Digital innovation in the museum practice

An exploratory study into different levels of implementation of digital technologies

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Abstract

Danish museums in Copenhagen are facing the challenges imposed on them by constantly changing the external environment. Behavioral patterns of population are drastically shaped in comparison to previous times. Experience economy became the cornerstone of current business initiatives. Technologies are developing at an unprecedented pace. Museums are cultural institutions with important public roles. Their functions are specifically defined functions, namely acquisition, preservation, research, exhibition, interpretation, dissemination and communication of the collection for the educational purpose. However, the paradigm shift from traditional museum practice to new one, more visitor-centered is obvious. In order to attract the attention of people and fulfill defined mission museums are implementing digital technologies into their practice. Nevertheless, digital innovation is not the core competence of a museum. This research explores how Danish museums implement digital innovation in order to fulfill their mission in terms of exhibition and dissemination of art.

The theoretical framework consists of theories on different levels of implementation of digital technologies, innovation and derivatives, and peculiarities of museum practice. Research is based on qualitative data gathered from both primary and secondary sources. This research is cross-sectional exploratory case study, based on pragmatic philosophy and combination of deductive and inductive approaches.

At the end of the paper there is an overall summary of how museums implement digital innovation, what is a digital innovation in museum practice, and how different levels of implementation of digital technologies correspond to marketing paradigms. At the results sections key insights that form the base for this summary are revealed.

Introduction

Arts as an expression of human creativity were developing along with humanity. It is hard to overestimate the role of the arts in people's lives. Even during wars and other sorts of conflict there was always a spot for art creation as a form of reflecting on the events and circumstances in which people existed. Nowadays we have witnessed the rapid and still on-going tendency of digital technologies' integration into life. This tendency affected the industry of arts as well whether we are speaking about visual arts, performative arts or its combination. These technologies provide artists with novel tools for art creation and its circulation.

Along with innovations in terms of art creation, the essence and role of art also shifted. The basic classic art starts to lose its position and the new art that is created by modern artists does not really serve the same need as the art of previous generations generally. Decorative functions of art become less implied and obvious. Changes in art consumption patterns among the people took place as well. The digital circulation, creation and consumption of art tendencies are obvious.

Already established museums, art centers, galleries, venues and other players on the market are trying to keep the same pace in innovation. But their actions in innovations in terms of creation and circulation are disproportionate. Especially when we take into consideration evolving venues and art spaces that are embracing new technologies from the start. There is plenty of information about the venues trying to implement digital innovations into their products or day to day operations. Nevertheless, the essential perception of novel tools and their possible role in the life of organizations drastically differs if we consider the output and outcome of the actions.

Rapid development of technologies and their higher coverage in practice rather than in theory created a vacuum around the definitions and concepts. By vocabulary 'digitization' and 'digitalization' are defined as synonyms, but in feasible reality the difference is really tangible. Moreover, 'digital transformation' became a new concept that stands in the line with the first two.

All of this led me to the idea of the lack of coherence among organizations when they claim to be digital innovative. There is no widely shared meaning of what constitutes 'digitization', 'digitalization' and 'digital transformation'. The same is true for the concept of innovation as well.

In my opinion, comprehending the meaning of these words is important in order to understand the essence of the processes and possible results. Clarification of the meaning will provide different actors with the possibility to share the same meaning and be completely understood by other parties. Museums as important cultural actors with clearly stated missions are gradually involving themselves into digital innovative practices. They realize that there is a shift in museum practice paradigm and society is not willing to be any more passive or solely educated by such institutions. Experience economy with the stress on leisure activities and entertainment migrated from the purely commercial sector into the non-commercial sector. In order to fulfill their mission and public role museums have to adapt and adjust their practices without losing their role in society as enlightening institutions.

Therefore, for this master thesis I decided to study the process of digital innovation in museum practice with the focus on exhibition and dissemination of art. I did not focus on acquisition, preservation, research and interpretation, and communication functions of museums. This decision is driven by my interest in how museums could actually digitally innovate online and on-site. I have a deep passion for museums as well as I am passionate about the possibilities that digital technologies provide for organizations in the cultural sector. I am concerned about the old-fashioned look on the museum in general, and curious about how museums are trying to shape their perception among the population with the help of digital technologies.

In order to fulfill my curiosity I formulated next research question and subquestions:

How do Danish museums implement digital innovations in order to fulfill their mission in terms of exhibition and dissemination of art?

What is the difference between ‘digitization’, ‘digitalization’ and ‘digital transformation’?

What qualifies innovation and digital innovation?

How do museums implement digital innovation into its practice?

Literature review

Levels of implementation of digital technologies

The democratization of such inventions as the Internet and world wide web in the 1990s, drastically changed the way how people and organizations operate. The corresponding development of digital technologies that provide more efficient and effective solutions initially affected companies that by their nature are willing to increase their performance. However, after technologies became a common convenient tool for the wide audiences, the *modus operandi* of the whole humanity was changed. Obviously, such changes in the lifestyle affected even the GLAM sector (galleries, libraries, archives and museums) which frequently are perceived as not progressive and willing to innovate.

According to Hesmondhalgh (2013) technologies should not be perceived as the best way to fulfill pre-existing needs, they are rather the result of unintended choices and decisions affected by external dynamics made by developing companies. However, availability of technologies eventually intensified the digitalization of cultural production, despite the strong resistance in the internal dynamics of the cultural industries.

The Industrial Revolution has radically changed the way people work and live as well as how products are bought and used by consumers. The digitization made one step further and not only transformed the production scale and quality of the products but transformed their nature. Nicholas Negroponte (1995, as cited in Schmitt, 2019) described this change as a shift "from atoms to bits". Digital technologies use bits as material for products and therefore can be distributed rapidly and globally, differently from physical products that fall under the category of tangible goods. Digitalization created a whole new array of added value in different forms, such as:

- knowledge (e.g. websites and search engines);
- entertainment (e.g. video games, digital music, photos, videos etc.);
- interaction (e.g. social platforms and communication tools);
- and new points of distribution (e.g. e-commerce).

According to Schmitt (2019) the new phase is a merging between physical and digital mediums. And we can witness it right now with the current development of different technologies, from which the most descriptive examples are 3D-printing and AR/VR/MR (augmented/virtual/ mixed reality).

Digitization versus digitalization

Digitization and digitalization are generally defined as synonyms due to the nature of their origin 'digit'. However, nowadays after amassing implementation of digital technologies into day-to-day operations of business and corresponding changes in the lifestyle of people, these two terms should be perceived differently. While the 'digitization' is an innovation that is centered around forward step in processes around the information such as creation, storage, transfer, etc., the 'digitalization' appears more as a phenomenon which is centered around implementation of digital technologies among people and organizations not only as a tool for efficiency but also as a core element of activities that redefines lifestyle and business processes correspondingly.

In a broad range of literature terms 'digitization' and 'digitalization' are used interchangeably with no explicitly stated differences between them. Brennen and Kreiss (2016) are some of the few scholars who essentially conceptualize the difference. They define 'digitization' as the material process of converting analog streams of information into digital bits. To 'digitalization' they refer to the way many domains of social life are restructured around digital communication and media infrastructures (Brennen & Kreiss, 2016, p.1).

The first use of the term "digitization" is traced down to 1956 by Oxford English Dictionary. It is defined as "the action or process of digitizing; the conversion of analogue data (esp. in later use images, video, and text) into digital form" (OED, 2010).

Considering the 'digitization' and its essence there is no contradiction among scholars. However, a big share of them do not distinguish 'digitization' and 'digitalization'. For instance, Hesmondhalgh (2013) with the use of the term 'digitalization' described the changes that took place from the 1950s and started to influence cultural production in the late 1970s. This meant that words, images, music, etc. became convertible into a binary code (sequence of zeros and ones) which allowed computers to store and read such information. On the contrary, in analogue systems

information was transferred with the help of continuous stream such as negative form on film or photography, or sound waves that have to be decoded afterwards by receiver or player.

Brenner and Kreiss (2016) stated that the foundation of digitization was identified in the late 17th century when the philosopher Gottfried Leibniz completed his work on binary number systems. This work eventually led to the development of Morse Code, one of the earliest digitization systems, that formed a cornerstone for future developments in computing and digitizing.

Brennen and Kreiss (2016) summarize the main essentials of digitization of information are that:

- there is no tangible aspect of the information that can be stored and processed on a wide array of mediums;
- the amount and quality of information to be digitized is initially defined by the algorithms created by people;
- due to the bits nature of information, it could be easily stored, transferred, processed and displayed;
- users have bigger control over digitized information;
- the transfer of such information does not imply physical transfer at any degree, it is rather a constant creation of copies of the information;
- the original digital object will not degrade due to the repeated use of a number of people;
- the by-product of digitization is the creation of metadata which in essence is data about the other data.

Large-scale implementation and, therefore, ubiquitous presence of digitizing provoke disputes about its core. Scholars are involved into disputes around such aspects as technical (selective preservation — what information to keep and what to discard during digitization); moral or philosophical (faithfulness of representation of the original); legal (intellectual property law regulations around reproduction, copies and original); and metadata as a by-product (big data and

government surveillance issues) (Brennen and Kreiss, 2016). Although, in my opinion it was meaningful to mention these aspects, they will not be deeply covered in this thesis.

According to Oxford English Dictionary (2010) "digitalization" is "the adoption or increase in use of digital or computer technology by an organization, industry, country, etc.". Oxford English Dictionary traces down the use of the term "digitalization" to an essay that was published in 1971 in North American Review by Robert Wachal. In the essay Wachal (1971) described the possible challenges and opportunities that computer technologies provide for research in the humanities areas in universities. This moment could be considered as the point when scholars started to address 'digitalization' as a structure changing phenomenon rather than just the transformation of data processing. However, it should be stated that despite of the different sense, the Oxford English Dictionary by defining 'digitization', still refers to 'digitalization' as a second definition, thereby maintaining the synonymous connection between them, as well as a wide array of scholars, that as mentioned earlier, creates interchangeability of terms in the way people address this topic.

Youngjin Yoo (2010) stated that 'digitization' adds new capabilities for non-digital products by transforming them into the form of digits, while 'digitalization' is a reconfiguration of socio-technical relationship between producer and users based on the 'digitization' (Yoo, 2010, p.7). Yoo addressed the concept from a business perspective, however it is reasonable to make an extrapolation and therefore imply that digitalization shaped relations not only between producers and users, but within society as a whole among its members. Manuel Castells (2009), as cited in Brenner and Kreiss (2016), views digitalization of "the new economy, society and culture" as one of the—if not *the*—defining characteristics of the contemporary era (Brennen & Kreiss, 2016, p. 5). Ciruela-Lorenzo et al. (2020) describes 'digitalization' as a great challenge for the modern world and states that digital technologies are changing not only the way business is conducted, but also people's behavior.

Digital transformation

The highly volatile and dynamically emerging nature of digital technologies creates deep uncertainty and contradiction among the scholars about the ultimate conceptualization of key terms in the digital area. While some addresses 'digitization' as a transformation from analogue to digital form and 'digitalization' as a structural change of domains of life (Brenner and Kreiss, 2016; Yoo,

2010), and others use ‘digitization’ and ‘digitalization’ interchangeably (Hesmondhalgh, 2013; Hughes, 2004; ILCUS, 2018), there is another group that differentiate these concepts in conjunction with the usage of another one — ‘**digital transformation**’ (i-Scoop, 2019; Bloomberg, 2018; Savic, 2019, 2020; Hapon, 2018).

Also, there is a group of writers, who in acknowledging the importance of ‘digital transformation’, treat ‘digitization’ and ‘digitalization’ as the same. For instance, ILCUS (2018) interchangeably uses ‘digitization’ and ‘digitalization’, however she states that it is important to draw a line when it comes to ‘digital transformation’. She argues that ‘digital transformation’ is much more than ‘digitalization’ (or ‘digitization’ according to her), while it is not about occasional digitalization of different aspects of business but about the transformation of the entire business model of a company.

Mergel et al. (2019) admits that the terms ‘digitization’, ‘digitalization’ and ‘digital transformation are used interchangeably in the literature. They provide an empirically-based definition of ‘digital transformation’ derived from expert interviews in the public sector. They define it as “a holistic effort to revise core processes and services of government beyond the traditional digitization efforts. It evolves along a continuum of transition from analog to digital to a full stack review of policies, current processes, and user needs and results in a complete revision of the existing and the creation of new digital services. The outcome of digital transformation efforts focuses among others on the satisfaction of user needs, new forms of service delivery, and the expansion of the user base” (Mergel et al., 2019, p. 12). One of the important things that is highlighted is that ‘digital transformation’ is assessed as a continuous process, rather than a project with an end status.

Nevertheless, it should be mentioned how the area of interest and a subject of research might shape the way scholars differentiate the key terms. In this article they clearly distinguish the difference between ‘digital transformation’ as a cultural and organizational change by comparing the merely functional nature of ‘digitization’ and ‘digitalization’ (Mergel et al., 2019). They acknowledge ‘digitization’ as a transition from analogue to digital form, however they also use the term ‘digitization’ to highlight the transition to digital services with a change in the delivery mode. At the same time they suggest to use ‘digitalization’ as a change in the process that is beyond mere

digitizing (Mergel et al., 2019). Mergel (2019) provides such examples within an area of public service: digitizing (downloading forms online); digitalization (filling out forms online); digital transformation (full service delivery online) (Mergel et al., 2019, p. 3). The conceptualization of 'digitization' as the basic use of digital data extracted from the physical medium, for automatization of processes and workflows are mentioned not solely by Mergel (i-SCOOP, 2019). This idea is based on the practical notion that in the working context digitizing is done for some reasons, therefore from practical point of view it implies basic manipulations afterwards, which do stay within the category of 'digitization'.

This article is a great example of how specific the scope of interest of scholars and the genuine interest to precisely describe and fully encompass the digital processes for the sake of thorough practical reflection within an object of research creates a confusion and overlap in the meaning of the three terms among scientists and scholars as such.

Arguably, the clearer demarcation of the terms without favorable slight substantial distortion is provided by Dobrica Savic (2020). Speaking about 'digital transformation', Savic (2020) also points out that because of the difference in expertise and interest there is no single and widely accepted definition of the term among researchers and business representers. He in turn attributes to 'digital transformation' the role of umbrella that covers 'digitization' and 'digitalization' as constituent consecutive components. Thereby, 'digitization' supplemented by 'digitalization' as a second step, eventually leads to 'digital transformation' (Savic, 2020).

Savic describes 'digitization' as a phase of conversion of data from analogue to digital format, which along with many of its advantages provides the possibility for further digital processing of data. According to the researcher, 'digitalization' is closely related to the automation of business processes that is based on the use of digitized data . These processes are improved by the leveraging of digital technologies and wider use of digitized data. However, processes are digitized independently and as a result, the lack of communication and integration among them. He divided the 'digitalization' into three phases (Savic, 2020, p. 30):

- **The initial phase,** where single operations or processes were automated.
- **The mid-phase,** where related processes were automated and joined together.

- **The third**, most complex phase, where multiple systems that supported business processes and information flows were partially integrated.

In contrast to ‘digitalization’ which is about implementing new, more efficient and effective technologies, ’digital transformation’, although being highly dependent on technologies, is concentrating more on the different goals. Savic describes it as a customer-centric approach of business development that implies the use of technologies, not for the sake of technologies themselves, but for the transformation in the essence of the organization — culture, strategy, process configuration — which is supplemented by creation of new revenue streams, products and services (Savic, 2020). Even though ‘digital transformation’ is not exclusively concentrated around technologies as such, some of them are of an important role in the implementation of digital transformation — e.g. artificial intelligence, machine learning, big data, cloud, 3D-printing, augmented/virtual/mixed reality etc. To manifest the difference more explicitly Savic (2019) analyzes each term in relation to manipulations around grey literature through five facets — focus, goal, activity, tools, and challenge.

