f) Om vacatures te vinden

    g) Gewoon uit nieuwsgierigheid

    h) Anders, namelijk:

5. Hieronder volgt nog een aantal stellingen over de website van Museum Boijmans Van Beuningen. Geef weer aan in welke mate je het met elke stelling eens of oneens bent (1= zeer mee oneens/ 5= zeer mee eens)

    1. Ik vind de website van het museum leuk

    2. Ik vind de website van het museum toegankelijk

    3. Ik vind het leuk om de kunst van het museum te beleven via de website

    4. Wanneer ik kunstwerken van het museum via de website ervaar, heb ik het gevoel dat ik er meer over leer dan wanneer ik in mijn eentje het museum zou bezoeken

    5. De website van het museum stelt mij in staat om zelf dingen te ontdekken

    6. Als ik de kunstwerken van het museum via de website ervaar, ontdek ik meer daaraan gerelateerde onderwerpen/ kunstwerken/ artiesten/ kunststromingen dan wanneer ik offlinekunst bekijk

    7. De manier waarom de inhoud van de website van het museum is ingedeeld, vind ik verwarrend

    8. Ik vind de website van het museum eenvoudig te navigeren en gebruiksvriendelijk

    9. Ik vindt het leuk om het museum virtueel te ontdekken

    10. De website van het museum is saai

    11. Wanneer ik kunstwerken van het museum ervaar via de website, word ik minder emotioneel geraakt dan wanneer ik ze in het echt zou zien

    12. Via de website van het museum kan ik kunst goed bekijken en waarderen

    13. De website van het museum biedt maar beperkte informatie over de kunstwerken

    14. De website van het museum vergroot mijn interesse in kunst

    15. De website van het museum nodigt mij uit om deel te nemen aan onlineactiviteiten (volgen van sociale media van het museum, deelname aan discussiefora, delen van foto's enz.)

    16. De website van het museum geeft mij zin om deel te nemen aan activiteiten van het museum

    17. Ik ben bekend met het programma "Boijmans Next Door"

    18. De manier waarop "Boijman's Next Door" op de website van het museum wordt uitgelegd, is verwarrend

    19. De website van het museum motiveert mij om tentoonstellingen van het museum (momenteel via "Boijmans Next Door") of het Depot te bezoeken

    20. De website van het museum geeft me het gevoel dat ik deel uitmaak van de gemeenschap rondom het museum

21. Wat betreft kunstmusea in het algemeen, ga ik liever via de virtuele online omgeving een verbinding aan dan door het echte museum te bezoeken

22. Wat betreft kunstmusea in het algemeen, is het voor mij eenvoudiger om online mee te doen dan om deze in het echt te bezoeken

6. Hoe actief ben je online via de website van Museum Boijmans Van Beunigen, en hoe vaak bezoek (of bezocht) je het daadwerkelijke museumgebouw (voordat ze tijdelijk gesloten waren, of via "Boijmans Next Door"). Geef voor allebei een hoe jij de frequentie van je deelname of bezoek inschat (1= erg weinig/ 5= erg vaak)

   a) Mijn frequentie van online bezoek van de website is ...

   b) Mijn frequentie van fysiek of offline bezoek aan het museum is/was ...

b. English version

This survey is about Museum Boijmans van Beuningen in Rotterdam. We want to know how you feel about the museum and what you think about the way it presents itself online through its website, Instagram and Facebook. The survey will start with some general questions about your personal background, which are required to interpret the findings correctly. Next, there will be questions about the online or virtual resources of the museum. In total, filling out the survey will take about 10 minutes. The results from this survey will be processed anonymously, so none of our findings will be linked to you as a person and your data will not be shared with any external parties. The data will only be analysed for academic purposes: two Master theses will be based on the data, written by students of the Arts, Culture and Society Master Programme of Erasmus University Rotterdam. Thank you so much for your collaboration in this study.

