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Sustainable museums:

a new paradigm for the 21st century

from the perspective of museum professionals and visitors

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CORVINUS UNIVERSITY OF BUDAPEST
DOCTORAL SCHOOL OF BUSINESS AND MANAGEMENT

**Sustainable museums:
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from the perspective of museum professionals and visitors**

Doctoral dissertation

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I. INTRODUCTION

I.1. The relevance of the topic

One of the most important basic functions of museums is to preserve the cultural resources of a community, not only for the present but also for future generations. However changing levels of government, corporate and individual support, new demographic indicators and the rapid development of information technology are encouraging museums to rethink and develop new strategies.

In recent years, the concepts of sustainability and sustainable development have constantly come to the attention of researchers and practitioners, and have become more widespread. Museums are no exception to this process and sustainability is increasingly becoming a priority for museums, as reflected in the new definition adopted by ICOM in 2022.

Well-managed museums not only ensure their own sustainability, but also play an important role in the sustainable economic development of different urban regions (Gustafsson and Ijla 2017). The quality of the products and services offered by museums directly influences the development of cultural tourism in a given region as well. Cultural tourism is a key factor for sustainable development and intercultural dialogue, however due to Covid-19 several scenarios for its future seem to be emerging (Matteucci et al. 2022). Academics agree that to determine the future development of cultural tourism, it is necessary to examine how culture is interpreted by destination managers and how it is embedded in the tourism products developed (Calvi et al. 2020). In the strategic alliance between culture and tourism, sustainability should be used as a bridge connecting them (Pop and Borza 2015).

Through the phenomenon of a sustainable museum, we can understand the complexity of museums, their role in society and find the points where they can be linked to the economy and tourism in a sustainable way. Much depends on how museums perceive their role in this process, as this will have a long-term impact on the extent to which they contribute to sustainable development.

Despite the obvious links between museums, culture and sustainability, not much research has explored how museums fit into sustainability and how different stakeholders can contribute to promoting cultural sustainability.

A paradigm shift is needed in all areas of museum work, which means rethinking tasks and developing forward-looking strategies. It is one of the major challenges for museums because the related sustainability framework in museology is still missing.

The starting point of the research is the conceptual framework of the sustainable museum, which is defined on the basis of an analysis of the literature, followed by a systematic analysis of the criteria and requirements for sustainable museums.

The issue of sustainability in museums is examined in the context of European museums. The European Union is a geographically and culturally well-defined area, and through the study of contemporary art museums (2 articles related to this field) it is possible to observe the phenomena that define the concept of the sustainable museum and help to answer the research question.

According to Miles (2017), there are seven types of research gaps. In this study, at least four research gaps could be mentioned regarding the analyzed literature on sustainable museums.

First empirical research gap: previous research has not investigated the opinion preferences of the main stakeholders' groups with an interest in museums on the complex issue of sustainability.

Second knowledge gap: few museum managers know how to integrate cultural, social, environmental and economic factors when making decisions. There is little research that looks at this complex issue from a museum management perspective. A review of the literature suggests that little attention has been paid to exploring the knowledge and skills of museum visitors and non-visitors in relation to the value that museums provide.

Third context extension: very few studies in the literature have addressed the relationship between contemporary art museums and sustainability. Through their activities, these museums are very closely linked to contemporary social phenomena and thus provide a good research framework for the construction of a sustainable museum model and definition.

Fourth methodological gap: the methodological analysis of the literature revealed that the application of the Q method is novel. Based on this, the main research question (RQ) is the following:

How can a sustainable museum be defined based on the mission statements of European contemporary art museums and according to the value preferences of museum professionals and museum visitors?

To answer the research question, the phenomenon of sustainable museums needs to be analyzed from different aspects. Five research methodologies were used to explore the sustainability priorities communicated by museums, the sustainability preferences of museum managers and young museum visitors, and to understand the expectations of a particularly important visitor group - families, in order to ensure sustainable museum operations.

This document presents an article-based dissertation which consists of five peer-reviewed papers as well as a summary of the literature and thesis.

The dissertation is structured as follows: before presenting the five journal articles, the theoretical background is introduced in chapter 1.2, including the basic concepts of sustainable development, cultural sustainability and the museums' role in sustainable development. The conceptual framework of the research is also presented.

In chapter 1.3. the data collection and the five research methods applied are introduced. As the journal articles presented below are co-authored, chapter II clarifies the authors' contributions based on a widely accepted framework suggested by Brand et al. (2015).

The five journal articles (A1-A5) are then presented in chapters III-VII. In chapter VIII, the theoretical and practical contribution of the research is outlined together with limitations.

I.2. Theoretical background

The theoretical chapter introduces the concept of sustainability and the conceptual framework of cultural sustainability, followed by a description of the models of sustainability in museums identified in the literature analysis, including a detailed description of the four-dimensional approach.

I.2.1. Key concept for sustainability

In 1987, the Brundtland Commission, set up by the United Nations, published its report "Our Common Future"¹. It defined sustainable development as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs. Sustainability is a paradigm for thinking about the future in which environmental, social and economic considerations are balanced to achieve a better quality of life." (Brundtland & Khalid 1987:39). In this context, 'sustainability' is a long-term objective along which systems develop their sustainable strategies for a 'sustainable future' through the process of 'sustainable development'.

¹ <https://sustainabledevelopment.un.org/content/documents/5987our-common-future.pdf>

In the broad societal discourse on sustainability, the main interpretative models have taken environmental, social and economic aspects as the fundamental dimensions, and the emphasis has been on balancing these three pillars. Since the concepts of equity, justice, gender equality and ecological quality are understood differently from culture to culture, the definition of sustainable development is constantly changing depending on the cultural context in which it is applied (Barker 2006).

I.2.2. Theories of cultural sustainability

Cultural sustainability was first defined by the World Commission on Culture and Development as ensuring intergenerational and transgenerational access to culture: "The principle of intergenerational equity states that current generations should care for and use the environment and cultural and natural resources for the benefit of all members of current and future generations. Each generation is a user, custodian and potential enricher of the common natural, genetic and cultural heritage of humanity and should therefore bequeath to future generations at least the same opportunities that it has enjoyed" (World Commission on Culture and Development, 1995:46).

Cultural sustainability also implies that development takes place in a way that respects society's cultural capital and values (Mpofu 2012). Thus, this dimension of sustainability is primarily concerned with ensuring the continuity of cultural values that link past, present and future.