To sum up, after having analyzed how different scholars address these terms, I can conclude that although there is no strong discrepancy around ‘digitization’, there is a big confusion around ‘digitalization’, and ‘digital transformation’ and not only between themselves, but also in relation to ‘digitization’ itself. The definition of ‘digitization’ is mostly solid, while the definitions of the other two terms are vague and strongly affected by the area of interest and perspective of the authors.

The reason for distinguishing the semantic core of the three concepts (‘digitization’, ‘digitalization’ and ‘digital transformation’) is practical — clear communication and unambiguous understanding of the terms. Although scholars provided a quality differentiation among these terms, neither of these approaches could be defined as exhaustive and universal for any industry, especially taking into consideration the creative industries as such. That is why, I think it is important to essentially define these three terms in the context of cultural industries. This point will be addressed in later sections.

Innovation

Nowadays innovation as a concept is applied in every industry regardless of the nature of their products or services. This term has become closely conjugated with the concepts of progress and development as such. In short, innovation is everywhere. However, as of now the meaning of the concept is instantly attached to the technological side of the development. This connection is comparatively new, especially in historical terms. There is no lack of literature on innovation, however, the genesis of the concept and therefore the etymology of it is not explicitly represented among the scholars. Benoit Godin is arguably one of the most important scholars who tried to cover this necessary gap of meaning of the concept that is so omnipresent right now.

Genesis and development of the concept

In his book "Innovation Contested The Idea of Innovation over the centuries" (2015), Benoit Godin is analyzing the concept of innovation in a long-term perspective covering 2,500 years of history. Godin (2015) profoundly investigated the difference in representation of innovation throughout history from the time when it was used as an essentially pejorative and odious term frequently used by the opponents of change. They used it to describe their enemies, people who departed from the social norms and therefore became deviant. His study also covers the twentieth century and modern times when the concept of innovation becomes an integral part of the landscape with a principally positive connotation pointing out that innovation is a useful positive change to the state of current affairs.

Godin states that innovation is a contested concept. According to him there is a complete lack of history on the concept of innovation in the literature, hence, in the work of Schumpeter on the myths of the origin of the concept (Godin, 2015, p. 3)**.** Hence the dominant representation of innovation as technological, and thus the absence of reflexivity on the connotation of the concept. According to Godin, innovation is a primarily political concept that has nothing to do with economics (technology) or with creativity for most of history (Godin, 2015, p. 5). In modern times, the meaning of innovation is shaped according to the current needs and goals — moral, political, social and material.

To establish his point of view Godin (2015) analyzed how the concept had shifted from the vice to virtue according to three historical periods:

- the *prohibition episteme* (from the Reformation to the nineteenth century);
- the *instrument episteme* (nineteenth and twentieth century);
- and the *value episteme* (the current moment).

These three historical periods are supplemented with the coverage of the emergence of the concept of innovation and thoughts on innovation since Antiquity.

The concept of innovation is of Greek origin (*kainotomia*). Novelty (kainon) in arts and science were accepted if they did not undermine the natural order of things, while innovation (kainotomia) was not accepted under any circumstances (Godin, 2015, p. 19). Godin traced down the earliest step in the genealogy of innovation as a concept back to Xenophone (430-355 BCE) and to his work on political economy: "*Ways and Means"*. It was addressed to Athens' council of Five Hundred to increase the revenue of the city. In his work, Xenophone did not use the word 'innovation' itself but the word *'kainotomia',* in the sense of *'making new cuttings'* (making new mines) refers to innovation for Xenophone (Godin, 2015, p. 21).

Xenophone's representation of innovation as something new, something that forms a plan of actions, and something that should be implemented gradually, would be developed by later intellectuals. However, it would change its neutral connotation to negative one.

Both Plato and Aristotle had a negative perception of innovation. While Plato's discussion about innovation is related overwhelmingly to cultural aspects and education, Aristotle's concern with innovation is a political change. Plato stressed the importance of stability and tradition in the society. He refused innovation in education, since eventually, it would lead to a change in the social domains. He stressed the need to contain and control innovation, not only within the State but also the possible changes that could come from the foreign (Godin, 2015, p. 23-27).

Aristotle within his political lens on innovation admitted that some changes are desirable. While changes in medicine methods, physical training and other skills could be appropriate, all the

good changes in politics have been already made and therefore no further changes are needed. Aristotle also did not appreciate innovation as a radical change. His argument for gradualism is based on two ideas: first — that the small, almost imperceptible changes are preceding big radical changes, and thus should be governed, which leads us to the second — stability is a key, and changes should not contradict the law and should appear according to the given time (Godin, 2015, p. 23-27).

It must be stated that the word 'innovation' itself did not exist at that time, and therefore was not used. However the concept of innovation with modern meaning was described by words *kainotomia* and *neoterismos*. The word innovation that could appear or the other words that describe 'innovation' in translated works were explicitly pejorative. However, *kainotomia* and *neoterismo* were used in terms of political and/or cultural change and have an implied subversive aspect to them (Godin, 2015).

The Greek historian Polybius, who is considered one of the fathers of objective history continued the tradition of using the concept mainly as subversive. Nevertheless, he did not forbid innovation. He introduced a new word to *kainotomia and neoterismos,* 'kainopoiia' in the meaning of making something new. Even though the context remains mainly political, Polybius differed from entirely negative connotation of the concept and used it frequently as neutral or positive when speaking about military issues. He also started to apply the concept to his persona in terms of renewing the practice of history (Godin, 2015, p. 28-30).

Godin states that "to the Greeks, people 'given to innovation' are not creative but are rather guilty of something. Innovators are transgressors of the political order" (Godin, 2015, p. 31).

Semantics of innovation

During the third and fourth century the word *innovo* entered into the latin vocabulary. In contrast to The Greeks, it had initially positive meaning. Christianity that was adopted by the Roman Empire in the fourth century, was affected by the Greek language. *Kainizein* that is the old form of Greek *keinein* (make new), was translated into Latin *innovo.* However, the Latin translation changes its meaning to "renewal" and placed it in the line with other religious terms: renovation,

reformation, regeneration. *Re* emphasizes the newness in the return to the old, while *in* emphasizes introducing something completely new (Godin, 2015, p. 41). Along with the religious practice, *innovo* was popularly used in poetry in a spiritual positive meaning of renewal. This meaning remained till the sixteenth century, when it regained its negative connotation.

The prohibition episteme

In the time of the Reformation and later on, innovation gained explicitly negative meaning. It was used as a form of attack at the opponents. At the time, changes to established doctrine were perceived as negative and dangerous. Being accused of being the innovator could have led to prison sentence and death penalty as well. However, there was a big controversy around the concept itself — it was polemical and ambiguous. While some used innovation as indication of alternation and change of an established order, others used it in the meaning of renovation and restoration of the order that was established in the past times. Moreover, there was a distinction between innovation's implications — novelty as curiosity and invention as something useful was absent at that time. This controversy could be easily traced back to England, to the conflict between Burton (who represented protestantism) and the bishops who were accused of being innovators and a part of popery. Innovation became a synonym for heresy, which in that time was a serious accusation. (Godin, 2015, p. 75-99)

The failed attempt to turn monarchic England into a republic in the middle of the seventeenth century formed the base to include the concept of innovation to political discourse as well. The term remained pejorative. It was not used to speak about your own actions, it was used only to assess actions of others. Nevertheless, with entering a political discourse the term gained a new negative facet — it was considered as sudden and violent (Godin, 2015, p. 101-102; 114). However, it must be stated that the change was accepted if it was gradual and justified by the time.

At the beginning of the nineteenth century, the concept of innovation included such pros as *social innovation.* Contrary to religion and politics, where innovation was overwhelmingly negative, this new social side of innovation had a dual connotation. It started to gradually get a resemblance with the idea of progress. Social innovation as a socialism aimed to destroy capitalism

and private equity was perceived as radical and disruptive. Therefore, it was negative, while social innovation as a humanistic social reform had a positive connotation to it. Also, the French social innovation was more positive than the English (Godin, 2015, p. 122-132).

The instrument episteme

By the end of the nineteenth, century innovation became part of the vocabulary and got the additional meaning of being a scheme or plot. People started to think that innovation is rational, and it could be useful if implemented correctly. Perhaps one of the most prominent writers who helped in the rehabilitation of the term was the English philosopher Jeremy Bentham (1748–1832). His idea of utility appeared in his 1789 work "*An Introduction to the Principles of Morals and Legislation"*. From his utilitarian perspective, he was describing innovation as something useful. He restructured the conceptual base around innovation and criticized fallacies that formed the basis of negative perception. Arguably, Bentham contributed to the notion of technological innovation with his stresses on utility and progress (Godin, 2015, p. 137, 147, 151).

In upcoming years, during the nineteenth century innovation together with revolution acquired positive meaning. People started to use the word innovation in a daily language for specific purposes with the stress on progress and utility. Innovation started to be recognized as a part of life with the aim at the better future in a whole array of areas — politics, religion, arts etc. (Godin, 2015, p. 167-172).

In the nineteenth century, innovation in the meaning of progress started to be gradually appropriated in science as well. For most people outside of the scientific field, innovation remained a political term and was perceived pejorative. The perception of innovation for scientists could be well described by Francis Bacon (1521 — 1626). Even though Bacon never used the word innovation in describing views or actions, he was an innovator himself because of the introduction of new scientific methods into the useful arts. Bacon perceived science as the source of progress, however at the same time he acknowledged the resistance of innovation. He thought that there should be a middle ground. He stated that progress and new things should appear in a form of improvement or progress, but not with the idea of change, just for the sake of a change. He was against radical changes (innovation), especially when it came to order and established customs, but he was in favour of the progress (novelty) within the arts. A lot of scientists shared his ideas and

precautions, especially the one that had to justify the idea of progress and thought through the possible repercussion of such (Godin, 2015, p. 179-182).

In the late nineteenth century, perception of innovation began to change. For the writers, innovation became the synonym of change and novelty in the useful arts with a positive meaning. However, for polemic purposes, it still remained a negative word. The positive meaning was based on two factors — utility and originality. Also, the concept of innovation as progress began to be used as an argument on the national level, rather than on the egoistic, individualistic level as it was referred to in previous centuries. Innovation was not connected to market issues. Technological innovation was only one of the connotations, and will not become the primary until the twentieth century (Godin, 2015, p. 190-197).

The Value Episteme

Before the twentieth century, theories regarding innovation as such did not exist. In the second half of twentieth century, innovation became an umbrella concept that started to be used when people spoke about change and novelty at a large scale. It could be stated that innovation obtained a completely different representation and was tightly connected to the market as a development process of new ideas and processes. Identification with technological innovations became the primary connotation after World War II. The key aspects of innovation in this age was originality and practicality. The perceptual difference of innovation also became attributed to the perception of change. From the twentieth century, change became explicitly positive and therefore happened the same with innovation. Perception of beneficiaries also changed — innovation is beneficial not merely to individuals, but to the nation since it advances society. Innovators started to be referred to as creative and ingenious people that opposed the traditional way of doing things (Godin, 2015, p. 222-223). However, the debate on what actually constitutes innovation is not resolved. Ambiguity and blurred lines are still present. Today, the dominant representation of innovation is technological, and is commonly referred to as technological innovation.

Carnage around the meaning

The dominant representation of innovation nowadays is a technological innovation, and is attributed to Joseph Schumpeter (1883 — 1950). For Schumpeter (1934), an innovation is a new combination of knowledge, resources, equipment or other factors and in contrast to invention, it is more of a function maintained by entrepreneurs with the eventual goal of further commercialization of the final product that comes as a result of these combinations.

As it was already mentioned earlier in this paper, innovation has become an umbrella concept for a lot of things. Scholars are using this concept freely shaping it to the area of their interest or the goal of their writings. The same is true for different industries, where players fit the concept to the peculiarities of their field. Innovation becomes a concept that is taken for granted and that finds an understanding among people in itself without necessity for explicit common definition. Not only there is no consensus on what exactly innovation means, the vocabulary of innovation is facing concepts that are interfering to some extent with the innovation creating more ambiguity. Such vocabulary includes *change, imitation, invention and creativity.*

Change. As an example, Selwyn Becker and Thomas Whistler (1967) state that there is a lack in distinguishing between change and innovation (Godin, 2015). In their opinion, the definition of innovation gets sterilized by using it each time when we are seeking something that has never been done by the particular organization. For them, change is a result of innovation that happens in organization. Later, Becker (1978), made another distinction — now the stress is that if it is new (and therefore different) only for organization then it is a change, but if it is new as such then it is an innovation. The common point of view is that innovation is a change, but a radical change in a positive sense, while a change as such is a change in small things — materials, resources etc. (Godin, 2015).

Imitation. According to Godin (2015), imitation became a counter-concept to innovation in the twentieth century. He analyzed a number of scholars' points of view on this issue. The main inference is that distinguishing is based on the idea of originality and primacy. Innovation is the first in introducing or adopting an invention, while being the one who applies it afterwards means being an imitator, who adopts the innovation generated elsewhere (Godin, 2015, p. 226-228).

Despite the prevailingly negative conception of imitation, there is a group of scholars who describes innovation in a more positive sense, either it is a reasonable stage after innovation (Mueller and Tilton, 1969, as cited in Godin, 2015) or the form of innovation itself. Speaking of the form of innovation, the main idea is that imitation is not just about copying. On the contrary, it is an adaptation of innovation to your realities. It is possible for the firm to be innovative, without showing much originality in the creation of invocation itself. On that account, innovation could be a production of something new or the use of the new (imitation). This idea is aptly supported with the statement that innovation is "an idea perceived as new by individuals" (Rogers, 1962, as cited in Godin, 2015).

Godin elaborates more on the dichotomy of imitation and innovation (Godin et al., 2017). He argues that this dichotomy is a theoretical construct and, therefore basically based on semantics. For cultural and social oriented disciplines, innovation has much bigger meaning than for economics for whom the innovation is exhaustively connected to the market and commercialization. The first group studied innovation in terms of effect on society and culture. For them diffusion (a more positive word for imitation) matters more than pure innovation. To support this idea, Godin (2017) refers to a variety of scholars. Nelson and Winter (1982) considered imitation not as a duplication but creation and that the imitator is still an innovator, as it is impossible to blindly copy the innovation of a competitor. Malikowsky (1927) believed that diffusion as such is a re-adaptation and therefore is a properly creative process (Godin et.al., 2017).

For the anthropologist Homer Barnett (1953) imitation and innovation appeared as sufficiently overlapping concepts. For him, innovation is "any thought, behavior, or thing that is new because it is qualitatively different from existing forms" (Barnett, 1953, p. 7). He suggests that innovation is a result of the combination of already existing things in a new way. And therefore, the one who is adopting a new practice instead of sticking strictly to the customs is an innovator as well. In this case, innovation is recognizable not in being new to the world, but in being new in comparison to the past practice of individuals (Barnett, 1953).

Invention. For the majority of theorists innovation and invention are different things. The main difference could be gathered from the Godin (2015, pp. 229-230; 2017, p21) analysis of the distinction. Innovation is basically an applied invention, which moreover was commercialized. In

other words, invention is a new idea that is generated and further developed as an independent product or part of the process. At the same time innovation is a consecutive step of adopting this idea and introducing it commercially to the market (Godin, 2015, p. 229-230; Godin et al., 2017, p. 21).