Sociodemographic characteristics

0.1. How old are you?

   a) 14-18
   b) 19-25
   c) 26-35
   d) 36-45
   e) 46-60
   f) 61+

0.2. What is your gender?

   a) Female
   b) Male
   c) Other

0.3. Where do you live?

    a) Rotterdam

    b) Netherlands

    c) Abroad

0.4. What is your level of education?

    a) no education

    b) elementary school

    c) lower secondary or lower vocational education

    d) intermediate vocational education

    e) high school

    f) pre-university education

    g) university of applied sciences

    h) academic university, Bachelor level

    i) academic university, Master level

    j) doctoral (PhD) or equivalent

    k) other, please specify

Website interaction and engagement

In this section of the survey, we will ask you about the Museum Boijmans Van Beuningen main website.

1. Are you familiar with Museum Boijmans Van Beuningen's website (www.boijmans.nl)?

    a) Yes

    b) No

2. How often do you visit Museum Boijmans Van Beuningen website?

    a) several times a week

    b) about weekly

    c) about bi-weekly

    d) about monthly

    e) every few months

    f) (almost) never

3. Through which channel did you arrive at the museum's website the first time?

    a) search engine (such as Google, Yahoo, Bing, ...)

    b) through a social media link

    c) news portals

    d) personal recommendation by people I know

    e) other, please specify _____

4. To what extent do the following motivations to visit the Museum Boijmans Van Beuningen website apply to you? Please tick the box that best represents your answer (1= strongly disagree / 5=strongly agree)

   a) seeking information about the museum or find out where exhibitions are currently taking place (for example via the program "Boijmans next Door"

   b) seeking specific information about an artwork/artist/collection

   c) to take a virtual tour

   d) seeking for events

   e) seeking information about the construction and the depot

   f) seeking for job opportunities

   g) just out of curiosity

   h) other, please specify _____

5. Below are a number of statements regarding the website of Museum Boijmans Van Beuningen. Please indicate how much you agree with the following statements (1= strongly disagree / 5= strongly agree)

1. I like the museum's website

2. I believe the museum's website is accessible

3. I enjoy experiencing the museum's artworks through their website

4. When I experience the museum's artworks through their website, I feel I learn more than when visiting the institution by myself

5. The museum's website allows me to explore my interests

6. When I experience the museum's artworks through their website, I discover more interrelated topics /artworks/ artists/ art movements than I would do offline

7. The content organization of the museum's website is confusing

8. I believe the museum's website is easy to explore and user-friendly

9. Discovering the museum through their website is a pleasing virtual visit

10. The museum's website is boring

11. When I experience the museum's artworks through their website, I feel fewer emotions than when I would see them physically

12. When I visit the museum's website, I can appreciate art well

13. The museum's website has limited information on their artworks

14. The museum's website enhances my interest in the arts

15. The museum's website engages me to virtually participate in online activities (social media following and engagement, discussions, community collaborations like posting pictures...)

16. The museum's website makes me want to physically participate in activities by the institution

17. I am familiar with the program "Boijman's Next Door"

18. The way the program "Boijman's Next Door" is explained on the museum's website is confusing

19. The museum's website motivates me to visit the institution's exhibitions (currently "Boijman's Next Door") and the Depot

20. The museum's website makes me feel part of the museum community

21. When it comes to art museums, I prefer to participate and engage in virtual environments rather than in physical activities / visits

22. When it comes to art museums, it is easier for me to participate in virtual environments than in physical activities/visits

6. In the following question, we would like to know how much do you participate online through Museum Boijmans Van Beunigen website, and how often you visit (or have visited) the physical museum (before they closed, or "Boijmans Next Door"). Please indicate how high your level of participation is based on a 1 - 5 points scale (1 very low / 5 very high)

   a) My level of online participation is ...

   b) My level of physical participation is ...

B. Quantitative analysis: Survey coding tables

Table A1.

Independent variables

Independent variables

Age	0=14-18, 1=18-25, 2= 26-35, 3=36-61+
Gender	0= Female 1= Male
Location	0= Rotterdam 1= Netherlands 2= Abroad
Level of education	0= no education 1= elementary school 2= lower secondary or lower vocational education 3= intermediate vocational education 4= high school 5= pre-university education 6= university of applied sciences 7= academic university, Bachelor level 8= academic university, Master level 9= doctoral (PhD) or equivalent 10= other, please specify

Table A2.