Many official documents and conventions try to integrate culture into sustainable development in various ways. The Hangzhou International Congress (2013) outlines three such theoretical attempts. Culture, together with human rights, equity and sustainability, is seen as an overarching issue for all development initiatives, (2) Transversal. Culture is integrated into the goals of the three pillars of sustainable development, alongside peace and reconciliation, and (3). It is a pillar in its own right in sustainable development. Culture is considered the fourth pillar of sustainability among the ecological, social and economic pillars.

However, authors Dessein et al. (2015) identified additional roles in their research. They described culture as a phenomenon with a greater influence beyond itself. Culture is a mediator that can balance all three existing pillars and reinforce sustainable development between economic, social and ecological pressures and needs (culture for sustainable development). The authors argue that culture can play an even more decisive role ("culture as sustainable development"), and that culture is seen as a structure that is

necessary to achieve the goals of sustainable development.

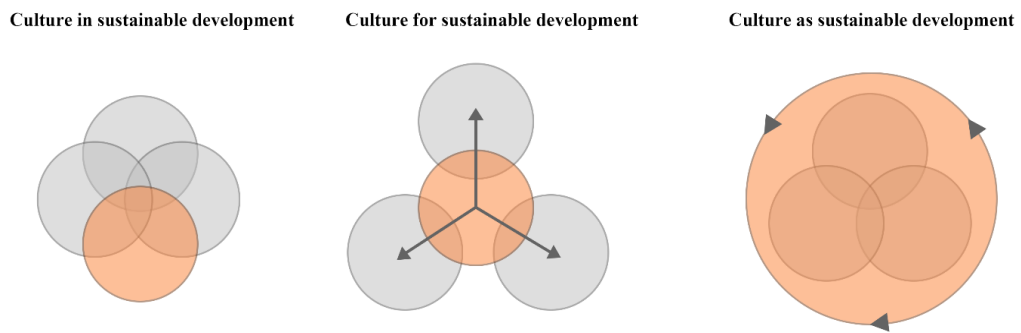


Figure 1. Roles of culture in sustainable development process adapted from Dessein et al. (2015:29)

I.2.3. Museums' role in sustainable development

Museums play a unique role in cultural sustainability by preserving the heritage of their communities and ensuring the accumulation and transfer of cultural capital from current generations to future generations. Historically, humanity has turned to museums for inspiration, creativity, insight and inner strength. As they have evolved, museums have acquired vast knowledge through their continued focused research. How do museums need to change in order to play their role as catalysts for the promotion of human culture around the world in the 21st century, to meet new challenges? Empirical research on this topic can make a significant contribution to the social and economic changes that we now perceive as necessary and essential for a sustainable future. Many authors have concluded that sustainability requires the rebuilding of the foundations of social and economic structures, both locally and globally, and that museums can facilitate these processes (Belfiore & Bennett 2007). In the pre-Covid-19 period, many art tourism destinations with famous museums have become over-visited (e.g. Paris, Florence), and there is a growing trend towards the need for sustainable solutions, even for museum-based art tourism, that properly control and manage visitor flows. The Uffizi Gallery in Florence, for example, has moved part of its valuable collection to several locations in the Tuscany region, thus allowing the entire region to concentrate tourist flows, rather than just one institution and city. In this way, it has ensured that cultural assets contribute to the sustainable development of tourism in the whole region.

Sustainability models for museums

(1) Ecological museum model

In his study, Jung (2011) outlines a so-called ecological museum model, which already has some characteristics that allow us to interpret it within a framework of sustainability. However, this democratic, non-hierarchical model can only be a realistic perspective for smaller museums and is difficult to implement in larger institutions. The model promises that if museums operate as an ecosystem they can ensure their long-term sustainability. In such a museum, all human and non-human elements are interconnected and interdependent. This ecological model allows the different perspectives of museum staff, visitors, other cultural institutions and even nature to be taken into account.

(2) Archétopy museum model

Campolmi (2013) takes Jung's (2011) model of the ecological museum further and argues that these ecological museums should be considered as archetyopoi. The word arché emphasises that narratives, meanings and exhibition contents are constantly being challenged and lead back to early (arché) stages of the creative (emergent) processes. If we begin to conceive of museums as archetypes, as spaces where information is not final but as provisional expert opinions, our understanding of knowledge may be transformed. In such museums, experts seek to reveal the epistemological frameworks through which objects have been interpreted, thus pointing out that interpretations are changing and should no longer be seen as definitive accounts with a single authority.

(3) Culture focused four-dimensional museum model

Stylianou-Lambert et al. (2014) outline the sustainable development model for museums in a much more concrete way and includes culture as a fourth pillar. They based their theory on previous research and took into account recommendations from museum associations and discourses on multiculturalism, inclusion and community participation. Four intersecting circles, of which cultural stands out, contain the parameters that should ideally be taken into account when designing sustainable museums. The circles intersect because certain parameters may be common to several pillars. When it comes to the cultural dimension of sustainable museums, it is necessary to consider what is worth preserving and how cultural skills and knowledge can be passed on to future generations. The social dimension includes an emphasis on the overall well-being of local communities and the creation of a sense of place. The environmental dimension includes the role of museums in urban planning and regeneration and landscape design. Finally, museums play a crucial role in environmental education, for example by integrating ecological events and exhibitions into their programmes.

The economic dimension includes fundraising issues, the development and promotion of cultural tourism, job creation in creative industries, and the economic revitalisation of the local community. Since the opening of the Guggenheim Museum in Bilbao (1997), the economic contribution of museums to the development of a region has become a central element of revitalisation efforts, since, in addition to creating jobs in the tertiary sector through increased tourist traffic, they also stimulate growth in the primary and secondary sectors of industry (Fehér 2022).