Creativity. Arguably, creativity in the sense is the precursor of innovation becoming as well the buzzword and the major value for modern society. Creativity however is not well theorized among the scholars of innovation. Nevertheless for Barnett (1953), for whom it is a creation of something new by combination. Amibile (1988) speaks of creativity using product-oriented definition as a production of novel and useful ideas. In her paper, she also mentions that innovations is the successful implementation of creative ideas, which actually forms the base for innovation itself. It should be stated that creativity could take place not only in terms of product, but also in processes (Amabile, 1988).

Joseph Schumpeter (2010) in his work *Capitalism, Socialism and Democracy* (first published in 1943) coined a metaphor for *creative destruction*. He perceived creative destruction as the essential fact about capitalism. Creative destruction is described as a process of qualitative change that incessantly revolutionizes the economic structure from within, incessantly destroying the old one, incessantly creating a new one (Schumpeter, 2010, p. 73). It is a process of qualitative change that manifests itself in new products and new processes.

Therefore, there is no explicit definition of innovation. However, scholars agree that innovation is an intentional and positive rational behavior. Moreover, innovation is a process in time from the generation of an idea to its implementation in practice. Nevertheless, the dominant representation of innovation, not only for economists but also for the government, is the industrial one — technological innovation. Innovation defies definition like other abstract concepts. No one has ever offered three definite answers to three important questions: Innovation for whom (worldwide, user or the market); innovation in what ways (radical or incremental); innovation when (invented or applied) (Godin, 2015, p. 237). The definition of innovation differs on the author and the discipline. As Godin (2017) aptly summarized “to sociologists, innovators are the first to adopt a new practice. To economists, innovators are the first to commercialize a new invention” (Godin, 2017, p. 27).

Models of innovation

During the twentieth century, scholars and theorists of innovation were trying to introduce the models of innovation to explain how innovation occurred and developed. Benoit Godin and Joseph P. Lane (2013) have written a paper that provides an arguably explicit oversight on this theoretical effort. It should be stated that the same contradictions that exist in theorizing innovation as such, take place in the realm of models as well. Generally speaking, the main fight was between the linear model, which was formalized in the 1940s, and the demand-pull model, which appeared in 1972. On the basis of this conflict, a number of other multidimensional models were introduced. As well as it happened with innovation, these models were affected by the area of interest and field of the authors.

On one hand, the linear model suggests that innovation occurs stimulated by the scientific discoveries through research and development phases and then is introduced to the public. This model was a dominant one to discuss the process of technological innovation for a dozen years. The main idea is that scientific discoveries are the primary force that pushes technological development. On the other hand, the demand model was introduced as the exact opposite idea about the process of innovation. Scholars that supported this model argued that the main force is people's needs and the market, and therefore innovation is pulled to meet these needs (Godin and Lane, 2013).

The dichotomy created by this polarized conflict on what is the key driver of innovation provoked scholars to contribute to the topic. The demand-pull model (which was initially known as the need-pull model) did not last long. Heavy critique towards it destroyed it as a reasonable view on the process. Mostly, critics attacked the fact that this model did not take into consideration the complex supply side of the production. These single-factor models were absorbed by the multidimensional model. Nowadays, most authors would agree the innovation is a result of the combination of technology-push and demand-pull models. While demand unarguably plays the role of innovation, the technological opportunities are creating the direction of the innovations. Hence, it is better to consider simultaneously two processes (Godin and Lane, 2013).

The important moment that needs to be stated is that innovation was primarily a market concept and therefore the semantic shift from the 'need' to the 'demand' occurred. In the best case, these words were used interchangeably which created confusion and ambiguity, and partially

contributed to devastating critique of the “demand-pull model”. This distinction became especially important when we speak about non-market oriented organizations that deal with the public needs from the social perspective. In this case these needs could not be sufficiently represented by such a category as market demand. As Godin and Lane state, the “need refers to a social problem or public goal addressed in a program, particularly the program of a mission-oriented organization” (Godin and Lane, 2013, p. 640). On the contrary to the demand, needs are impossible to be sufficiently calculated, but they could manifest themselves through the choices and actions of customers. A Steve Jobs quote stresses the idea that it is hard to calculate the needs, especially when we deal with innovation — “People don't know what they want until you show it to them”.

Summing up, the main idea behind the pull model was to create opposition to the linear model which exhaustively attributed prime drivers to the supply side. However, the pull model turned into merely a demand market model and therefore, faded as insufficient. Demand as a category excluded social and public needs, that are of big importance when we are speaking about public and other non-market driven organizations. The multidimensional model aspect is found to be the most appropriate nowadays, speaking of the innovation process. However, models are constantly succeeding each other and there is no widely accepted one, since they are tailor-made to the area of interest of the author, which decides to conceptualize the reality in a simplified but effective form (Godin, 2015).

Types of innovation

Disruptive and sustaining

As it was stated previously, innovation, as well as models of innovation are quite ambiguous concepts and therefore there is no completely shared opinion about the precise, meaning that the typology of innovation is of the same nature. In other words it’s hard to outline the main common taxonomy of the innovations. Nevertheless, for this paper several types are of particular interest, namely disruptive and sustaining innovation, open innovation, and digital innovation as more narrowed descriptions of technological innovation.

Clayton M. Christensen (2003) is probably the most prominent author who in his book, *The Innovator's Dilemma,* clearly described the difference between disruptive and sustaining innovation. Being stimulated by the pattern of failure in the disk drive industry, he argues that there is an important distinction between *sustaining* and *disruptive* technologies. The main distinction lies in their effect, whether it is incremental or radical.

According to Christensen, new technologies that improve product performance are sustaining. The main point is that such technologies improve the performance of established products that are most valued by the mainstream customer. The lion share of new technologies are sustaining. Nevertheless, they could be either incremental or radical (Christensen, 2003).

Disruptive technologies are different in nature and bring different value propositions that previously did not exist to the customer. Usually the products of disruptive technologies are simpler and cheaper, and at the first step they underperform compared to the already established products. However, they are aiming at the insignificant small markets or the ones that are emerging and do not exist right now (Christensen, 2003).

Although Christensen's book became a national bestseller, this distinction is still relevant. In his article (Christensen et al., 2015) he addressed this issue. He stated that people started to use "disruption innovation" loosely and described with its help any situation when an industry is somehow shaken with the new technology (Christensen et al., 2015). The cases of Uber and Tesla Motors are used to prove this point. Both of these technologies are not aimed at the somehow neglected markets by the company market groups (low-end footholds) or at currently non-existent markets (new-market footholds). Therefore, despite the public picture of them being breakthrough technologies, they still constitute a sustaining innovation (Christensen et al., 2015).

Open innovation

Henry Chesbrough (2003) is one of the most prominent authors who promoted the term "open innovation" with regards to the constantly changing landscape of industries. In his book *Open Innovation: The new imperative for creating and profiting from technology* he shortly elaborates on topics from the closed innovation paradigm to the open innovation paradigm

proposing open innovation as a successive counterpart of internal development of new technologies. Before describing the open innovation, it is useful to shortly address the idea behind the closed innovation paradigm and how it had lost its actuality.

According to Chesbrough (2003), companies that used the closed innovation paradigm have had a model of deep vertical integration of the process of innovation. All the research and developments were maintained in-house without involving external actors. Discovering new ideas, developing and building new products on own facilities with further distribution, financing, and other services around the product were conducted within the four walls of the company. Organized industrial R&D departments were the physical manifestation of this idea. This provides companies with the opportunity of accumulating new knowledge without any leaks from the company. This mind-set was prevalent among U.S. organizations in the twentieth century and resulted in a lot of scientific achievements and examples of commercial success (Chesbrough, 2003).

This golden age of industrial internal innovation is completely justifiable. In the twentieth century, 'commercial science' was not well liked among the scientist community and the lack of government funding was obvious. The only way to innovate and create new commercially successful technologies for companies was to establish a private R&D laboratory. 'One man army' so to say formed the business' entity perspective. There was no rationality in waiting for either scientist or other organization to contribute to your product (Chesbrough, 2003). Moreover economies of scale based on the internal R&D department, resulted in new opportunities and economy of scope. In some industries this golden age still takes place, and internal focus on R&D remains reasonable. Tight IP protection and regulations, together with big internal funds, sustain this paradigm. However, for the majority it became obsolete. New companies can not rely solely on the internal ideas anymore and they can not restrict the diffusion of its innovation to only one path. Ability to experiment with new ideas in new markets is crucial (Chesbrough, 2003).

As Chesbrough (2003) states, the transformation of traditionally closed internal environment into the new open one, where ideas could be used externally and internally, and accessed outside as well, was due to four main erosion factors:

1. the Increasing Availability and Mobility of Skilled Workers that happened after World War II;

2. the establishing of the venture capital market which supported private commercial initiatives from the ex-employees;
3. increasing opportunities for developed ideas that were not used by companies (i.e. leak);
4. and the emergence of capable external suppliers that could offer products of equal or better quality to the company compared to its internally developed analogs.

This modern knowledge landscape at the beginning of the twenty-first century undermines the closed paradigm and promotes the open one.

Chesbrough (2003) describes open innovation as a paradigm which allows the ideas to circulate freely, in other words it allows ideas to come from both inside and outside of the company, and to be introduced to the market from both inside and outside of the company. This paradigm also implies that instead of hoarding technologies for your own use and placing them 'on the shelf', you are looking for another way of how they could enter the market. Instead of constraining the diffusion with the help of IP protection, you share your assets and benefit from the competitors' use of them. This approach in no way perceives the internal R&D department as obsolete. On the contrary, the R&D department is still important and crucial for sustainable business. However, companies should be open-minded about interaction with the external knowledge environments, since they should not (and sometimes could not) wait for internal technologies to arrive (Chesbrough, 2003).

What it means in practical terms is that firms and organizations who maintain an open innovation paradigm and do not possess sufficient finance and human resources or internal capabilities to innovate themselves could borrow ideas, technologies and innovation from the outside and implement them into their internal processes so to fulfill their mission and commercial ambitions. The availability of these ideas, and possibility of hiring people who create them is of great use. This paradigm is especially of crucial importance when we consider NGOs and non-profit organizations such as museums and other cultural institutions, who operate in constant financial constraints (Chesbrough, 2003).

Open innovation in public sector

Open innovation was initially conceived as a paradigm shift for large industrial manufactures. Since then, the concept expanded its boundaries and started to get recognition among other areas, including not-for-profit organizations. Theoretical materials on this topic are still quite scarce. However, Chesbrough and Di Minin (2014) are ones of the few who state the importance of this concept for social, nonprofit and public organizations. They use the term *open social innovation* to explain how the open innovation paradigm could be applied to those organizations (Chesbrough and Di Minin, 2014).

Chesbrough and Di Minin (2014) define Open Social Innovation as "*the application of either inbound or outbound open innovation strategies, along with innovations in the associated business model of the organization, to social challenges"* (Chesbrough and Di Minin, 2014, p. 170). Inbound (i.e. outside-in) innovation means to get the knowledge and know-hows from the outside environment and implement them into your overall strategy, while outbound (i.e. inside-out) is the opposite process when your knowledge and know-hows are shared outside, so to change a status quo of a specific problem. These two strategies are not mutually exclusive and could be implemented simultaneously (Chesbrough and Di Minin, 2014).

Although libraries, museums and other similar organizations are included in the public and not-for-profit organization, they are not discussed explicitly in the paper of Chesbrough and Di Minin. Nevertheless, it is reasonable to extrapolate the ideas to such non-profit organizations. As Vanhaverbeke, Chesbrough and Westthey (2014) conclude, there is a diversity of non-profit organizations (including museums) that could be analyzed through open innovation sense. They as well face considerable strategic challenges, and start to acknowledge the crucial role of partnership as a part of successful strategy (Vanhaverbeke, Chesbrough and Westthey, 2014).

Digital innovation

Organizations, regardless of their type, are under constantly increasing pressure of applying digital technologies to renew or transform their business models. However, not all of them are capable of fulfilling this task. There is no shortage of the literature on digital innovation. According

to Kohli and Melville (2018), despite the richness, breadth and depth of such literature there is a certain unclarity about the knowledge around digital innovation in total (Kohli and Melville, 2018). In other words, there is a need for a theoretical base of this area. In their paper, the authors formalized some key concepts related to digital innovation.

According to Kohli and Melville (2018), there are three dominant conceptualizations of IS (information system) and innovation:

- "Information technology (IT) innovation" — refers to adoption and diffusion of new IT-enabled processes, products and services by organizations. In this case, the organization adopts an IT artifact that already existed but is new to the organization.
- "Digital innovation" — refers to the combination of physical and digital products in order to form new products. In this case the stress is on the role of IT artifacts in enabling or constraining the development of new IT artifacts.
- "IS innovation" — refers to the application of IT artifacts within an organization that requires a significant change and leads to the creation of new products, services or processes. The stress is on the technological and organizational aspects of the change within organization (Kohli and Melville, 2018).

Kohli and Melville (2018) state that digital innovation does not take place in a vacuum and that digital innovation that takes place within an organization could be framed as a strategic initiative. They formulate their theoretical framework of digital innovation process that involves seven different aspects: four types of activities (initiating, developing, implementing and exploiting), two environmental factors (external competitive environment and internal organizational environment), and the outcomes of digital innovation (which, by the end of the day is either an intended or an accidental result of the activities) (Kohli and Melville, 2018).

Another conspicuous paper on digital innovations is introduced by Florian Wiesböck and Thomas Hess (2019). In their article they tried to link different existing research streams on digital innovations. After analyzing numerous sources that encompass digital innovation, the authors formulated a framework of embedding digital innovation within organizations. This framework is

based on four main existing research streams: conceptual development of digital innovation; categories of digital innovation; enablers of digital innovation; and governance of digital innovation (Wiesböck and Hess, 2019).

Wiesböck and Hess (2019) described digital innovation as a new kind of innovation that implies the development and implementation of artifacts and solutions that are based on the use of digital technologies. They specifically conceptualize digital innovation as "*a combination of two digital artifacts: an innovative digital solution and (indispensable) a complementary digital business concept, both driven by the opportunities of new digital technologies ("technology-push) and the needs and requirements in the domain of application ("technology-pull")*" (Wiesböck and Hess, 2019, p. 76).

The development processor of digital innovations is characterized by a recursive interdependence between the involved digital artifacts. In other words, the appearance of new digital technology leads to the development of digital pollution, which in turn leads to the development of digital business concepts. To be more discreet, developing a digital solution that is based on abstract digital technology qualifies as digitalization. In case of transition from digital solutions to digital business concepts, an organization's digital transformation takes place (Wiesböck and Hess, 2019).

In the part of digital innovation taxonomy Wiesböck and Hess divided digital innovations into three categories:

- **Digital product and service innovations** — refers either to the creation of fundamentally new digital products and services or to the enhancement of existing products or services with addition or integration of digital components. These innovations typically provoke further innovations either as a complementary service or product; and strongly depends on novel customer preferences and behaviors.
- **Digital process innovation** — refers to the innovative implementation of digital technology in order to improve the current organizational business process or to create new ones. Typically an organization is trying to optimize operational and administrative processes by

providing service of higher quality and utility, and by cutting the cost of the existing services.

- **Digital business model innovation** — covers the adaptation and extension of current business models with the help of digital technologies. It could be the transformation of either certain elements or of the entire business model based on digital technologies (i.e. novel combination of digital products and services, new form of production or revenue creation). The transformation of certain elements is usually embodied in the establishing of digital sales channels and revenue models (Wiesböck and Hess, 2019).