Dependent variables concept coding

Dependent variables

Participation	participation, usage and knowledge	1. Are you familiar with Museum Boijmans Van Beuningen's website (www.boijmans.nl)? 2. How often do you visit Museum Boijmans Van Beuningen website? 3. Through which channel did you arrive at the museum's website the first time? 4. To what extent do the following motivations to visit the Museum Boijmans Van Beuningen website apply to you? 6.1. My level of online participation with Museum Boijmans Van Beuningen is... 6. 6.2. My level of physical participation with Museum Boijmans Van Beuningen is...
Perception	general museum perception	5.1. I like the museum's website 5.2. I believe the museum's website is accessible 5.7. The content organization of the museum's website is confusing 5.8. I believe the museum's website is easy to explore and user-friendly 5.9. Discovering the museum through their website is a pleasing virtual visit 5.10. The museum's website is boring
	art perception	5.3. I enjoy experiencing the museum's artworks through their website 5.4. When I experience the museum's artworks through their website, I feel I learn more than when visiting the institution by myself 5.5. The museum's website allows me to explore my interests 5.6. When I experience the museum's artworks through their website, I discover more interrelated topics /artworks/ artists / art movements than I would do offline

		5.11. When I experience the museum's artworks through their website, I feel fewer emotions than when I would see them physically
		5.12. When I visit the museum's website, I can appreciate art well
		5.13. The museum's website has limited information on their artworks
		5.14. The museum's website enhances my interest in the arts
Engagement	general engagement	5.15. The museum's website engages me to virtually participate in online activities (social media following and engagement, discussions, community collaborations like posting pictures...)
		5.16. The museum's website makes me want to physically participate in activities by the institution
		5.20. The museum's website makes me feel part of the museum community
		5.21. When it comes to art museums, I prefer to participate and engage in virtual environments rather than in physical activities / visits
		5.22. When it comes to art museums, it is easier for me to participate in virtual environments than in physical activities/visits
	"Boijman's Next Door" engagement	5.17. I am familiar with the program "Boijman's Next Door"
		5.18. The way the program "Boijman's Next Door" is explained on the museum's website is confusing
		5.19. The museum's website motivates me to visit the institution's exhibitions (currently "Boijman's Next Door") and the Depot

C. Qualitative analysis: Guided discussion

a. Informants profile

The participants of the results presentation and guided discussion were anonymized for privacy reasons and so are their descriptions, which illustrate a broad professional profile.

- Informant 1: working closely with the website of Museum Boijmans Van Beuningen. Experience in virtual strategy, digital projects and user experience.
- Informant 2: working closely with the educational programs of Museum Boijmans Van Beuningen. Experience in innovative strategies in virtual environments, digital projects and education.

b. Discussion guide

Foundational concepts of the website

1. What is the vision behind the museum website or what story thread does the museum website follow?
2. Do you conceive the museum website as an extension of the physical museum, as a complementary exhibition space in a digital environment, or as another communication channel within the institution?
3. Has this vision evolved over time?

User experience and community enhancement

4. What would you like to transmit to your online visitors with your digital resources and virtual museum?
5. How do you strengthen the art experience online? What is "Art Mediation" about?
6. We saw that the respondents are rather neutral about the sense of community felt via the website. What approaches are you currently using to engage community with the website?
7. Museum Boijman's is part of Google Art Project. What does this project mean for the museum community?

Digital resources in the current situation (construction, building the Depot, COVID-19)

8. During the *COVID* -19 pandemic, the museum offered the initiative "BHome", consisting in different resources and activities to enjoy the museum while following the measures. How did you adapt from "Boijman's Next Door" program to "BHome"?
9. How do you rely on your website now that the museum is closed? What does this imply for the long run?