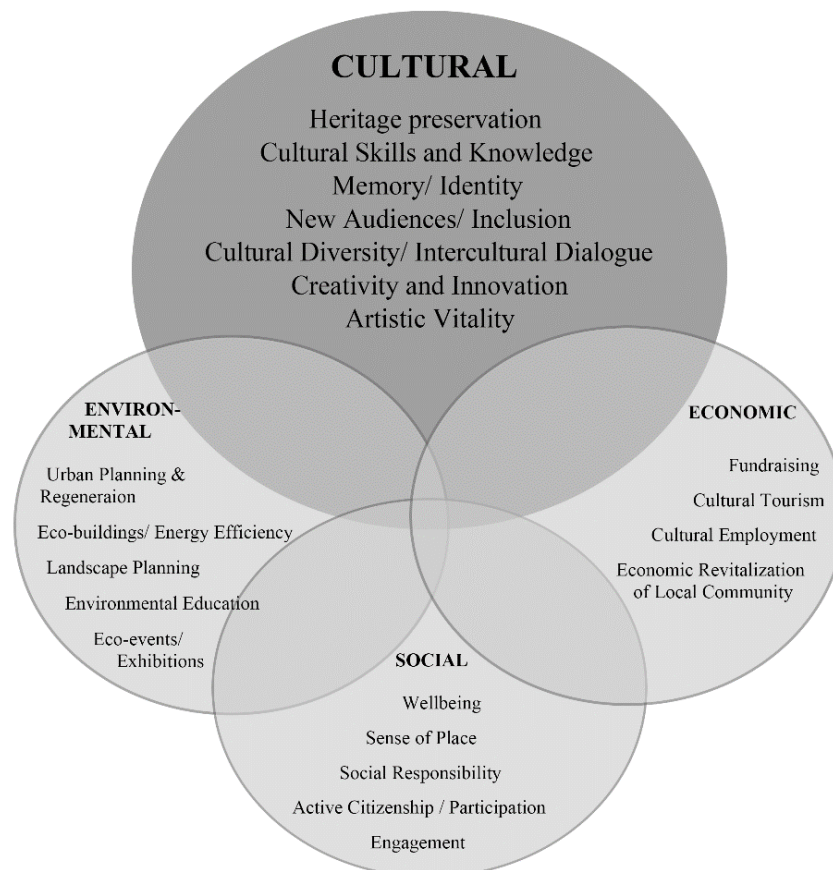


Figure 2. Culture focused four-dimensional museum model adapted from Stylianou-Lambert et al. (2014:570)

(4) Sustainability Priorities Model

Cultural heritage organisations are now making a major effort to define 'who and what' they represent and serve in a given market; that is, they need to consider creating mission and vision statements to identify and engage with a wide range of prominent stakeholders in order to remain viable. According to the Sustainability Priorities Model (Figure 3.), the external stakeholders in the cultural heritage sector are 'culture', 'artefacts', 'history' and 'natural environment' and the internal stakeholders are the museum's 'staff', 'infrastructure'

and 'collection'. This supports the idea that sustainability in the context of cultural heritage should be extended to the allocation and use of a wider range of resources (e.g. human capital, cultural, historical, social and economic resources), in addition to those traditionally considered natural environmental resources (Wickham & Lehman 2015).

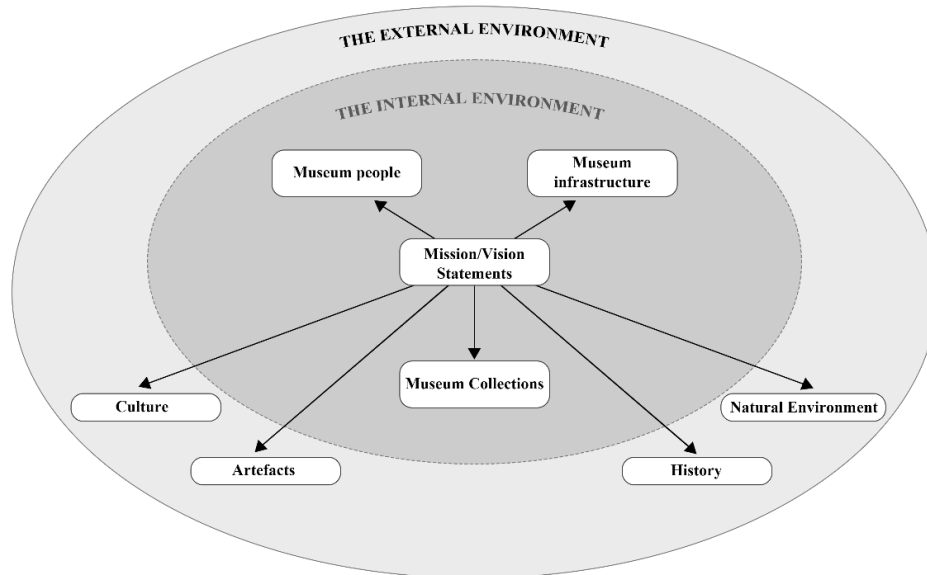


Figure 3. Sustainability Priority Model adapted from Wickham & Lehman (2015:1023)

(5) Museum Sustainability Measurement Model

The study by Pop & Borza (2016) analyzes the factors influencing sustainable museum development. The aim of the research is to determine the extent to which the size and type of museum, as well as its management and marketing strategies, influence sustainability, and to develop a measurement method that can measure the sustainability of museums as accurately and objectively as possible, while allowing for comparative analysis at sectoral level. On the basis of the results of the expert interviews, the authors concluded that sustainability can be strongly influenced by the size of the museum and the financial and human resources available. These factors should therefore be taken into account when measuring sustainability in order to make correct comparisons between museums, and the indicators were designed to measure values in relation to the size of the museum.

In some cases, the type of museum can have a positive impact on its success, but it should not be used as an excuse for having a lower level of sustainability than other museums,

as any museum, regardless of its type, can become sustainable with the right management and the right strategies. Thus, the authors conclude that all museums, regardless of their type, are comparable in terms of their level of sustainability when their size is taken into account.

The researchers developed 33 indicators to measure the level of sustainability of different museums. These indicators were grouped according to sustainability dimensions. For the cultural, social and economic pillars, the indicators are designed so that their optimal values tend towards the maximum, while for the environmental pillar, the optimal values tend towards the minimum.