Wiesböck and Hess state that digital innovation could adequately be implemented when the organization is prepared. They point out four enablers of digital innovation: organizational IT application portfolio, organizational structure, organizational culture and organizational capabilities (Wiesböck and Hess, 2019).

- Organizational IT application portfolio covers the ability of organization to accommodate digital innovations. In order to do it organization should prepare the IS landscape that includes both IT systems and basically IS infrastructure (also known as digital infrastructure). This landscape should allow efficient and effective replication and processing of data that will sustain current and further digital initiatives.
- Organizational structure. Since implementation of digital innovation could be disruptive for current business processes, or at least undermining some core aspects of current activities, organization needs to establish a structure that will enable digital innovations. On the other hand, digital innovations are often highly interdependent with the external turbulent market and therefore the implementation could become complicated. In order to mitigate the risks, organizations need to balance the tension of organizational ambidexterity and become more agile.
- Organizational culture is an important enabler that determines how employees within an organization accept the changes brought by digital technologies and how the teams in charge

of these changes pursue their goals in the development of digital innovations. General attitude of employees towards digital innovation, their risk-willingness and their appreciation of innovative ideas from inside and outside the firm are shaped by the culture of the organization.

- Organizational capabilities refer to sufficient levels of IT knowledge among employees that enable them to handle digital technologies as a base for digital innovations. These capabilities could be either built organically via training or be acquired inorganically via outsourcing (Wiesböck and Hess, 2019).

The last main research stream that forms the base for the framework of embedding digital innovation in organization is governance of digital innovations. It deals with the organization's ability to manage the development, implementation and adoption of digital innovations. In order to realize and maintain the four enablers described above, the organization needs to create an adequate digital transformation governance (DTG) approach. This governance could be designed in the form of dedicated structures, dedicated processes or dedicated relational mechanisms (Wiesböck and Hess, 2019) .

DTG structures that deal with management roles or business units describe how an organization, in order to be prepared for digital innovation, adjusts its organizational structure. Generally, this could be done in three ways: to allocate the digital related tasks to the existing IT department; to establish a deliberate executive department with the purpose of coordinating digital endeavors; and to strictly separate the organization's core activities and digital activities and to establish a separate dedicated digital business unit. The last approach is sensible when an organization can maintain two distinct business models simultaneously. With regard to DTG processes, the organization should develop and implement its digital strategy which will define all the tasks, activities and roles related to the organization's digital innovation activities. DTG relational mechanism is complementary to the structure and processes. It takes place when the implementation of formal structure requires internal and external communication among the actors. Relational mechanism facilitates active participation and knowledge sharing among different parties

in order to get the general alignment of IT and other business departments (Wiesböck and Hess, 2019).

Wiesböck & Hess summarized the analysis of four main research streams of digital innovation in the form of the "linking" framework. They state that development of digital initiative regardless of category could take place if there are active enables for digital innovation within an organization, that in their turn could take place only if the organization has a dedicated governance approach (Wiesböck and Hess, 2019).

Digital disruption (Digital innovation and disruptive innovation)

Digital innovations are often perceived as radical, since they bring new and different solutions to the markets and industries. Because of their capability to change the basic status quo, they tend to be labelled as disruptive, correspondingly as digital disruption. As it was stated above, the concept of disruptive innovation is being misused by people and therefore ambiguity took place. The vague and highly subjective perception of the disruptive innovation inevitably affects in the same way what regards digital disruption. Baiyere and Hukal (2020) wrote a paper with the goal of clarification of this issue.

Most scholars and business players generally use the term 'digital disruption' when they describe changes that happen within some areas due to the influence of digital technologies. However the term is widely misused and deflects from its original meaning. Therefore, it is important to establish the borders. According to Baiyere and Hukal (2020), digital disruption is "*the alteration of a domain-specific paradigm due to the digital attributes of an innovation*" (Baiyere and Hukal, 2020, p. 7). The definition drawn by them is based on two theoretical roots of digital disruption: disruptive innovation and digital innovation.

Baiyere and Hukal (2020) described disruptive innovation as innovation that leads to the decimation of other entities (e.g. product, company or industry itself). The term implies three defining characteristics: impact, relativity and temporality. *Impact* as a first characteristic stresses the impact that innovation creates in contrast to disruption from the novelty. Disruptiveness of the innovation measured by the effect on the entities, and does not need to be superior to the innovation itself. Second characteristic — *relativity,* covers the idea that disruptive innovation is not self-

sufficient as a concept, on the contrary, in order to be called disruptive it should be related to something that is being disrupted by this innovation. The last characteristic — *temporality,* means that disruptiveness is a time-based concept. Disruptive innovation dissolves with the time, matures and then becomes subjected to be disrupted by other innovations (Baiyere and Hukal, 2020).

The authors define digital innovation as the combination (recombination) of digital technology to create novel output. On the part of this concept, they outline three characteristics: *digital technology, recombination* and *generativity*. First, *digital technology* corresponds to the unique attributes of digital technology to handle digital information. These attributes include: *homogeneity* — information in digital form can be stored, transformed and transmitted by any digital technology with computing capabilities; *edibility* — digital technologies are malleable to changes by interactions with actors and other technologies; *self-reference* — digital technology is created on the basis of digital information and vice versa. Second, *recombination* implies that combination of digitization and digitalization enable diverse interaction and thus create more inputs for innovation. The last characteristic, *generativity* relates to the ability of digital innovation to create new things beyond its initial conception (Baiyere and Hukal, 2020).

Based on this analysis authors conclude that digital disruption should be clearly identifiable as change of status quo within a given domain, it should be based on digital technologies, and should be in the form of something new or an enhancement of existing elements (Baiyere and Hukal, 2020).

Museum practice

Museums as cultural institutions with specific tasks have not changed much throughout time. They still remain non-profit organizations with the main tasks as acquisition, preservation, research, exhibition, interpretation, dissemination and communication of the collection for the educational purpose. The collection of the museum is based on its scope and could include artistic, cultural, historical or scientific objects. Art museums that are of particular interest for this paper are primarily concerned with visual art that is displayed mainly through permanent or temporary

exhibition. However, art museums are frequently used as a venue for other artistic activities or performances. Although the functioning idea behind the museums have not changed much, the paradigm shift in their modus operandi is obvious. This change is widely acknowledged, however the emotional perception of the change varies greatly.

Museum for nobody

The more critical and sharp perception of the change that is taking place within the museum landscape is expressed by James Panero (2012, 2016). His point of view is reflected in the quote of Stephen E. Weil, who identified how museums were moving from "being about something to being for somebody" (Panero, 2016). Panero argues that the traditional focus of museums was on their permanent collections and on taking care and protecting of the art, but now it is in a big way shifted towards the visitor experience, which undermines the museum's cultural importance (Panero, 2012; 2016).

James Panero supports his argument by analyzing the initial underlying idea behind the European and American museums in the past and nowadays. Generally speaking, the identity of European museums were intangibly tied to a permanent collection held and displayed in order to represent the characteristic ideals of their respective nations. This close association between the permanent collections of the museum and national ideas are underscored by the type of the ownership — even now some form of government control takes place. American museums have different missions but the main similarity is that they are supported by private individuals, largely through private donations. American museums are some sort of the embodiment of the virtue — transferring of private wealth to the public trust. Panero principally ground his position on example of American museum practice (Panero, 2016).

He states that the American museum emerged out of belief in the idea that virtuous people with passion may voluntarily create institutions in the public interest without the involvement of the government. Therefore museums' treasures and art objects serve as a tangible manifestation of this idea. This tangible heritage is of great symbolic meaning for Panero. Therefore, he is highly deprecative towards the change that happened in the twentieth century. He defines it as 'creeping

professionalism' that in the name of good business, namely maximizing revenues and attendance numbers works against the founding principles of museums (Panero, 2012).

He mentioned deaccession (the selling of permanent collection's art piece for profit) as an apparent case. Even though deaccession can free up the second-rate work from the storage in order to obtain the piece that would be more suitable for the museum's mission, cultural institutions were infected with the idea of treating collection as a source of fast money. Museums claimed that the work does not fit their mission in order to label it as second-rate. Nevertheless, controversy about such selling and negative publicity contain it to some extent (Panero, 2012).

The second argument Panero uses to support his idea is the demolition of the historical architectural composition of the museums. He states that the current museums' capital project includes the construction of new restaurant places, entertainment venues and contemporary halls. Although, this construction is particularly seductive, it is implemented on the cost of original vision of the building and its architectural history. Panero uses the expression "a café with the art on the side" to vividly stress his point. Nevertheless, he states that in many cases this change in appearance was benign (Panero, 2016).

The last argument is that contemporary museums, instead of learning from history and stressing its importance, tend to show support for the superiority of the present over the past. Instead of being an ark of culture that manifests its own cultural importance and the value of its collection, museums focus on the visitor and his/her social self-reflection. Panero thinks that the idea of becoming a socially oriented museum, and thus, focus the efforts on meeting contemporary needs of great topicality, now is shaped in destructive and ominous form. This overall recentering of the experience of the museum around the visitor, basically is the form of entertaining of his/her egocentrism. Panero symbolically compares the museum as completely dedicated to the visitor experience with a golden toilet. He finishes the point with these words: "*This is the end result of the "museum for somebody": a museum without objects that is ultimately objectless—a museum for nobody"* (Panero, 2016).

Museum for somebody

The variety of the authors is describing the change in paradigm among the museums in a not so spiteful manner. They basically acknowledge the shift in the consumer behavior that resulted in the economy of experience. Tahari and Jafari (2012) argue that our society is becoming a leisure society. People tend to get more easily bored, they are more restless and show less interest in serious things. Intensified pace of life results in more stressful daily experience, which motivates people to look for faster ways of satisfaction. In order to cope with the reality of life people pursue leisure activities on an unprecedented scale (Tahari and Jafari, 2012).

Museums have traditionally played an important role in providing people with excitement, happiness, escapism and learning. Museums have a capacity to differentiate feelings and emotions by manipulation and interpretation with the art. However, nowadays, due to the rapid development of leisure industries, museums have to compete with the abundant variety of other actors — cinemas, theaters, musical venues, game centers, malls etc. Basically museums have to compete with everything that seeks for the time and money of the people dedicated for leisure. These 'competitors' put a lot of effort to attract and engage the customers both in physically and virtual spaces. This inevitably affects the museums. The latest now have to develop and sustain a high quality engagement of the customers, who are in constant demand for something different and memorable (Tahari and Jafari, 2012).

Tahari and Jafari (2012) argue that engagement itself is partially based on the experimental consumption. Among the list of types of experimental consumption, they highlight the two most relevant for contemporary museums — consumption as experience and consumption as play. Consumption of experience relates to subjective and emotional reaction of visitors to the given objects, while consumption as play relates to the user involvement via objects as a means of interaction and entertainment. For museums, such experiential approach to consumption is of particular use, since it reflects the emotional behavior of visitors and deals with the symbolic meanings and values in contrast to instrumental ones (Tahari and Jafari, 2012).

Another aspect that describes the modern shift in customers behavior is the active role of customers in production and consumption of experience. Museum visitors are interested in co-creating their experience (Tahari and Jafari, 2012). Visitors want to be actively involved. Therefore

there is a challenge for museums to synchronize their goals with the experience of the visitors. This balance between the role of the museum as a cultivator of taste and knowledge and individual and social needs of visitors based in intrinsic motivations and interest, represents a modern conundrum for museums (Tahari and Jafari, 2012).

According to Tahari and Jafari (2012), museums understand the importance of meaningful engagement of the visitors and now are trying to retain their attention and to increase the level of satisfaction with innovative presentations and interpretation. However, this task is complicated by the simultaneous presence of two overall types of cultural consumers — the ones who prefer familiar and common objects and events, and the other ones who enjoy unfamiliar and challenging situations that positively activate their imagination. Hence, museums try to present different objects and activities and to combine learning and fun experience in order to raise the level of satisfaction (Tahari and Jafari, 2012).

In contrast to James Panero (2012, 2016), Tahari and Jafari (2012) argue that museums are social constructs, and they need to have a place in the mainstream of contemporary life. Therefore, the museum's most crucial task is to engage the public. The main goal is to remain at the centre of social reality of life, in order for museums to sustain their important historical role in the transferring of generational knowledge (Tahari and Jafari, 2012). Although Tahari and Jafari acknowledge that museums' focus on commercialization and popularization might undermine the traditional role of the museum, they argue that this evolution is forced by the leisure-driven society and increasing competition for the leisure time and money of visitors. In order to outdo this competition, the general image of the museum should be changed with consideration of public interest and patterns of consumption (Tahari and Jafari, 2012).

Old versus new museology

The two different approaches or attitudes may be described as original (old) and new museology. McCall and Gray (2013) have diligently described the dynamic relationship between these two kinds of museology. Museum functions and roles have changed on the basis of expectation that museums had to rethink their philosophy. Having analyzed a wide array of sources, authors conceptualize these types of museology.

Original museology basically implies the traditional ideas that museum practices were functionally based around collections and curatorships were held central in the museum practices. This original idea of a museum as a collection-focused, building-based institution was perceived by the general public as a cultural authority that is holding and communicating true knowledge. The main mission of the museum was to civilize and to discipline the overall population. This was reflected explicitly in differentiating between 'high' and thus, 'elitist' arts and 'low' and thus, 'mass' arts. Retrospectively we can say that the museum operated in the best interest of a narrow social dominating group. In 1971 it was claimed by Hudson that museums were isolated from the modern world, elitist, obsolete and a waste of public money (McCall and Gray, 2013, p. 20). The 'new museology' developed based on the shortcoming of the previous one.

The 'new museology' claimed that the role of museums in society needed to be changed. It encourages the shift from the functional idea of traditional museums as a collection-based entity to the new social and political roles of the museums. 'New museology' implies new communication and new styles of expression, as well as the redistribution of curatorial power within the museums. Perhaps the most obvious changes are reconsideration of relationship with the general population, namely the promotion of the wider access and more thorough representation of diverse groups, and more active role of the public in both functions as visitors and curators. Generally speaking, the museums changed the focus from object to the ideas as well as changed in the identity from being a legislator to being an interpreter of arts (McCall and Gray, 2013).

It should be mentioned based on McCall and Gray (2013) that the discourse between old and new museology is still quite dynamic. The new museology has had less practical effect than it could have been expected. Partially because museums, roughly speaking, were left on their own to find the way of incorporating new philosophy into their practice. Therefore, nowadays the tension between approaches is still part of the museum reality (McCall and Gray, 2013).

In the situation of opposition of two contrast viewpoints on this specific issue, the truth is usually somewhere in the middle, as wise people say. Speaking about the two above mentioned different attitudes towards the paradigm change among museums, it is also the case. The museum has to find the right balance in its activities. On the one hand, it should maintain the significance of their role as the ark of culture and thus, cultivate the taste and knowledge among the visitors. On the

other hand, the external environment is constantly changing and museums can not simply ignore reality, therefore they should take into consideration the tendencies and interest of the general public, so they will remain the important social and cultural players in the life of people (McCall and Gray, 2013).