D. Qualitative analysis: Concept mapping

THEME	SUB-THEME	QUOTE
Community Building	Sense of community	"Community is something absolutely a vital part of being part of a cultural institution."
		"I think it's quite good that the respondents say "we are neutral about it", cause I'm having a really hard time coming up with any website to be honest, for me personally, that I visit and makes me feel part of a community."
		"I feel part of a community and I visit the website and it really doesn't match to my sense of aesthetics, thinking I don't feel part of this somehow, this doesn't represent me in a way"
		"'Community' is a big word in this context."
	User participation	"We should involve the public more than we do now […] don't use it [the website] like a panel, for instance to help us developing the website."
		"I think the online participation is quite low, but that's also because we don't really have a community aspect on the website."
		"80% of our visitors just visit the website for opening hours but that's a large group that isn't interested in participating or in the community."
		"[We] want to build more of a community with our users but I'm not sure if the website is the way to go, perhaps is the social media or something else."
		"The audience is not able to do or influence anything on the website now."
	Social Media	"We would really want to have a higher figure there [users arriving to the website via social media]."
		"I'm not surprised. On social media, if I look at myself, I consume content, I look at stuff and often there's hardly nowadays any incentive to go to the website from looking at your Instagram feed, right? If you see a story by the Boijmans that's fine, there's no call to action through them to go to the website."
		"That is totally the social media point in general, you have to go where the users are. […] We do it [post on Instagrma and Facebook] because our users, our community, is there and we need to go where our community is."

	Museum community	"I think it is interesting for all musea to engage in such projects [Google Art Project]."
		"It would be great if we could develop such things with other musea and perhaps all cultural institutions in the Netherlands."
		"I think most museum, and Boijmans also, we should do something connecting with our websites, other musea already use Wikipedia for biographies that they have written themselves."
		"What you see now is that you shouldn't have to write everything by yourself, why not connect to Wikipedia or other platforms? It's a way to enrich your website and create more crossed links."
Virtual Museum	Website development	"This website was developed about two years ago, we started with the collection website, a couple of years ago we had like 20 different websites for different purposes."
		"We wanted to have an integrated website so the museum website is about collection but also about events, and it's also about knowledge, education… So, no separate websites, but a website where you can find anything, a space that is what the public wants and not what the museum wants."
		"Websites in general have gone through a functionality that is expected from them, the kind of image of what a website is has changed so drastically over the past years and the past decades."
		"In general, there is a development in the websites of cultural institutions where at the beginning of the internet […] they tended to be very encyclopaedic."
		"Possibility to use them as kind of an open archive setting. Many institutions started creating these, almost like a type of catalogue online."
		"Marketing aspect websites […] They tended to become much more like means for people to visit the physical museum, the prime objective was to get people to the physical museum. through the website."
		"Build an infrastructure that is what we envisioned, where everything is connected, so that the website is connected to the collection system, to the administration system, so that it is a smooth environment with a good user experience but also more efficiency at the back office."

	Interaction possibilities	"The vision of the digital strategy and the mission is to be open. Open online also."
		"A few things in our roadmap."
		"We want the website to be also like a knowledge platform and for researchers."
		"More connection between physical and online, in a way that you can use the information that you have online in your museum building."
		"We are thinking about digital exhibitions."
		"A marketing thing, is about online sales. […] Have some subscriptions, but also online shop."
		"The website before this one having a "My Boijmans" […] You create a profile with us, you collect your own art, it sounds nice, but if you don't do anything with it, people won't use it."
		"Something simple like liking an art object, so that we can create a top 10 with the most appreciated artworks online."
		"That is very popular, the questions module."
		"[Bhome] is an effort to give and offer of temporary, sometimes improvised, ways to still be in touch with our visitors."
		"We love to talk about art and meet with our audiences and if this is not possible in Boijmans neighbours, then we make it possible in other ways."
		"The education in the classroom programs, we send the video lessons."
		"We want to have a much better user experience than there is now."
	Art perception	"A pavilion that is online, that exists digitally, that it is not physically a museum part but that it is also part of the museum. Filled with new types of ways of sharing the art we have and making experiences possible, but as another pavilion that adds to the whole Boijmans overture of activities."
		"'Art Mediation' is a pilot, a test to first see how we can create more valuable art experiences in an online context, how the internet and the website can be used to create experiences that are not a replacement necessarily of real life experiences but a complementary experience."
		"Online complement experience, which is not a replacement of the physical experience, but complementary to it. Which allows best use of the tools that it provides, so you can do different things online that you cannot do offline."
		"Boijmans is very much about developing a good digital strategy and defining how can we manifest the museum and our collection online in a way that is fitting to the online realm, not replacing the physical but also not just promoting the physical neither. Just being complementary."