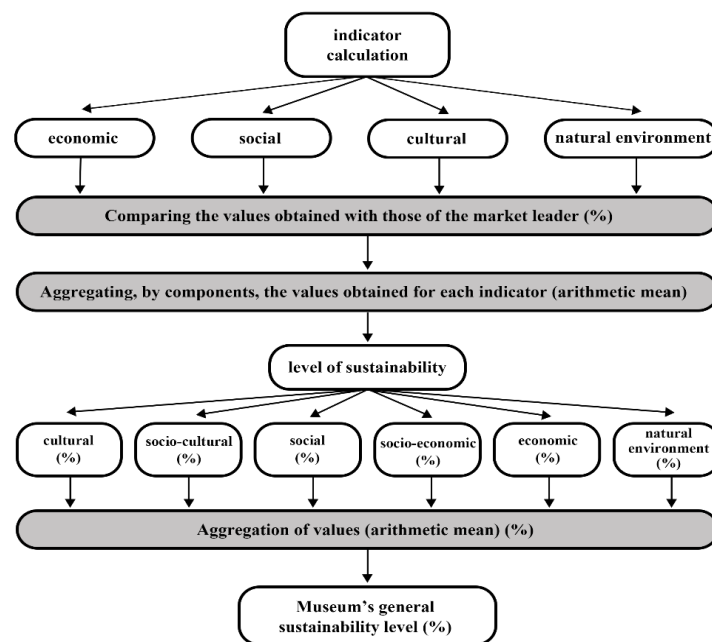


Figure 4. Sustainability Measurement Model adapted from Pop & Borza (2016:101)

(6) Regional Sustainability Model

Pencarelli et al. (2016) offer a multidimensional model for measuring the environmental, social, and economic sustainability of museums. According to results museums are aware of the benefits of sustainability, even if they focus on the socio-cultural aspects rather

than the economic dimension of sustainability. They are also aware of their role in sustainable development, especially in tourism, and have engaged in a number of good environmental practices, even without subsidies. However, the potential of museum networks to enhance social and economic sustainability has not yet been exploited, and their socio-economic value creation potential is still low. Therefore, it is important to develop a regional cultural strategy and a business-based vision based on awareness and cooperation of cultural actors. Taking into account that human and financial resources are scarce, Pencarelli et al. (2016) suggest that regional planning should be based on four lines of action:

- (1) Horizontal actions - ensuring the preservation of cultural heritage.
- (2) Targeted actions - promoting excellence. Supporting collections of outstanding importance in creating new narratives for a wider audience
- (3) Cross actions - promoting partnerships between museums, other cultural organisations and sectors
- (4) Professional training - building capacity, investing in leadership and professional development, scholarship and collections management, digital technology to ensure efficiency and sustainability in the long term.

Museums can create long-term value for multiple stakeholders, generating economic benefits from cultural assets, ensuring environmental, social, institutional and economic sustainability of development (Figure 5.).

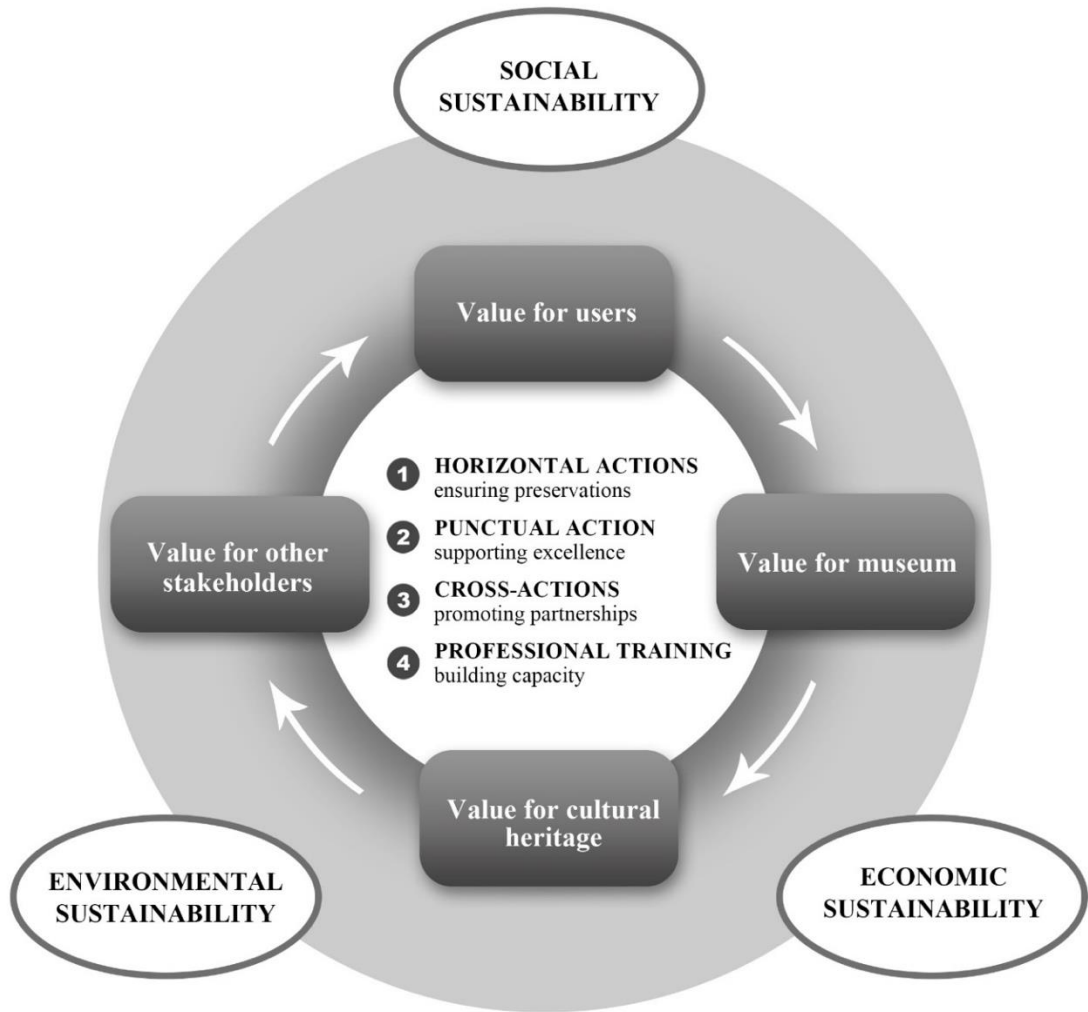


Figure 5. Regional Sustainability Model adapted from Pencarelli et al. (2016:43)

(7) An economics-based four-dimensional museum model

In their research, Magliacani and Sorrentino (2021) took Stylianou and Lambert et al.'s (2014) four-dimensional model as a starting point and explored how sustainability dimensions are interwoven in the creation of a university museum through the University of Pavia museum project. The economic dimension appears as the basis for the other dimensions. It is necessary to provide the community with an economic value at the time of the creation of the museum and throughout its lifetime, in order to support cultural, environmental and social sustainability.