Marketing lense

Philip Kotler, one of the most prominent and important figures in the marketing area did not ignore the museum sphere. Together with his brother Neil Kotler (2000) they reflected on the change that museums are subjugated to and recommended an approach of marketing perspective on how to embrace this change. They acknowledge the struggle of museums with issues of simultaneously maintaining their integrity as an institution with obligation to collect, conserve, research and exhibit the collection with the educational purpose on the one hand, and making the museum more competitive and popular on the other hand. Nowadays, museums are not only trying to reach larger audiences but also, they are creating new offerings and services that will raise the satisfaction level and overall positive outcome of the visitors. Museums are trying to change their perception from the elitist and inaccessible to congenial and comfortable for the general public (Kotler and Kotler, 2000).

Kotler and Kotler (2000) outline three different strategies that museums could embrace in order to meet the changes: improving the museum going experience; community service; and market repositioning toward entertainment. It should be mentioned that these strategies are interrelated and definitely are not mutually exclusive. Afterwards, the authors list ten museum goals sorted into three groups in relation to the strategies. These goals consist of audience goals (audience growth, membership growth, donor growth and community service), product goals (improving offerings and programs; and improving design and services), and organizational/competitive goals (image-building, building a consumer centered organization, increasing income, and generating collaboration and partnerships). The specific set of the goals should be tailored in a complementary way to the specific institution (Kotler and Kotler, 2000).

Improving the museum going experience strategy aims at providing richer exhibits and programs, designing new elements of experience, introducing new services, and more comfortable and accessible facilities. These changes deal with both core activities that directly deal with objects

and collections, and supplementary activities (e.g. gift shops, restaurants, interactive events etc.). The second strategy community service is aimed to raise the museum's image and local impact. In this case, museums adjust and/or create their programs and services in connection to the common needs and interests of the local community or region. The last strategy of market repositioning toward entertainment is chosen by the museum when it wants to radically redesign its facilities and offerings in order to compete for an entirely new audience with other leisure organizations. This strategy implies that the focus from educational purpose shifts on the popular and entertaining activities (Kotler and Kotler, 2000).

According to Kotler and Kotler (2000) the last strategy evokes the most criticism. The first objection is that such a strategy undermines the core of the museum mission as an institution with primary educational purpose. The second objection is that museums are distinctive institutions with focus on collection. Thus, non-collection-based activities of the museums take away the alternative approaches of knowledge from the public. Third objection is that by emphasizing entertainment, the museum decreases its value as a unique form of recreational activity centered around the unique profound collection that other entertaining organizations do not have (Kotler and Kotler, 2000).

Kotler and Kotler (2000) identifies a list of marketing tools that can help museums in pursuing their goals, that includes research and analysis techniques, STP (segmentation, targeting and positioning) and marketing mix 4P (product, price, promotion, place). 4P marketing mix is of special interest for analyzing digital initiatives in the museums.

Product	Managing and renewing exhibits, collections, programs, creating new offerings and services
Place	Designing a comfortable museum facility as well as distributing museum offerings to schools, traveling exhibits and websites and other electronic media
Promotion	Advertising public relations, directing marketing, sales promotion, and integrated communications to audiences, collaborators and competitors
Price	Pricing admissions, memberships, gift shop merchandise, special events, donor acknowledgment, discounts to attract visitors in all seasons, including off-season, and to attract under-served constituencies
From the Kotler and Kotler (2000)	

Kotler and Kotler proposed a 4P marketing mix as a marketing tool for museums. However, the 4P marketing mix is better suited for the product and thus, better fits the organizations that produce and sell products. The museum as a cultural venue, that mainly operates in the role of intermediary between the already created art pieces and the public, mostly provide the service to the visitor, rather than the product (Kotler and Kotler, 2000). Even though product categories in the marketing mix 4P for the museums according to Kotler and Kotler include activities in terms of exhibitions and services, in my opinion it is not sufficient to assess the marketing efforts of the museum from the product perspective. The more suitable tool is an extended marketing mix 7P that is also regarded as service marketing mix.

Margee Hume (2011) in her paper stresses the importance of service marketing paradigm for museums. She also argues that more advanced concepts from service marketing should be applied to the museum services. Hume notes that the entire transaction received by the visitor is a service experience. In the museum context, this experience is based on both core and peripheral services provided by the museum. The core service of the museum refers to the provided product through the exhibitions, curatorship, research and other educational fulfilling in cultural forms, while peripheral or augmented services include cafes, shops and other entertaining or experimental activities of the customer experience (Hume, 2011).

As it was previously stated, extended marketing mix 7P is more appropriate for analyzing the museums from a marketing perspective. This marketing mix becomes of even greater usefulness when we deal with digital initiatives of the museum, since not all of them are having the obvious outcome in the eyes of the visitors. Service compared to the product has some distinctive characteristics. They are: intangible; heterogeneous in nature; tightened to the place of service delivery (simultaneously produced and consumed); perishable (could not be stored or returned etc.) (Booms and Bitner, 1981). Service marketing paradigm of 7P was introduced by Booms and Bitner (1981). They developed 3 other Ps on the basis of the 4P concept in order to create a more relevant service industries marketing mix. These new Ps include physical evidence, people and process.

Conceptualization of elements of 7P marketing mix	
Product (service)	Is something that satisfies the needs and demands of the customer. It could be a tangible product, or an intangible service.
Price	The amount of money that customer pays. Price is based on a wide variety of factors (type of the ownership, type of organization etc.) and the pricing thus drastically differs among the organizations and industries
Promotion	All the communication tools that is used by the organization to promote their product/service, to share information among the target audience and create the initial interest, thus stimulating the purchase. ATL, BTL marketing, personalized and non-personalized communications etc.
Place (distribution)	It is a place where the product is sold, or the service is delivered. It could be in the form of a digital space (e.g. web-site), instead of typical physical site.
Physical evidence	Due to the intangible and perishable nature of the service customers basically do not see what they are buying, it is not represented in tangible form. Physical evidence is sort of visual metaphor what service represents. It serves both goals — it gives the idea about the service to the customer, and it surrounds and affects the customer during his or her service experience. The variety of elements are included into physical evidence from the environmental physical conditions (architecture, temperature) to navigation (maps and signs) as well as point-of-sale materials (brochures, information flyers etc.)
People	People who are directly or indirectly are involved into the trade of product or service. This group consists mainly of employees who contact with the customers. However, not employees of the organization could be represented in this group as well.
Process	Procedures and activities within the organization that defines the service delivery.

Danish context

Holdgaard and Simonsen (2011) stated that the paradigm shift among the Danish museums has taken place. Namely, museums are changing their main focus from their collection to a user, thus becoming more user-oriented, open and less elitist. Although digital technologies are widely accepted as means to attract new audiences, the research on how digital technologies and media affect museum practice is quite scarce. Holdgaard and Simonsen stated that in the Danish context such research could be considered as almost non-existent (Holdgaard and Simonsen, 2011).

One of the peculiarities of Danish museums according to authors is that one of the key activities defined for the Danish museums is *formidling* (Holdgaard and Simonsen, 2011). English translation of this word that covers the dissemination of knowledge is 'communication'. Nevertheless, this translation does not reflect the whole meaning of the word. For instance, in the Danish Consolidated Act on museums *formidling* refers to a one-way distribution of knowledge (The Danish Ministry of Culture, 2006), from museum to the visitor. According to the International Council of Museums (2017) the similar activity is described as communication and thus is a reciprocal approach with the help of exhibiting (ICOM, 2017).

Holdgaard and Simonsen (2011) state that etymologically *'fomidle'* means to act as a link or connection between two parts. Nevertheless, the idea behind the word is still ambiguous, and perceived differently among the Danish museums. Based on their research, the authors conclude that Danish museums distinguish heavily between *formidling* (which usually is used in the connection to research, exhibition and education) and communication (which is a reciprocal relationship between the museum and the audience, that captures the new trend of the experience economy). The latest one is often perceived as a secondary to *formidling* (Holdgaard and Simonsen, 2011).

Holdgaard and Simonsen also conclude that Danish museums' increased interest in digital technologies online and on-site generate new possibilities. However, formidling and communication should be more tightly aligned in the practice of the museum, and together with digital technologies they could be of great use for the museum practice, especially in the times of experience economy (Holdgaard and Simonsen, 2011).

Research methodology

In this thesis I used *qualitative* research. I share the interest in the role of digital technologies in museum practice, therefore, qualitative research offers a chance to connect my study to my area of interest. According to Robert Yin (2016) qualitative research allows the researcher to understand how people act in their real-world settings. One of the biggest limitations that is avoided by choosing qualitative research is being devoted to studying the past events instead of on-going ones. Yin (2016) argues that because of the weight usage of qualitative research among different academic disciplines and professions, the specific definition of a succinct definition of qualitative research is absent (Yin, 2016).

According to Yin (2016) despite the non-existent unified qualitative research methodology, qualitative research is based on the five distinctive features (Yin, 2016, p. 9):

- Studying the meaning of people's lives in their real-world roles;
- Representing the views and perspectives of the people;
- Explicitly attending to and accounting for real-world contextual conditions;
- Contributing insights from existing or new concepts that may help to explain social behavior and thinking;
- Acknowledging the potential relevance of multiple sources of evidence rather than relying on a single source alone.

Taking the above into consideration, the only reasonable methodology that will serve the purpose of my thesis is qualitative research, since it provides possibility to address the on-going event and is driven by desire to use emerging concepts to analyze the event with the connection to the external and internal conditions where the event takes place.

Philosophy of science

Saunders et al. (2009) argue that research philosophy is an important point to establish in the research process before you start to choose data collection techniques or analysis procedures. According to Saunders et al. (2009) research philosophy is a term that relates to the development of knowledge and the nature of that knowledge. The specific research philosophy contains important assumptions about the way the researcher sees the world, and the way the researcher sees the relationship between knowledge and the process by which it is developed in particular (Saunders et al., 2009). Research philosophy forms a base for a chosen research strategy and chosen methods. Saunders et al. (2009) distinguish four philosophical perspectives for research — *positivism, realism, pragmatism and interpretivism* (Saunders et al., 2009).

The research philosophy for this thesis is *pragmatism.* Saunders et al. (2009) suggests that in this philosophical perspective the most important consideration is the research question. They argue that pragmatism is as a result when the researcher thinks that the choice between *positivism* and *interpretivism* is somewhat unrealistic in practice (Saunders et al., 2009). The philosophy of *positivism* is the one that will be probably adopted by natural scientists. Such research is centered around working with observable reality that results into the law-like generalizations. The *interpretivism* comes as a counterbalance approach, which suggests that the researchers should understand the differences between humans as social actors. Researchers should treat people differently as he or she treats inanimate objects. This approach is heavily based on subjectivity, interpretation and empathy. Therefore, the goal is to understand the world from the point of view of social actors (Saunders et al., 2009).

Adopting *pragmatism* as research philosophy enables you to study the area of your interest in the different ways that you find the most appropriate for answering your research question. As any other research philosophy pragmatism is based on three major philosophical ways of thinking — *ontology, epistemology and axiology* (Saunders et al., 2009).

Ontology — is "*the researcher's view of the nature of reality"* (Saunders et al., 2009, p.119). Saunders et al. describes two main aspects of ontology — *objectivism* and *subjectivism*. *Objectivism* implies that social entities exist in the reality external to social actors. In other words it states formal and structural truth that is shared among different entities and to which social actors are

subjugated. *Subjectivism* views reality as a social construct. Such a way of thinking implies that in order to understand a phenomena researcher should explore perceptions, consequent actions and social interactions of actors. The focus should be on motivations and interpretations of people in the different situations in a constant change of context (Saunders et al., 2009). *Pragmatism* from an ontological perspective enables the researcher to have the most appropriate view on the reality that serves his or her research. In other words, the researcher acknowledges the objective truth of reality with the consideration of subjective elements of social actors (Saunders et al., 2009).

Epistemology — is *"the researcher's view regarding what constitutes acceptable knowledge"* (Saunders et al., 2009, p.119). Saunders et al. argue that the most important distinction is whether the researcher considers as important knowledge 'facts' or 'feelings'. For the 'facts' researcher rarity is represented by real inanimate objects. While for the 'feelings' researcher is working with feelings and attitudes as social phenomena that have no exact manifestation in reality. If you maintain a pragmatic view, observable phenomena (facts) and subjective meanings (feelings) behind it could be integrated and provide acceptable knowledge (Saunders et al., 2009).

Axiology — is "*the researcher's view of the role of values in research*". (Saunders et al., 2009, p.119). Values of the researcher manifest themselves during the whole research from the choice about the topic till the choice of data collection techniques. *Pragmatism* implies that values play an important role in the interpretation of results. A researcher who chose *pragmatism* as a philosophy of research adopts both objective (thus value-free) and subjective (thus value-bound) points of view (Saunders et al., 2009).

Research approach

The research approach that I used for this thesis is mainly *inductive*. In *inductive* research you begin with collecting data and then develop a theory as a result of your data analysis (Saunders et al., 2009). Inductive approach relies more on the qualitative data in order to understand better the nature of the problem. One of the strengths of an inductive approach is the ability to develop the understanding of the problem by understanding people's interpretation of their social reality. *Inductive* approach does not limit you in terms of alternative explanations in comparison to

deductive approaches with exhaustively defined initial hypotheses. Moreover, by using an inductive approach the researcher is more concerned with the context of phenomena, and therefore deep study of small samples of subjects might be more appropriate than a large one in deductive approach. It should be noticed that such research includes the researcher as a part of the process and permits him or her to make changes in the research focus along the process (Saunders et al., 2009).

However, Saunders et al. (2009) argue that grounded theory as a research strategy (this point will be addressed later in this thesis) is a 'theory building' based on a combination of inductive and deductive approaches (Saunders et al., 2009). Therefore, the choice to use such research strategy adds a deductive facet to the primary inductive approach.

Research purpose

According to Saunders et al. (2009) the next step after determining a research approach is to define the purpose of your research that is reflected in your research question. Authors point out three different research purposes — *exploratory, descriptive* and *explanatory* (Saunders et al., 2009).

Exploratory study is about finding out "what is happening; to seek new insights; to ask questions and to assess phenomena in a new light" (Robson 2002, p.59 as cited in Saunders et al., 2009, p.139). Exploratory focus is especially useful if the researcher is trying to clarify an understanding of a problem during his or her research. Saunders et al. (2009) point out that there are three principal ways of conducting exploratory research — a search of the literature, interviewing experts and conducting focus groups interviews. Additionally they state that the exploratory study provides you with flexibility and adaptability. Therefore, even if the direction of initial interest of the researcher remains the same, the focus of research progressively narrows in the process of study (Saunders et al., 2009). Taking into consideration the form of research question and the changes that have taken place in the process this thesis is *exploratory*.

Research strategy

Robson (2002) defines case study as "*a strategy for doing research which involves an empirical investigation of a particular contemporary phenomenon within its real life context using multiple sources of evidence*" (Saunders et al., 2009, p. 145). The case study is often used in exploratory research and is able to generate the answers to a 'how?' research questions. It also implies that data collection techniques may be various and be used in combination (Saunders et al., 2009). This approach underscores the importance of the context in which particular phenomenon is being studied.

The case study research is of particular use for this thesis, since the phenomenon that is in the focus of this work is not widely observed in a given context. According to Yin (2003, as cited in Saunders et al., 2009) classification of case study strategies the case study of this thesis is multiple and embedded. Multiple because more than one case is analyzed in order to understand whether there is a common pattern, and embedded because a number of social actors with different roles and different levels of involvement in the studied process are considered.