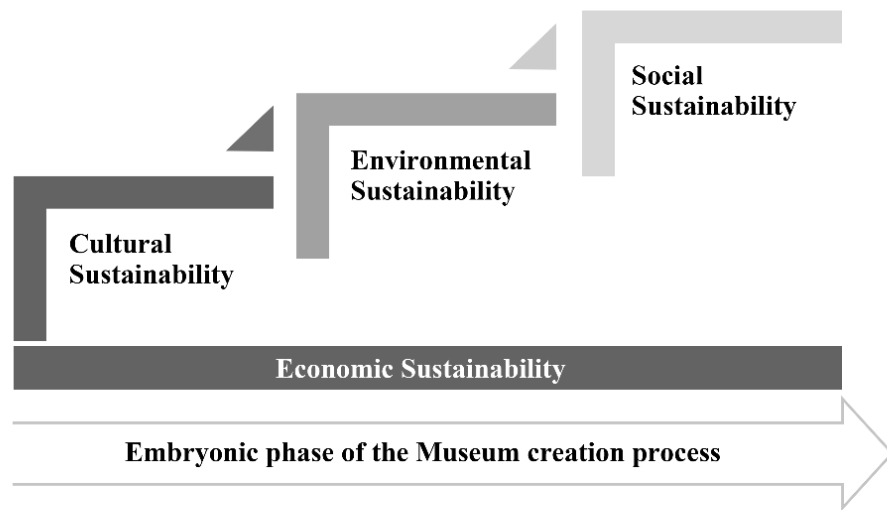


Figure 6. The sustainability model of the museum creation process, based on Magliacani & Sorrentino (2021:407)

The presented models reflect how the theoretical framework for museum sustainability has evolved. The starting point is the Ecological model (Jung 2011), which already anticipated the idea that all museum activities are closely interconnected and the Archetype museum model (Campolmi 2013), which envisages a museum that is symbiotic with society and constantly reinterpreting itself. Culture (Stylianou-Lambert et al. 2014) has been included as a fourth dimension in the classic triple bottom line sustainability model. The model of priorities addresses internal and external stakeholders and resources that determine sustainability (Wickham & Lehman 2015) and Pencarelli et al.'s (2016) model describes the value creation at regional level. Recent research highlights the importance of the economic dimension as a basis for other dimensions (Magliacani & Sorrentino 2021).

Table 1. Sustainability models of the museums

Author	Model	Highlight
Jung 2011	Ecological museum model	If museums operate as an ecosystem, they can ensure their long-term sustainability
Campolmi 2013	Archétopy museum model	The information (knowledge) is not presented as final but as provisional expert opinions
Stylianou-Lambert et al. 2014	Culture-focused four-dimensional museum model	Culture emerges as a 4th dimension that is worth preserving and how cultural skills and knowledge can be passed on to future generations
Wickham & Lehman 2015	Sustainability priorities model	Sustainability should be extended to the wider range of resources (e.g. human capital, cultural, historical, social and economic resources)
Pop & Borza 2016	Museum Sustainability Measurement Model	Sustainability can be strongly influenced by the size of the museum and the financial and human resources available.
Pencarelli et al. 2016	Regional Sustainability Model	Museums can create long-term value for multiple stakeholders
Magliacani & Sorrentino 2021	An economics-based four-dimensional museum model	The economic dimension appears as the basis for the other dimensions

Source: own editing

I.2.4. Sustainability of museums based on four pillars

Soini and Birkeland (2014) examined the discourse on the concept of cultural sustainability by analysing the academic publications that mention the term. They found that cultural sustainability is a transdisciplinary, constantly evolving term that can be organised around seven narratives: heritage, cultural vitality, economic viability,

diversity, localism, ecocultural resilience and ecocultural civilisation. The authors argue that while most of these narratives are linked to economic, social and environmental sustainability, the narratives of heritage and cultural vitality can be seen as forming the fourth (cultural) pillar of sustainable development. These two narratives, which focus on the promotion and preservation of cultural capital for future generations, are key issues for museums and can be seen as essential tools for cultural sustainability. This theoretical approach has been accepted by the authors Stylianou - Lambert et al. (2014) and Pop and Borza (2016) and the Q methodological research presented in the dissertation- proposal also examine museum sustainability within this theoretical framework.

Cultural pillar

Sustainable collections management is one of the core tasks of museums, which means a thoughtful concept of collections development as well as the continuous improvement of artifact conservation (Merriman 2008). Ankersmit (2021) extended this with further tasks and identified the following as 6 key aspects for sustainable collection management: (1) Mission and vision of the cultural institution and the role of their collections in society; (2) Preventive conservation and collection management; (3) Logistics, spaces and access; (4) Energy and building physics; (5) Architecture; and (6) Finance and project management. Museums are aware of the importance and responsibility of their collections in society and accessibility and preventive conservation have become an important element of collections management. In their research, Manfriani et al. (2021) highlighted the potential of smart technology in preventive artefact conservation. One of the main aims of using smart solutions is to reduce the risk of potential damage resulting from the interaction between heritage objects and their conservation environment. The combination of active environmental monitoring and the Internet of Things (IoT) opens up new perspectives in heritage conservation.

Orea-Giner et al. (2021) in their research focus on the analysis of the most important attributes of the Thyssen-Bornemisza National Museum in Madrid as perceived by tourists and the local community (Madrid residents). The results of the application of relevance determination analysis (RDA) show that the attributes with the highest subjective value as perceived by the tourists and local residents interviewed are the location, the building and the permanent collection. In addition to these, the exhibitions are the main attraction for local residents.

In their research, Jurčišinová et al. (2021) approach the so-called blockbuster exhibition business model from the perspective of sustainability, which can be defined as an

exhibition that receives substantial loans, aims to attract a large number of visitors and uses intensive marketing methods to achieve this. In the light of the Covid-19 crisis, which resulted in the closure of museums, blockbusters have become particularly problematic. The crisis could have been a catalyst for changes already underway. The steady growth in the museum sector in recent years does not seem sustainable, especially if museums continue to compete for visitor numbers while ignoring the visitor experience. In this light, the Covid-19 crisis could facilitate a positive transformation, which in turn could accelerate much needed change in the museum sector. Instead of large, travelling exhibitions with foreign loans, skyrocketing insurance costs and aggressive marketing, new, small-scale, community-based and potentially more sustainable ways of operating exhibition model will be enlarged.

The paradigm shifts that occurred with the emergence of the new museology have influenced the way in which professionals and visitors interact (Bodnár et al. 2017). Increasingly, institutions and professionals within them are moving away from the autocratic, one-way cultural mediation from above and approaching the visitor as an active interpreter, who creates his or her interpretation of the work based on his or her own experiences, associations, doubts and identity, making the museum an open work that is completed by the visitor (Douglas & Carless, 2018).

The digitisation of museums is an important area of sustainability. In their study, Clini & Quattrini (2021) pointed out that in the post-pandemic era, the main challenges for the digital transformation of cultural heritage lie in digital developments for curatorial and preservation purposes. They identified four areas that support the creation of a new, conscious, sustainable and proactive digital value chain for cultural heritage: scientific digitization, user experiences, user engagement and digital skills. The use of blockchain in museums is still in the experimental phase, but according to a World Cultural Heritage Organization (2019) publication, the technology will play a revolutionary role in the collection, auctioning, valuation, research, rescue, exploration, protection, planning and certification of cultural assets. The museum is a non-profit organisation that shares intangible intellectual property for the use of society as a whole and its services via the internet are expanding to fulfil the museum's mission of social education sustainability. However, Wang et al. (2021) point out that it is also essential to protect digital archives of cultural relics through appropriate mechanisms. Muñoz-López et al. (2021) in their research investigated the role of digital content from the user's perspective during

museum visits and the results show that audio-visual exhibitions are more sustainable than printed exhibitions (audio-guided instead of explanatory texts).

In their research, Viau & Courville (2021) point out that it is now inevitable for museums to develop multidisciplinary organizations to enable creativity and social innovation, especially for ethically driven and future-oriented institutions. They need to place greater emphasis on developing healthy teamwork, community engagement projects and investing in the career development of key staff. Encouraging creativity is key to the sustainability of such a model in the 21st century.

Table 2. Factors for the cultural pillar

Mission and vision of the cultural institution and the role of their collections in society	Ankersmit 2021
Collection management	
Preventive conservation	Ankersmit 2021
The use of smart technology in artefacts protection	Manfriani et al. 2021
Collection as a tourist attraction	Orea & Giner et al. 2021
Exhibition management	
The use of smart technology in exhibitions	Manfriani et al. 2021
Small-scale exhibition model that favours visitor experience (instead of blockbuster)	Jurčišinová et al. 2021
Active involvement of visitors in the interpretation	Bodnár et al. 2017; Douglas et al. 2018; Clini & Quattrini 2021
Digitization	
Scientific digitization, user experiences, user engagement and digital skills	Wang et al 2021; Muñoz - López et al. 2021; Clini & Quattrini 2021
Future-oriented approach	
Multidisciplinary professional team	Viau & Courville 2021
The importance of young professionals in the renewal of museums	Carr 2021

Source: own editing

Carr (2021) investigates the importance of the role of the younger generation and the importance of age diversity for the sustainability of museums. Younger generations are more socially connected and socially aware, they want to change the world now. However, data shows that fewer young people see museums as living up to these values, which creates an urgent need to engage and build loyalty among the next generation of patrons. Opening museum boards to a younger, more diverse generation can help museums to respond agilely to these challenges and ensure the sustainability of museums now and in the future.

Environmental pillar

Operating in an environmentally responsible way also poses major challenges for museums. The operation of buildings, the conservation of collections in an energy-efficient way and the negative environmental impact of transportation of artefacts are also forcing museums to develop new strategies and standards that do not require high energy consumption, do not require complex technological skills and are affordable for the majority of museums.

In the case of environmental sustainability, the role of museums can be understood at two levels: on the one hand, as an organisation, how much attention is paid to the museum's building and operations and on the other hand, how it can raise awareness of the importance of the environment. Wickham and Lehman (2015) point out in their study that sustainability in the context of cultural heritage needs to be extended to a wider range of resources (e.g. human capital, cultural, historical, social and economic resources) in addition to those traditionally considered as natural environmental resources. Thus, the concept of organisational sustainability focuses on the allocation and use of human, economic and natural resources.

Reducing the energy consumption of museum buildings is a significant step towards the elimination of greenhouse gas emissions (Pedro et al. 2013). The future could bring a major breakthrough in the “greening” of outdated, high energy-use museum buildings, of which there are a growing number of international examples in progress or already implemented, for example, the Alvar Aalto Museum, Helsinki, MAXXI, Rome. Aleksandrov (2021) presents a study on the integration of innovative and spectacular solutions in the energy-efficient retrofitting of the old museum building of the Alvar Aalto Museum. Green roofs and walls, gardens, waterfalls, solar energy for heating the internal halls extension through "flooded balloons" with warm air located on the roof, the space

closed between the two double umbrellas of the windows for making a warm air, with different thicknesses and lengths of pipes filling the role of a sunny energy collector.

Arroyo et al. (2016) study the complex process of designing net zero energy (NZE) museum buildings. Consultation with an increasing number of stakeholders, consideration of the social and environmental impacts of architectural solutions, and economic considerations make decision-making particularly complex. Few planners know how to take these factors into account in decision-making. The use of the researcher-developed Choice Based on Advantage (CBA) method creates a transparent and collaborative environment for decision making by integrating multiple considerations, creating transparency, separating "value" from cost, and clearly documenting the rationale for the decision.

The issue of museum lighting is a key area of research in the field of museum environmental management. Hassanizadeh & Noorzai (2020) propose the introduction of a lighting solution that takes into account the quality of the artwork presentation and improves the comfort level, in addition to reducing energy, costs and greenhouse gases. Museums need to maximise energy efficiency and minimise their carbon footprint while ensuring the preservation of the works in their collections, the visitor experience and public access. To develop such systems, interdisciplinary teams of experts - including curators, conservators, architects, engineers and sustainability consultants - need to be established. Effective building maintenance also includes the use of renewable energy, water use, waste management, pollution management, vehicle management, and other eco-solutions (Sterrett & Piantavigna 2018).

Museums can bring the public closer to environmental issues through exhibitions. The potential of mobile technology is also increasingly being explored by researchers. Aguayo et al. (2020) explore in their study how to integrate the use of smartphones into the teaching and learning of sustainability education in optional learning spaces such as museums. Huang et al. (2022) developed an eco-incentive mobile app system to encourage consumers to consume sustainably, in which consumers who recycle and reuse end-of-life products are awarded eco-credits and in which eco-credits can be used for shopping discounts, redeem eco-credits for museum/theatre tickets, or donate them for tree planting.

According to the research of Navas Iannini & Pedretti (2022) exhibitions related to sustainability can contribute to changing visitors' behaviour at an individual action level - they can learn how to recycle better, how to choose products more wisely, how to make

better choices about the food they consume, the amount of energy they use and the waste they generate. The exhibitions help visitors to become responsible citizens, to act responsibly in their communities and to make better and fairer choices about the environment.