Saunders et al. (2009) state that research strategies are not mutually exclusive and therefore it is possible to combine different strategies as long as it is beneficial to answer the research question. Another strategy that was used for this thesis is *grounded theory*. Although grounded theory is often perceived as the example of the inductive approach, it should be considered as a combination of induction and deduction. This approach helps the researcher to predict a behavior of social actors. In this strategy, theory building is based on the initial series of observations. Therefore the theoretical framework of research is not developed beforehand and then tested. Developed theory on the basis of observation leads to generation of predictions that are then tested. This process is based on a number of iterations of development and testing of the theories (Saunders et al., 2009).

Method choice

According to Saunders et al. (2009) the method that is used for this thesis is a *multi-method qualitative study*. On the contrary to the *mono method* that implies that researcher uses a single data

collecting technique, *multi-method* implies that the researcher uses more than one data collection technique to answer the research question (Saunders et al., 2009). In my case I used both primary (semi-structured interviews) and secondary data (analysis of lectures and workshops of experts in the field, and social actors that are involved in the given context).

Time horizon

Saunders et al. (2009) state that it is important for the researcher to decide whether he or she is planning the research to be either a 'snapshot' taken at a particular time or a 'diary' as a representation over a given period. They refer to such choices as *cross-sectional* and *longitudinal*. My research is not focused on studying change and development of the phenomenon, on contrary it is about studying a particular phenomenon at a particular time. Therefore the time horizon of this thesis is *cross-sectional.*

Nevertheless, some clarification should take place. The data for this research was gathered over the period of time — primary data was collected during this calendar year, but secondary data was collected the previous year. The phenomenon that is studied is the process by definition, and therefore stretched in time. Moreover, this process is not subjugated to dynamic changes and overseers since it is based on the strategies and relatively long projects held by institutions. Hence, the time horizon of this research is cross-sectional, despite the fact that data collection took place over a period of time.

Data collection techniques

Primary data. Semi-structured interviews

The primary data collection method for this research was a *semi-structured interview*. According to Saunders et al. (2009), an interview is a purposeful discussion that involves two or more people and can help the researcher to get valid and relevant data to the research question. If the question is not finally formulated, interviews provide research with data on which the final formulation could be based. Authors outline such types of the interview — semi-structured, in-

depth and group interviews, and structured (Saunders et al., 2009). In this paper for primary data collection the *semi-structured* interviews were used as a method.

In semi-structured interviews the researchers will prepare the list of questions and topics to be covered in advance. However, the order of questions could be changed depending on the conversation. Moreover, taking into consideration specific organizations contexts, the researcher may omit some questions or ask additional questions that were not prepared beforehand. The gathered data is to be recorded by audio - or video-recording or in the form of notes (Saunders et al., 2009).

According to Saunders et al. (2009), semi-structured interviews are of great use when it is important to the research to understand the reasons behind the decision of your interviewees, their attitude and opinions. Such interviews enable the researcher to ask the interviewees to explain, or build on, their responses. During the interview the discussion could flow into previously not considered areas, and the interviewees could be provided with "*an opportunity to hear themselves 'thinking aloud' about things they may not have previously thought about"* (Saunders et al., 2009, p. 324).

Secondary data

Saunders et al. (2009) describe secondary data as the data that "*have already been collected for some other purposes"* (Saunders et al., 2009, p. 256). It includes both raw data and published summaries. They state that secondary data could be a useful source to answer the research question. Secondary data also provide comparative and contextual data to the one that you already collected. Saunders et al. (2009) outline three main sub-groups of secondary data — *documentary data, survey-based data,* and *multiple source data.* Secondary data that were used in this thesis is *documentary data*. Documentary data include written materials and non-written materials. To the first group belong such documents as journals, books, articles, interview transcripts, documents of internal communication, organization's databases, organization's websites etc. To the second group belong voice and video recordings, pictures, films and television programs etc. (Saunders et al. 2009). In this thesis there was used data that was collected during the last year for the research about SMK Open, therefore it goes into the category of secondary.

Yin (2016) suggests that there are four potential data collection methods for qualitative research — *interviewing, observing, collecting and examinin*g, and *feeling*. According to Yin (2016), "*collecting refers to complying or accumulating objects (documents, artifacts, archival records, videos, or social media information) related to your study"* (Yin, 2016, p. 154). Objects could be collected from electronic sources and websites and could provide you with valuable data about the things that are not directly observable (e.g. organizational policies, documents and other texts that include information about the strategy of organization, its mission, slogans and goals, etc.). Yin (2016) states that using documents could complement the data gathered by conducting interviews. They will add new actual knowledge to the reported perception of the situation by interviewees.

Data set

TItle	Type	Date	Relevance	Appendix
Primary data				
Merete Sanderhoff	Internet-mediated Interview	01.07.2020	Museum inspector and senior adviser	Appendix 1
Christina Jensen	Internet-mediated Interview	03.07.2020	Digital Project Manager	Appendix 2
Grayson (name changed)	Face-to-face interview	06.07.2020	Service coordinator	Appendix 3
Secondary data				
Glyptotek Strategy 2018-2020	Written material	2018	Strategic document	Appendix 4
SMK Research strategy 2018-2021	Written material	2018	Research strategy (collection and dissemination)	Appendix 5
SMK for alle. SMK-Strategi 2018-2021	Written material (in Danish)	2018	Strategic document	Appendix 6
Christina Jensen	Face-to-face interview	29.04.2020	Digital Project Manager	Appendix 7
Merete Sanderhoff. Workshop	Video Recording	19.11.2018	Museum inspector and senior adviser	Appendix 8
Jasper Visser. Workshop	Video Recording	12.12.2012	Digital consultant	Appendix 9

In both cases for this research there are examples of unique and important institutions. They are significant actors in Danish cultural landscapes. Both of them could be used as a benchmark of analysis due to their history, reputation and cultural importance. The main case is SMK which is recognized as the principal museum by the government. The second case is Glyptotek which is not so strongly subjugated to the government. Nevertheless, it is a great complementary case for the research.

Main case. Statens Museum For Kunst (SMK) is the largest museum in the country located in the centre area of Copenhagen. According to the Danish Consolidated Act on Museums, The National Gallery of Denmark is the principal museum for visual arts in Denmark and as a museum is obliged to collect, register, preserve, research and disseminate the Danish culture, art and natural history. More specifically, the Gallery responsibility is to illuminate Danish and foreign visual arts, primarily from the western world after 1300 AD; to establish and maintain representative collections regarding Danish art; highlight its collections and relate them through participating in international cooperation; and the collections of the Gallery shall provide a basis for research and for the general educational activities of the Gallery (The Danish Ministry of Culture, 2006).

The history of the museum starts in the 16th century. Since then, the museum has collected a huge amount of art objects. Currently the collection consists of more than 9000 paintings and sculptures, approximately 240.000 artworks on paper and more than 3500 plaster casts of sculptures from Antiquity, the Middle Ages and the Renaissance. The collection of Danish National Gallery attracted more than 300.000 visitors per year (before Corona Virus).

Second case. According to official website The Ny Carlsberg Glyptotek is an art museum in Copenhagen, that is primarily centered around sculpture collection. Glyptotek has been open to the public since 1897. The collection of the museum is built around the private collection of Carl Jacobsen. Currently the collection consists of more than 10.000 works of art and archaeological objects. Some objects are 6000 years old. The collection primarily represents art and objects Ancient Egypt, Ancient Greece and Rome, Etruscan Culture, and Danish and French art of the 19th century.

Data analysis

As Saunders et al. (2009) point out, qualitative data is non-standardized and complex in nature, therefore, in order to be meaningfully analyzed it should be summarized, categorized or restructured as narrative. However, before proceeding to data analysis, the collected data should be prepared for it. Collected interviews were audio and/or video recorded and subsequently transcribed and reproduced as a written document using the actual words. Saunders et al. (2009) mention that researchers tend to correct the grammar and use of language during the transcription. However, I transcribed data the way it was recorded without correcting to ensure factual accuracy. Also, during the transcription I used "…" to indicate when interviewees have taken a pause for shaping they thoughts.

After the data is prepared the researcher proceeds to its analysis. Analysis of qualitative data could be based on using a *deductive* or an *inductive approach*. However, in practice research is likely to combine elements of both approaches (Saunders et al., 2009). This combination with the strong gravity to inductive approach took place in this thesis as well. I approached analyzing data with some defined theoretical perspective based on my prior knowledge and observation to form an initial general analytical framework. Nevertheless, during the process, this theoretical perspective was shaped and changed with the respect to the new information that I encountered.

For this thesis, I use summarizing and categorization as the types of qualitative analysis processes. According to Saunders et al., (2009) summarizing of the data means to compress long statements into brief key points. It is helpful to outline the principal themes that have emerged from the interviews and other data. Categorization involves two activities — developing categories and attaching these categories to meaningful units of data, so as to create chunks of data (Saunders et al., 2009). In my case, constant iterations between analyzing the data and correspondent shaping of the initial literature framework mean that categories were derived from both my data and my theoretical framework.

According to Strauss and Corbin (2009, as cited in Saunders et al., 2009) there are three main sources to derive names for categories: utilizing terms that emerge from data; names are based on the actual terms used by participants; and names are derived from terms used in existing theory and literature. In my thesis names for categories were derived from terms used in existing theory

and the literature, that were correspondingly chosen to cover the meanings expressed by participants (Saunders et al., 2009).

The analytical procedure that was used in this paper goes with the name *template analysis.* Saunders et al. (2009) categorize this procedure as inductively based one. However, they point out that this analytical procedure uses deductive and inductive approaches. A template is basically a list of codes or categories that represent the themes revealed from the data. Combination of deduction and induction manifests itself in the way that codes are initially predetermined and then amended and added during the process of collecting and analyzing data (Saunders et al., 2009).

Saunders et al. (2009) describes this procedure based on the work of King (2004). King (2004, as cited in Saunders et al., 2009) differentiate template analysis from procedures used in grounded theory. In contrast to grounded theory, template analysis permits the prior specification of codes to analyze the data. Moreover, template analysis is less structured and prescriptive and therefore provides the researcher with flexibility to adjust it to the needs of the research.

Elaborating more on King's idea Saunders et al. (2009) state that template analysis involves categorization and unitizing of data, and allows codes to be shown in hierarchical manner that includes different levels of codes. These levels of codes represent basically categories and subcategories of the chunks of data. This hierarchy could be altered during the collection and analysis of data. So, codes are being revised and changed, or removed as well. During the data processing, template analysis serves as an analytical procedure that helps the researcher to finalize his or her conceptual framework that is used in the research (Saunders et al., 2009).

Saunders et al. (2009) suggest that the research may use CAQDAS (computer aided qualitative data analysis software) such as for example NVivo, or may use a manual approach. Initially I tried to use NVivo to analyze the data, but I have not comprehended how comfortably to use it and therefore decided to do summarization and categorizing manually. I used different colors to highlight parts of data that are useful for this research. I indicated different categories with different colors, at the same time as indication different sub-categories with the different shades of the color of respective categories. Even though the manual approach is considered to be more painstaking, for me it was more comfortable.

Limitations and encountered problems

Data collection process took place during an extremely turbulent period of time. The main factor was the pandemic of Corona Virus. The spread of this virus caused an acute and pervasive transformation of society and all categories of business. Government restrictions on social gathering, forcing social distancing and overall consecutive psychological downshift of people were dramatic. A lot of employees were removed from the physical facilities and asked to work distantly from home, others were fired. These changes forced companies and institutions to reshape and flip-over their daily routine and well-established business process. Therefore, the collection of data was negatively affected. Moreover, in terms of cultural institutions summer is by default the period of fluctuations, demand for museums services in the summer is dropping and museums are heavily preparing for the "reopening" in the Autumn. Summertime is also well known as a vacation period.

Mentioning the above factors, it resulted in ignorance or rejection from employees to be interviewed. While some of them gladly accepted the request, others clearly stated that they do not have time neither for personal interview nor for a written questionnaire. Some of the contacts answered only at the beginning of September. Some of the contacted employees refused to do an interview because they stated that digital innovations are not their area of expertise. This happened despite the fact that the mails that were sent were personified and stated the interest of the research in investigating the holistic perception of digital activities among employees.

The majority of interviews that constituted primary data were Internet-mediated interviews. Saunders et al. (2009) stated that some researchers argue that internet-based interviews involve limitations. Such interviews are unlikely to get the same level of interactivity and spontaneous communication in comparison to face-to-face interviews (Saunders et al., 2009). Therefore building a rapport became a challenging task. Also technical issues, such as problems with connection could take place. Due to these factors conducting interviews via the Internet is challenging. The biggest issue encountered is the limitation to build emotional connection, and inability to smoothly interrupt each other in a beneficial way for conversation due to the sound overlap (Saunders et al., 2009).

Results

Insight 1: Museums are acknowledging and embracing the paradigm shift toward new museology practice.

Nowadays, we face a substantial paradigm shift in museum practices. As well as a commercially driven entertainment sector the changes in preferences among target audiences are obvious. People now want to be more actively involved into the process of consumption of goods and services. They want their needs to be fulfilled and acknowledged, so the experience that they are paying for would be of a greater value. Institutions have to accept this and adjust their product and service proposition accordingly. Even though such a paradigm of thinking is obvious for commercial driven organizations, while they are centered around the exchange of their goods and services on money. The indulgence of such experience economy forced the museums to reconsider their position as institutions. As of now, museums compete for the audiences with a huge variety of alternatives that begins with the commercial sector that provide entertainment and finishes with the independent leisure activities of people (e.g. video gaming, streaming services etc.). In order to meet the new 'requirements' that are imposed on the museums, they have to consider implementing and maintaining the role of institutions that are not only concerned about preservation and dissemination of art from educational purpose, but also actually implement new services that provide visitors with comfort and entertainment.

Publicity is divided in terms of perception of this paradigm shift. On the one hand, such a shift is highly criticized and treated as diminishing to core values of the museum, and thus could be titled as 'museum for nobody' (Panero, 2012, 2016). At the other this leisure inclination of the museum as part of constantly developing experience economy is treated as logical and beneficial, and thus could be titled as 'museum for somebody' (Tahari and Jafari, 2012; McCall and Gray, 2013). This tension is conceptualized in the terms 'old museology' and 'new museology'.