Han et al. (2021) investigated the formation of environmentally-friendly decisions of museum visitors by incorporating the mediating effects of the quality of the purchase-product relationship and a sense of pride. A sense of pride is essential in justifying an individual's pro-environmental behaviour. This affective factor has been explored as a fundamental driver of museum visitors' pro-environmental intentions towards green museums in the theoretical framework established by the researchers.

In their study, Molina-Torres (2021) address the role of eco-museums in education. Museums can serve as an ecodidactic resource for teaching and implementing projects related to historical heritage, as well as fostering deeper engagement and enhancing students' respect for our cultural and natural heritage.

Table 3. Factors for the environmental pillar

The organisational sustainability focuses on the allocation and use of human, economic and <i>natural resources</i> .	Wickham & Lehman, 2015
Efficient building maintenance	
Reducing the energy consumption, net zero energy (NZE) museum buildings,	Pedro et al. 2013; Arroyo et al. 2016
Use of renewable energy sources, water use, waste management, pollution management, vehicle management	Sterrett & Piantavigna 2018
Lighting solution	Hassanizadeh & Noorzai 2020
Greening of museum buildings	Aleksandrov 2021
Shaping eco-conscious attitudes of visitors	
Strengthening the environment-friendly decision of museum visitors	Han et al. 2021
Organizing exhibitions related to sustainability	Navas Iannini & Pedretti 2022
Integrating mobile technology in education and promotion of sustainability	Aguayo et al. 2020; Huang et al. 2022

Museums as an eco-didactic resource for heritage projects, as well as fostering deeper engagement and developing students' respect for cultural and natural heritage.	Molina -Torres 2021
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Source: own editing

Social pillar

Cultural heritage is fundamentally linked to the idea of preservation through active use (Irace 2014). Reaching out to communities has become a priority for cultural institutions in recent years. This is not only important for them in terms of knowledge transfer, but also as a means of cultural awareness and development. Thus, museums are places where cultural content can be found and created, and where the crossover between cultures and generations is ensured (Llamazares de Prado 2021).

At the same time, the educational role of museums is also essential to have an emotional and intellectual impact on society (Azmat et al 2018). The ability of museums to promote knowledge, cultural and social values and contribute to multidimensional social discourse stems from the distinctive instrumental value of museum learning. However, no serious link between specific experiential learning and the sustainability of museums has been established. Therefore Moldanova's (2016) research is significant concluding that individual museum learning is one of the keys to the institutional distinctiveness of museums. The value of museum learning stems from the fact that museums are places where beauty and human endeavour can be learned through direct experience, rather than through books or traditional lectures.

Although the emphasis on object-based epistemology has diminished (Conn 2010), museum managers still view objects as powerful enablers of museum learning and the role of objects has shifted from storage and display to encouraging dialogue between art and people (Moldanova 2016).

Hansson & Öhman (2022) point out that museums can also become key pedagogical tools for sustainable development and thus play a crucial role in encouraging participation in sustainability issues. The complexity of sustainability and the moral, existential and emotional dimensions of the issues make teaching and learning about it a real challenge. Researchers have identified three types of evocation: existential, political and moral/ethical, which may be relevant to the teaching and learning of sustainability in museum education. From a didactical perspective, the emergence of evocations can enrich the museum education of sustainability issues related to exhibitions and thus provide insights into what students experience when visiting museum exhibitions. This

will allow museum educators to evaluate experiences with sustainability issues and the strong reactions they elicit.

Table 4. Factors for the social pillar

Education	
Individual, experiential learning	Moldanova 2016
Role of evocation through exhibition	Hansson & Öhman 2022
Active use of cultural heritage	
Interactivity	Schaper 2018
Visitors as cultural content creators	Llamazares de Prado 2021
Technology based immersive new museum experience	Hammady et al. 2021
Role of AI in the sustainability of the digital ecosystem, meaningful public participation and creative re-use of data.	Tzouganatou 2022
Community involvment	
Contributing to the development of cultural awareness in communities	Llamazares de Prado 2021
Influencing society	
Make an emotional and intellectual impact on society	Azmat et al. 2018

Source: own editing

Interactivity also makes it easier to reach younger audiences, such as secondary school students, and many potential visitors who avoid visiting museums because they believe that strict rules of behaviour limit the visitor experience by only allowing them to view exhibitions (Schaper 2018). Museum uses of MR (mixed reality) may in the future contribute to cultural sustainability and create a more gradual engagement and returning visitors' willingness to return compared to the traditional museum experience, thus strengthening the economic position of museums and cultural heritage sectors. Hammady et al. (2021) explore possible alternatives to reimagining the museum experience and present a museum case study where a highly engaging, immersive museum experience was developed for visitors by combining real-time visual and audio information,

computer-generated images with museum objects and visitor information interfaces. Museums are working to raise public awareness of cultural issues by making their content available on the internet. Although born-digital cultural heritage content has flooded the internet in some areas, it is still mostly stored in digital archives. Key issues related to this topic are the sustainability of the digital ecosystem, meaningful audience participation and creative re-use of data. Emerging technologies, such as artificial intelligence (AI), are being used to make born-digital archives accessible, with the aim of increasing audience engagement and participation (Tzouganatou 2022)

Economic pillar

At the beginning of the 21st century, museums are under great pressure to maintain financial stability and ensure their future survival. They are increasingly concerned to achieve not only cultural and social goals, but also economic ones. The concept of economic sustainability as it applies to museums was discussed at the ICOM meeting on Museums and Financial Sustainability in Porto in November 2011. It was concluded, among other things, that when examining the theory and practice of sustainability, museums should consider duration, long-term performance, the quality of their operations and services, non-profit objectives and their contribution to the well-being of society (Philip 2011). According to Pop & Sabou (2013) the only way for museums to develop is to make better use of their resources. For many, the notion of sustainable development is limited to the use of green technologies that do not harm the environment. However, sustainable development also refers to the preservation of the economic environment in good condition, using all resources (material, financial, human and information) in the most rational way. This activity results in (1) reducing costs, (2) achieving higher performance at the same cost, or ideally (3) minimising inputs and maximising performance.

In addition to the efficient use of resources, improving the quality of services is also an important feature of the museum's "entrepreneurial" approach. An entrepreneurial museum is not a commercial museum, but a museum that knows how to use its resources to maximise social, cultural and economic outputs (Coman & Pop 2012).