Part of the 'new museology' is to focus on a wider group of people and create experience that will bring them to the museum. In other words, museums should be centered around people's experience and not only around collection. This aspect is well recognized in the strategy of SMK:

…SMK bring art and artistic reflections out to all people in Denmark and art lovers from all over the world (Appendix 6, p.73; translated from Danish)

As Denmark's national gallery and main museum for visual art , SMK has a task in relation to the whole country, and for all interested in addition. (Appendix 6, p.74; translated from Danish)

It is a big task to create an experience of national relevance and fellowship around an art collection and a museum, when essential parts of the population are basically not preoccupied with either art or art museums. Or when sections of the population simply choose to prioritize their time in other interests or areas. (Appendix 6, p.74; translated from Danish)

Another aspect of 'new museology' is to create an art experience that is tighten to current problems and needs of community:

...Each generation poses new questions to art. Questions that are inextricably linked to contemporary understanding of the world around us and that reflect key issues of the time - climate, migration, globalization and our perception of reality, or something completely different… we will develop the museum so that it becomes relevant to more people and to different people here… (Appendix 6, p.75)

The whole strategy of SMK is pierced with the idea of creating new relevant experiences to new groups of visitors. These samples derived from the strategy of SMK show that at the strategic level SMK realized the shift and worked towards adopting a 'new museology' approach. Such changes could also be traced in the strategic document of Glyptotek:

*In the strategy for the coming years, the Glyptotek will move from its current identity as a classical, elitist museum to a position with an engaged and welcoming approach to our visitors and the world around us. (*Appendix 4, p.47)

Towards 2020, the Glyptotek will make distinct changes in our communication and outreach to expertly and innovatively open up millennia of art and culture to diverse audiences. (Appendix 4, p. 56)

By reaching out to a diversity of target groups with exciting and relevant activities, we will increase the number of our visitors and repeat visitors. (Appendix 4, p. 57)

Speaking of the distance between the museum and general population an employee of Glyptotek mentioned:

I would say Denmark, if there are places where the distance between the general population and museums is getting closer or at least has a good ground point to get closer is Denmark. …we are trying to make a place to go daily. The place to be daily for everyone …(Appendix 3, p.35)

Implementation of digital technologies appears to be of great use when it comes to building the bridges with society and encouraging new groups of people to visit museums. Nevertheless, reaching new more diversified groups is an on-going task for museums:

...in the past five to ten years we see increasing visitor numbers, in parallel with increasing use of the digital offering we… And it is not only that is happening at SMK, it's happening in all museums in Denmark… And one theory, or hypothesis, is that the fact that digital communication has matured in a way, where cultural institutions have become really efficient in reaching out to target audiences with the right kind of content at the right time in super quality. It's a great appetizer for people to seek out these institutions and want to go there. (Appendix 1, p.4-5)

I also think that digital openness that SMK and many other institutions around the world are representing is contributing to a change in perception of museums, libraries, archives. That these are not dusty, old, irrelevant places but they are vibrant and they have content that we want to use. And that we are free to use, and it belongs to us, and we can take it and ... adapt it to our own reality. ... I believe that this is one of the keys to, actually the bridge building, we are seeing between cultural institutions, collection institutions and the general population. (Appendix 1, p.5)

...one of the challenges we still are tackling is that the diversity of audiences is not fantastic. (Appendix 1, p.5)

So, that is also part of our strategy and something that we are working on. And which we succeeded in accomplishing during the lockdown. We had more diverse dialogues with people or dialogues with more diverse people. (Appendix 1, p.5)

… especially young people they get a bit provoked by the kind of fine culture, cultural, old cultural institution type that we are, so the digital project really addresses a younger group of people, because it speaks more in the type of language that they know and want to speak with art in a more… they want the cultural level to be lower, not to be more stupid, but to be more accessible. (Appendix 2, p.17)

...the open project was actually mostly created to kind of reach out to the rest of Denmark, because SMK is located in Copenhagen as you said, and we are having hard time to reach people in Jutland and the rest part of Denmark. (Appendix 2, p.19)

Insight 2: Although digital initiatives are not yet an integral part of museum practice in terms of exhibition and dissemination of art, the Corona crisis shifts the mindset about digital technologies in a positive way.

Museums acknowledge the possible utility of digital technologies. However, the digital mindset is in the development stage. Digital technologies are mainly used as a tool for communication and not integrated into other practices. The Pandemic of Corona virus appears to be some sort of ice-breaker toward acquiring a digital mindset. According to Kohli and Melville (2018), factors of external competition affects the process of digital innovation of organization.

I mean it's a crisis, but I think etymologically a crisis also means something like a new beginning. (Appendix 1, p.2)

I would always say that they [digital initiatives] are necessary. But now we are talking after Corona situation. So, I would say now it's even more useful. ...there is a lot of very concrete situations that we need to solve and the logical answer is to do it with digital tools. (Appendix 2, p. 12)

And what we have seen during the lockdown, was that digital went from being a nice to have to a necessity, a life line for everyone. Both as private persons, but also as institutions to keep in touch with our audiences. And our directors and everyone in our institution have rally taking that on board as an experience. And have braided that experience into our overall strategy. So what we are seeing now is that what used to be more of a digital strategy has become more central for the museum's overall strategy. (Appendix 1, p.2)

Made actually quite an effort to try and integrate, maybe not so much saying digital all the time, but the mindset behind it, the openness, the dialogue, the ability to adapt to the surrounding world. We have tried to braid that into our overall strategy. So, the digital isn't something we do over here, but it's more of a way of approaching the world. (Appendix 1, p.3)

Nevertheless, digital technologies are not mentioned as a crucial component in the research strategy of SMK for 2018-2021. Nevertheless SMK admit that dissemination of art should take into consideration the contemporary needs and be relevant for the visitor:

The museum's research is based on its collections and their dissemination. (Appendix 5, p. 65)

Research at SMK must ... not only clarify historical perspectives ... but also the contemporary contextualizations that make art relevant in the present day and relevant to today's museum user. (Appendix 5, p.65)

The only notion of 'digital' is not underscored and comes as a separate activity of the museum:

...research and development are inextricably linked to conservation, dissemination, communication, museology and digital museum practices. (Appendix 5, p.65)

At the same time, in the strategy of Glyptotek there is no mention of the role of digital technologies at all, however on one page there is a picture of their audio-guide implemented as a part of exhibition experience. (see Appendix 4, p.50)

However during the Covid-19 some digital initiatives took the place:

And during the Covid-19, from the old previous year exhibitions ... these recordings [recorded sounds of earlier exhibitions], so something they already had they published on the website and through the social media to keep the closer contact to the visitors. (Appendix 5, p.42)

But again how much of Covid-19 should be there to begin to have the museum as a place where there are digital solutions as a replacement to visiting the museum. I don't know how close we are to that, I'm not sure. But definitely more consideration… (Appendix 5, p.42)

Insight 3: Digital innovation in museums is highly affected by the external environment.

Kohli and Melville (2018) describe digital innovation as a strategic process maintained by organization. This process is affected by the factors of the external competitive environment. Their suggested theoretical framework for digital innovation is based on the analysis of commercial driven business. In order to apply it to the museums, some explanation should be made. First of all, museums are not commercially driven organizations and in this sense they do not really compete on the market place in the original way. They compete for government and private fundings, since they are the main states of income, as well as for the money and leisure time of visitors. The other important factor is the decisions made by the government that are enforced by the law. In this case such decisions could be considered as tendencies and fashions.

SMK Open is funded by an external private foundation. It gives us lead way to do digital innovation for four to five years. But because of different political and economic factors the museum is not wealthy. There's been budget cuts on all state cultural institutions for a number of years. Now, we have had the corona crisis, the repercussions of that. So, just being able to hire and maintain the necessary staff, to continuously keep up with digital technological innovations and implement it not only into the technical infrastructure, but also into the whole organizational mind of a museum it's a challenge. And it's a challenge that continuous over the years. (Appendix 1, p.1)

Danish government decided that all state-owned cultural institutions or state-subsidized cultural institutions should have their digital operations under one umbrella organization called States IT. (Appendix 1, p.2)

I mean it has been a long way coming because Statens IT was one bump on the road, another one was that also a top-down decision has been to create a new, like a common museum register, a common museum data-base. (Appendix 1, p.7)

I think we are in the situation as society where we have spent some many billions of krona on help packages for all sectors of society, that it's unlikely that we will se any time soon special initiatives from the state to put more finances into the cultural sector, besides the help packages… But what we also seeing in the time of Covid-19 is that some of the big foundations have really stepped up and pushed more money into the cultural sector. (Appendix 1, p.2)

But I would say our government regardless of a party, you know, which is in power have been interested in the whole digital transformation of museums and the cultural sector for at least a decade. They don't always really know what it takes and provide the right conditions for us. But it is on the agenda and they do expect us to write that into our four year plans. (Appendix 1, p.6)

In the summer time yes. This time of year we normally have like 80% tourists. So, we and older museums in Copenhagen are relying on tourists. So, the whole experience economy and tourism is just screwed up at the moment. And I think we haven't seen the effect of it and we won't see it until after the summer how hard it was. We know that SMK is a bit lucky because we have, some of our guests are pretty regular, Copenhagen citizens. But also some of the other museums are just more tourism like and they are seeing like a tenth of a normal guests. (Appendix 2, p.22)

I mean all museums and cultural institutions they get a state … a financial kick every year. It's a fixed amount of money, a few million every year, that you get. …You get even more from the state if you have a problem … and there are a lot of funds in Denmark and in many places, which you can apply for when you are making a specific exhibition. So the exhibition doesn't not necessarily cost money for the museum from the daily budget. … So when you are making a new exhibition and you need more money, you kinda count on private funds or state funds. (Appendix 3, p.34)

I don't think museums in Denmark or anywhere in the world have resources to do something [digital] out of interest, including that part because it costs a lot, my impression. (Appendix 3, p.41)

If you are thinking.. by risking if you mean investing more resources in it [experiments with digital solutions] money-wise, I would not say we are there now. (Appendix 3, p.42)

Insight 4: Internal environment does not foster digital innovation practice among the museums.

Florian Wiesböck and Thomas Hess (2019) formulate a framework of embedding digital innovation within organization. According to this framework digital innovation could adequately occur when is prepared and thus have four digital enables at place.

First enabler — IS landscape the include both IS systems and IS Infrastructure (i.e. digital infrastructure):

SMK Open as sort of a project the focus has been on building solid infrastructure, that we can base future projects on. So, for instance community building and facilitating reuse of the collection. And SMK Open will end next year, it was prolonged with a year in dialogue with foundation, because of all these initial bumps on the road. (Appendix 1, p.3)

And we experimented a lot with how to bring technologies, screens, apps, bring your own device kind of experiences into the galleries. And we did a lot of user testing and surveying of that. (Appendix 1, p.4)

SMK Open is not really digitization project. It's more of an IT development project. The difference is that what we are doing in Open is that we create the tools that make it possible for you to see the artworks, but we don't do the actual digitization. That's our photographer who does the actual digitization. And that's kind of a whole other task. (Appendix 2, p.11)

...And that was for infrastructure, not digitization. And the Nordea Foundation, who donated the money, actually was pretty clear that they didn't want digitization as part of the project, they wanted infrastructure. So, that's why it's pretty clear that there is a difference between two tasks. (Appendix 2, p.12)

...about two and a half year ago we had an IT department. And we had our own servers in the basement, and then the government decided that they wanted to have kind of a unit called the Statens IT. (Appendix 2, p.15)

So, my computer is now Statens IT computer and not a SMK computer. So, they took over the whole basic infrastructure of the IT. So… and that was kind of a challenge in a project, to build an IT project without an IT. (Appendix 2, p.16)

...for example we wanted to have ours SMK Open servers in the cloud. ... And Statens IT couldn't deliver that type of server, technology. So, we had to have a long fight with them before they allowed us to use another service than them. And the deal that we have with Statens IT is that in the future when they maybe will create a cloud solution, we will also switch and go with them again. (Appendix 2, p.16)

Second enabler — Organizational structure that enables digital innovation (departments, agility and ambidexterity of organizational structure, collaboration with external actors):

So, we used to have our own digital department with several developers in-house, who maintained our system administration, our service, and did internal developments and we kept that knowledge in the house. And in 2016, actually shortly after we received the funding for SMK Open, this decision was made and our IT department was shut down. We couldn't do anything about it. And it really turned SMK Open upside down. Because it was heavily reliant on our won IT department. So, the first year or year and a half of SMK Open we had to rethink the whole project plan. (Appendix 1, p.2)

I am trying to find partners, service partners, external service partners. Right now we have them for the web-site and also for the Open, but maybe we could also have them for API and stuff. So, let's see. (Appendix 2, p.27)

We paid someone external to do the sculpture [3D reproduction] (Appendix 2, p.29)

I think most of our projects and initiatives are through external partners. So that would most likely, or I would say definitely be through the others. We do get a lot of offers and some of them are attractive and taking up onto maybe. Sometimes we have an exhibition ourselves that needs that part and then they go out and look for it for a specific exhibition. (Appendix 3, p.40)

Third enabler — Organizational culture which forms general perception of digital technologies among employees, their risk-willingness and their appreciation of innovative ideas from inside and outside the firm.

Now, we have had the corona crisis, the repercussions of that. So, just being able to hire and maintain the necessary staff, to continuously keep up with digital technological innovations and implement it not only into the technical infrastructure, but also into the whole organizational mind of a museum it's a challenge. (Appendix 1, p.1)

And what we have seen during the lockdown, was that digital went from being a nice to have to a necessity, a life line for everyone. Both as private persons, but also as institutions to keep in touch with our audiences. And our directors and everyone in our institution have rally taking that on board as an experience. And have braided that experience into our overall strategy. So what we are seeing now is that what used to be more of a digital strategy has become more central for the museum's overall strategy. (Appendix 1, p.2)

We have tried to braid that [digital mindset] into our overall strategy. So, the digital isn't something we do over here, but it's more of a way of approaching the world. (Appendix 1, p.3)

...it's been a long process to kind of implement also the digital mindset. But it's also because most of the people that are employed at SMK, they haven't got a digital education or an IT education. They have art history or like normal education. So, it's not like, it's just how it is. It's not the normal thing for museums to have digital employees. So, it's been a while for kind of having the whole museum more digital mindset. And I think the SMK Open has really helped. But we had to make the platform before my colleges begin to understand what it really was and what is the impact of putting our collection free online. Even though we have tried to tell them for years. (Appendix 2, p.13)

And I think it's gonna be a long way until guests and users would create physical exhibition, because we have highly highly educated and trained art historians at the museum and that would be kind of a big provocation of their… I think if I was dictator of SMK I could do that, but it's an old organization with people who have been there for twenty five, thirty years. So, things are pretty old-fashioned and slow. (Appendix 2, p.25)

...the kind that is not going out definitely and searching for technology, unless there is a specific need because of the way things develop, or someone comes in and offers a good solution that is kinda matching a problem that we are having at that time. So in that sense it's a very

functional attitude. What can this one solves. But to develop and to make somethings more attractive or in that sense, i would not say there is a big focus right now. (Appendix 3, p.36-37)

And if it's totally new and another concept for a relatively flexible place like Glyptotek it could be another exhibition. It could be a temporary exhibition on a temporary given place, in a given month of the year or few years. That is also a flexibility and openness - something that Glyptotek is actually known for. (Appendix 3, p.42)

Fourth enabler — Organizational capabilities that refer to sufficient levels of IT knowledge among employees that enable them to handle digital technologies as a base for digital innovations. These capabilities could be either built organically (e.g. trainings and workshops) or be acquired inorganically (e.g. outsourcing)

We always say I mean as a museum it's not our top competence to build apps. (Appendix 1, p.7)

The other side of the coin is to make your mind set digital and to make the whole organization think digital. And that has very little to do with technology, although it does require some capacity building. (Appendix 1, p.8)

But now the platform is there. So, museum kind of, it has to take over the platform, because it's always, it's also… the question is who is gonna maintain? Who is gonna create content from now on? For example this feature cold "Themes" in the platform, explore themes. And who will make the themes in the future? (Appendix 2, p.14)

But we have to make kind of a mock-up of the digital guide before we could actually discuss it. Because my colleagues they have to see something concrete, physical. It is just to abstract for them to discuss the idea that was digital. Because they don't know what's possible. Sometimes they ask me like "Can you do this and can you do that?" And I am like "No, the technology doesn't exist". You can think it and you can say it, but you can not develop it. (Appendix 2, p.15)

Yeah, that's a big problem. And I've been for the last year trying to make our direction… what's it called, my bosses, to figure out a plan how to make the project live on. But again I think because IT is like, people don't understand what it is, I think they don't know what to really do about it. (Appendix 2, p.26)

Wiesböck and Hess (2019) also characterize the development process of digital innovations as a recursive interdependence between the involved digital artifacts. The appearance of new digital technology assists to the diffusion of digital pollution that afterwards assists the creation of digital business concept:

So, as it is for a lot of things, it's kind of the hen and the egg, what comes first. And now we made the platform first and then we can find out how we gonna actually use it. (Appendix 2, p.15)

Insight 5: Museum models of digital innovation are driven by social and public needs and therefore tend to correspond to a pull model of innovation.

According to Godin and Lane (2013) the pull model of innovation is driven by people's needs and therefore the innovations are created to fulfill those needs. Although, demand-pull model was highly criticized as insufficient and therefore not viable, the idea behind it is applicable to museum practice. However this application needs to be predeceased with clarification that the initial demand-pull model excluded social and public needs and shifted toward being completely based on market demand. For museums social and public needs are the main driven force of innovations.

And we experimented a lot with how to bring technologies, screens, apps, bring your own device kind of experiences into the galleries. And we did a lot of user testing and surveying of that. And the overall conclusion is that the kind of experience are audiences are looking for when they go into the museum is to get rid of all the screens and be more like authentically together, hm, and not be looking down but be looking up at the art and looking at each other. So, in some sense technology can feel like something that disturbs or interferes with the experience people are looking for when they actually visit the museum. So, that's why digital strategy of SMK is very much to be a platform of resources that people can use independent of the museum visit. (Appendix 1, p.4)

...that digital communication has matured in a way, where cultural institutions have become really efficient in reaching out to target audiences with the right kind of content at the right time in super quality. (Appendix 1, p.5)

And in SMK Open we have "Themes" and I suggested to our directors that we do like an open-call for people to curate themes. With these semantics approach of epidemics but not only like the illness, but more importantly feelings and the experiences that they entail. So, the sense of loneliness, isolation, reflecting on "do I have the life I want?", "what is it like to be at home all the time", you know, "did we make the right decisions as society?". There have been so many different agendas came out of the lockdown and Covid-19. (Appendix 1,p.6)

And that was for infrastructure, not digitization. And the Nordea Foundation, who donated the money, actually was pretty clear that they didn't want digitization as part of the project, they wanted infrastructure. So, that's why it's pretty clear that there is a difference between two tasks. (Appendix 2, p.12)

...because externally everyone was just happy. Because it's a really positive thing to give out something free, you give out digital art for free, people are happy. So, it's a really positive project. No one could say anything negative about it. (Appendix 2, p.14)

...for example in the corona period here in the lockdown SMK Open had kind of a raise in uses, seven doubled. So, it was really, we could just see… and at that time we got a lot of feedback. For example, there was this grandmother, who wrote to us that one day in the corona time she took her granddaughter to the "museum" and then they connect on Skype and then they kind of discussed the art in the SMK Open and were at the museum together even though they couldn't meet physically. (Appendix 2, p.18-19)

...mentioned the word functionality — that is the main reason. They would go out and look for it. And functionality is normally to make something that is right now and you need to make it work. (Appendix 3, p.41)

Insight 6: Museums maintain the open innovation paradigm in order to digitally innovate

According to Chesbrough (2002) open innovation paradigm implies the free circulation of the ideas between organization itself and external environment in a reciprocal connection. It also means that organizations open up their activities, so the other actors could benefit from them. Open innovation paradigm enables museums, which do not possess sufficient resources or capabilities to rely on the environment and borrow ideas and technologies to adapt them beneficially for museum practice.

…in 2016, actually shortly after we received the funding for SMK Open, this decision was made and our IT department was shut down. (Appendix 1, p.2)

But I would also say in the next major digital project that we are planning after SMK Open, we plan to work with community building and co-curation as an integral part of that. (Appendix 1, p.6)

So, our open API is out there and we invite everyone to take the data and build their own, you know, apps, services, whatever with it. That's the whole base of data of our open collection. And there are several, you know, art experience apps there using the API. (Appendix 1, p.7)

We always say I mean as a museum it's not our top competence to build apps. Others do that better than we do. But we know our collection, we know our data and we try to provide it in a useful manner. (Appendix 1, p.7)

But for instance we have a close and multi annual collaboration with Wikipedia, that use our data and our open images as a very important resource in the community work. We both have a very strong community that meets and collaborates, but also we, you know, our resources is a tool for a wider community of Wikipedia editors to create better content in all the languages that Wikipedia comes in. (Appendix 1, p.9)

Right now we also have an app that we didn't create, which called Visco, which is image recognition, so you hold your phone up to them and then it recognizes art work… (Appendix 2, p. 19)

But this is one way of experiencing it. If someone finds a digital way that could bring it closer to the guests, again before outside the museum, after the visit, or while at the museum, could be a big part of the experience and very attachable, addable to the core concept of Glyptothek experience. (Appendix 3, p. 38)

...We do get a lot of offers [digital] and some of them are attractive and taking up onto maybe... (Appendix 3, p.40)

Insight 7: Digital innovations in a museum are sustaining. Disruption does not take place

The type of innovation that occurs in museums is sustaining innovations. Christensen (2003) describes sustaining innovations as technologies that improve the performance of the product. According to Baiyere and Hukal (2020) digital innovations in the museum do not constitute disruptive innovations. The innovations that currently occur does not disrupt other products, companies or industry itself.

...digital communication is supporting the increase in audiences to the , you know, physical cultural attractions. (Appendix 1, p.5)

...so the digital project really addresses a younger group of people, because it speaks more in the type of language that they know and want to speak with art in a more... they want the cultural level to be lower, not to be more stupid, but to be more accessible. (Appendix 2,p.17)

And we also know from the other reports that there is difference between seeing an art work digital and seeing the real thing. It's more like religious feeling when you see the actual, when you see the actual Mona Lisa. That's pretty different form seeing all of the digital versions. So, that's why we are not afraid that SMK Open will undermine the physical museum. (Appendix 2, p.28)

Insight 8: Museums digitally innovate through processes of digitization and digitalization. However, digital transformation is a desirable but currently not feasible state of organization.

...because we have done a lot of openness initiatives since 2011/12. And it's been a lot of sort of working progress and, how do you call it, a lot in beta. And with SMK Open for the first time we've had substantial funding to do more coordinated effort to open up online collection. And that's why we closed down some of the earlier initiatives. Because SMK Open, the new online collection, has sort of stepped in, in the place of former initiatives. (Appendix 1, p.1)

And that will be centered around using SMK Open or the online collection as a platform for community building and reuse both in-house and distributed where people are. (Appendix 1, p.3)

And the overall conclusion is that the kind of experience are audiences are looking for when they go into the museum is to get rid of all the screens and be more like authentically together, hm, and not be looking down but be looking up at the art and looking at each other. So, in some sense technology can feel like something that disturbs or interferes with the experience people are looking for when they actually visit the museum. So, that's why digital strategy of SMK is very much to be a platform of resources that people can use independent of the museum visit. (Appendix 1, p.4)

...the ambition to educate people through digital devices in the gallery. It is something that we have stepped away from and going back to more analogue tools. Because it seems to be helping people to get a more sociable experience together, and that is what people come for. (Appendix 1,p. 4)

...digital communication is supporting the increase in audiences to the , you know, physical cultural attractions. (Appendix 1, p.5)

And in SMK Open we have "Themes" and I suggested to our directors that we do like an open-call for people to curate themes. ... But I would also say in the next major digital project that we are planning after SMK Open, we plan to work with community building and co-curation as an integral part of that. (Appendix 1, p.6)

It's not all 260 000 works. We have around 40 000 open images with good data. It's a considerable data set. (Appendix 1, p.7)

We are continuously working on digitization. It's not going to be finished any time soon because of lack of funding for it. But, you can say, the policy is in place. So, every time the new art work is digitized or maybe it's just, you know, typed into the data base, or maybe there is also a picture of it. If the art work is in a public domain it will be an addition to an open collection. (Appendix 1, p.7)

But then social media really took off and people had accounts there and they didn't want to create accounts all over the place, they just wanted to have like Facebook, Instagram, Snapchat or whatever. And at the certain point we left the idea that the museum should try to compete with that environment. (Appendix 1, p.9)

...the actual digitization. That's our photographer who does the actual digitization. (Appendix 2, p.11)

I think, it's seventy eight thousand digitized art pieces. But we always trying to push it and say okay, digitize more. (Appendix 2,p.12)

And that was for infrastructure, not digitization. ... So, that's why it's pretty clear that there is a difference between two tasks. (Appendix 2, p.12)

...we have some sound art... (Appendix 2, p.12)

We did kind of the same thing in the corona situation, because we also had to take away all our paper, folders, we have a lot of folders in the reception area. Because there is kind of no touch situation we had to take them away. (Appendix 2, p.15)

We really want to build SMK Open idea into the physical museum. ... I think it might be to build into the idea of a digital guide that you can have on your own device and try to connect the physical art works with the digital copy. (Appendix 2, p.19)

We've scratched the surface of that idea and SMK Open, because you can make your own list. You can check it out, it's like, if you go into an artwork there is a button called "add to my

list"…. A lot of online collections do that, where you can kind of make your own smaller collection and you can share it and stuff, so it's a digital exhibition. (Appendix 2, p.24)

Digitization for us is when you take something that is not digital and then you make it digital. That's how it is for us. And then we also have the digital department that works with digital medias. (Appendix 2, p.27)

And we also know from the other reports that there is difference between seeing an art work digital and seeing the real thing. (Appendix 2, p.28)

…we did the 3D sculptures some years ago. (Appendix 2, p.29)

I think it will go along with the development outside in the world and it will be an add-on, it will be something supporting or bettering or making it easy, the experience. (Appendix 3, p.43)

Summary

I am not the one to escape the temptation to fit the concept of innovation to specific industry, not last because of its utility and practicality for the paper. In order to assess a particular industry it is reasonable to tailor the ambiguous concepts. This will not needlessly transform the main ideas behind the concepts, but rather will help to address the specifics of a given area. My conceptualization of innovation for the museums is based on such important properties of the museums derived from the literature above:

- Museums (as well as other non-profit organizations) especially when subsidized or owned by the state are the cultural organizations with no prior motivation of financial success. Therefore, the main mission of the museums is to have social and cultural impact on society. It could not be measured explicitly in commercial terms. Innovation in museum practice should be addressed from the sociological rather than economical point of view. Therefore, innovation should be assessed not in terms of profitability but in terms of fulfilling the public mission of the museum.

- Museums as cultural actors do not possess the sufficient R&D capabilities or other reminiscent capabilities that serve the same purpose and therefore could not create inventions and bring them to the public solely by themselves. Museums are exploiting outside knowledge and adopt the useful technologies in a creative manner adjusting them to the specific needs and processes. Thus, re-adaptation is to be considered innovation. Museums do not need to be directly involved in introducing innovation in terms of originality, they can still be acknowledged as innovative even if they adopt innovations from the outside and borrow external ideas.

- Museums are basically service-based organizations that act as intermediaries between the art pieces and other representations of cultural tangible and intangible heritage and the audience. The museum practice is strongly based on the physical dimensions of customer experience. Therefore, taking into account the impossibility to change the core products (art pieces) museums innovate mainly in the processes of delivering the art experience centered around the art works to the visitor. However, innovation in the form of the digitization of the product (e.g. digital collection) also takes place. Therefore museums face the limits of the possible use of digital technologies in terms of digitization, digitalization, and digital transformation.

- The innovation model for museums is multidimensional with the bigger focus on the demand-pull model. This prevalence is based on the need of museums to apply marketing perspective of view to their activities due to the spread of experience economy among the population. Nowadays, the shift towards ‘new’ museology motivates museums to address the needs of their audiences and therefore to increase the level of satisfaction by introducing new and useful solutions. Push component of the model is based on the creation of digital artifacts that could be exploited according to the goals and tasks that museums define.

- Innovation among museums as of now should be considered as sustaining. Adoption of technologies improve the quality and variety of the service components perceived by the

visitors. These innovations do not qualify as disruptive ones. They do not disrupt other museums as well as they do not disrupt the experience of physical visit to the museum.

Digital innovation in the museum practice — is the process of thoughtful adaptation, development and implementation of digital technologies into the practice of the museum that positively affect the core activities of the nowadays museum: collection, preservation, research, exhibition, interpretation, dissemination and communication of the collection for the educational and entertaining purpose. These digital solutions have to provide a quality change to the activities within the museum that leads to a new value proposition for a customer or to the establishment of more effective and efficient internal business processes. Digital innovation in the museums manifests themselves in the form of digital product and service innovation, digital process innovation or digital business model innovation, and could take place on three different levels:

Digitization — conversion data from analogue to digital. This includes both transformation of the art objects into the digital reproduction that could be stored, preserved, disseminated and further manipulated, and digitization of workflow documents and basic non-art related supportive processes (e.g. selling tickets). Digitization is performed by the employees for the employees. The goal is to create archives, to get control on preservation of digitized materials and to make the usage of materials more comfortable.

Digitalization — reconfiguration and creation of essentially new forms of processes based on the manipulations with digital data both the transformed from analog form and born-digital materials (originally created in the digital form). Digitalization basically refers to the implementation of more effective and efficient technologies in order to either automate the processes or create a new way of interaction between organization and customer. Within museum it could be embodied in different forms: further processing of digital artifacts (e.g. digitized art pieces) in the form of creating digital collection open for the customers; creating or altering the core services with the use of digital technologies (e.g. audio guides, mobile applications); usage of digital technologies for supportive processes like marketing, logistics, etc. Basically digitalization in museums is about either changing the form of the service, or creating and distributing new digital

value added components of art experience. Digitalization is performed by teams, subdivisions or contractors with the focus on customers as the main beneficiaries.

Digital transformation — is a process of a transformation in the essence of organization (i.e. culture, strategy, core processes) with an eventual result of complete revision of current business model and creation of the new one digitally based. Digital transformation leads to establishment of new revenue streams and new digitally based business processes. For digital transformation the main consideration is a visitor and his or her experience. In museum context digital transformation could never be completely accomplished due to the essence of the museum practice, which is centered around the physical sensible experience of the customers. However, the usage of digital technologies that essentially change the experience of visitors or the usage of the digital art objects in the exhibitions that are created purely digitally and could be perceived with digital means put the museums further on the scale of digital transformation (e.g. creation of VR and AR self-sufficient art spaces both online and on-site). These are created by contract authors with the assistance and permission from the museum.

Summing up, the ultimate purpose of digital innovations in museums is to provide a digitally based opportunity for the visitor to deepen his or her experience with the art. The one's reflection on the art piece that is based on the limited analogue information about the art piece aside and on its physical properties that are perceived by visitor's physical sensations could be digitally augmented with the deeper contextual and background knowledge about the art piece in the form of text or audio-visual appendage. Implementation of digital technologies allows museums to widen and open the potential of the art piece and therefore provide visitors with a more immersive experience of higher quality for the same ticket price.

Current levels of implementation of digital technologies according to marketing paradigm among studied cases

	Digitization	**Digitalization**	**Digital transformation**
Product (Service)	Creating online collection of digitized art objects	Providing interactivity element with digitized collection Implementation of digital tools into physical environment (sound/ video solutions, AR, etc.)	—
Price	Free for the art pieces in public domain (Creative Commons license)	No added price for ticket	—
Promotion	—	Social Medias	—
Place (distribution)	Digital platform (SMK Open), web-site	On-site and online POS-materials	—
Physical evidence	Aesthetics and user-friendliness of digital platform and web-site	Reputation of the museum Architecture of the museum Actual usage of the technology by visitors	—
People	—	—	Facilitation of workshops in order to create digital mind set Creation of 'tangible' digital solutions with consecutive presentation to employees
Process	Digitization of internal paper flow Digitization of selling procedures	Installing software, obtaining hardware. Automatization of the processes (e.g. marketing, logistics etc.)	—

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