In museums, the involvement of stakeholder groups, such as donors, employees, volunteers or government is also a key feature. The pursuit of a multi-stakeholder approach that includes all these groups is vital, although donor orientation and visitor orientation are particularly important as they form the two cornerstones through which the financial goals of these organisations can be achieved. Visitor orientation is about

understanding and seeking to meet the needs and wishes of the visitor, but it should be remembered that donations, patronage and sponsorship play a significant role in sustaining cultural institutions and are essential to keeping them alive (Stokburger-Sauer & Wetzels 2007).

Innovation is another important dimension of museums' economic sustainability. Research confirms that innovation has a significant and positive impact on the economic and social performance of museums and therefore, when innovation strategies are applied in the museum sector, the social, economic and environmental sustainability of museums is improved (Camarero & Garrido 2008). In order to reach a wider audience and to attract additional resources from donors and sponsors, museums are increasingly organising large-scale projects and investing in exhibitions and their visualisation, as well as in the development of technical resources (digital catalogues, software applications, educational programmes, virtual visits and online publications). Some museums are also making significant changes to their organisational structures and are seeking to recruit staff with different training backgrounds (art, business management, IT and digital technology, etc.). Museums have thus recently moved towards an innovation orientation. However, the use of innovation in museum management should be understood in the context of the mission of museums, i.e. to preserve and research culture and heritage and to stimulate interest in culture and education (Brown 2020).

Vision 2050² calls for new, disruptive innovation processes. Technology can be an important tool for cultural innovation, but it cannot be the only driver. Culture and technology must work together to achieve positive results. As current mainstream production and consumption and related innovation patterns are still largely driven by mass consumption and profit maximisation, innovation for sustainable development will require a fundamental paradigm shift to have a positive impact in the world (Ernst et al. 2016). To manage the risk of a likely reduction in public funding, some organisations are pursuing financial sustainability strategies while seeking to preserve their original social or cultural objectives. Financial sustainability in the cultural sector is linked to cost reduction, market openness and diversification of funding. Financial sustainability is defined as effective risk management that allows the organisation's planned expenditure to continue uninterrupted and ensures that likely external and internal shocks do not lead to interruption or reduction of services. This implies a wide and diverse range of tactics

² <https://www.wbcsd.org/Overview/About-us/Vision-2050-Time-to-Transform>

that include a flexible workforce, a flexible organizational infrastructure, and a stronger marketing function (Dollery et al. 2007). Research shows that non-profit organizations with more diversified revenue streams tend to exhibit greater revenue stability, which increases organizational sustainability (Carroll & Slater 2009).

Traditional indicators that measure museum performance include: attendance, revenue, number of Friends members, gift shop sales, media coverage, balanced balance sheet and corporate events. According to Douglas Worts (2004), all of these indicators are useful for measuring the well-being of an organisation, but are not suitable for showing the role a museum plays in maintaining the cultural health of a community. In this respect, we believe that a more relevant indicator would be the unit cost of a museum visit, estimated as a ratio of the institution's total budget to the total number of visitors. From an economic point of view, this indicator uses precisely the two elements needed to measure the efficiency of an institution, namely input and output.

In their study, Pop & Sabou (2013) also considered the self-financing rate to be important in addition to the unit cost of a museum visit. By aggregating these indicators and calculating the cost per visit and the share of own income in the total income, we can obtain a sustainable development indicator for museums. Museums should aim to keep this figure as low as possible.

Güner & Gülaçtı (2022) identified the areas where new business lines are needed under three main headings as (1) presentation of exhibitions and works, (2) commercial activities, and (3) communication. Business models transformed by digitalization in contemporary art museums and galleries.

Creativity has extended well beyond the artistic and cultural field and is today recognised as a fundamental component of economic development. While creativity remains high in the museum sector, there is a growing need to enable cultural professionals to fulfil financial sustainability and resilience. Three interrelated management upskilling pillars are crucial at this stage: (1) agile and exponential organization, (2) human and cooperative organization, and (3) sustainable and positive impact organization (Ost & Saleh 2021).

The economic role of museums in tourism

Museums play an important role in the tourism development strategies of regions and contribute to increasing the income of local residents and creating jobs. In the UK, the museum sector has been shown to contribute more to the economy than the automotive or advertising and film industries, directly supporting around 195 000 jobs (Siu et al. 2013). In addition, it is estimated that museums in Europe attract hundreds of millions of

visitors each year, the vast majority of whom are tourists (Gil & Ritchie 2009). The economic potential of museums has led to a growing number of cities in the United States and Europe developing sustainable development strategies focused on cultural tourism (Sacco et al. 2009; Plaza & Haarich 2013). Governments have recognised the contribution of museum heritage to the economic and socio-cultural development of a region through tourism. This could be a good opportunity for museums to develop strategic partnerships with the tourism sector in the future within a framework of sustainability.

Art tourism, a new area of cultural tourism, has especially recently become a key driver of regional and urban regeneration. Museums, which historically served local art audiences, now need to connect with a growing travelling public. (Franklin, 2018). For urban tourists, cultural activities are the most important motivator, with cultural tourists making up the largest segment (43%). They prefer heritage sites, museums and galleries rather than performing arts and festivals (Smith et al. 2023).

Table 5. Factors for the economic pillar

Organisational development	
Flexible workforce, flexible organisational infrastructure	Dollery et al. 2007
Innovation orientation, creativity, new technology	Brown 2020 Ost & Saleh 2021
New management skills (1) agile and exponential organization, (2) human and cooperative organization, and (3) sustainable and positive impact organization.	Ost & Saleh 2021
Services	
Improving the quality of services	Comaan & Pop 2012
Visitor orientation, stronger marketing function	Stokburger-Sauer & Wetzels 2007 Dollery et al. 2007
Sustainable financial approach	
Diversified sources of income	Carroll & Slater 2009
Better use of resources	Pop & Sabou 2013
Self-financing	Pop & Sabou 2013
New business models transformed by digitalization	Güner & Gülaçtı 2022
Tourism	
Cultural tourism, regional development strategies	Siu et al. 201

Source: own editing

I.2.5. Sustainable museum strategies

After reviewing the literature, we can see that the concept of sustainable museums has been outlined in academic research, but in practice there is no clear and well-established framework about how to understand it. Hedges (2021) pointed out that museums conceptualize sustainability differently from the way it is presented in the literature, creating a gap between concept and practice, for example, while scholars have generally conceptualized sustainability as a multidimensional concept, interview responses in her research focused on environmental sustainability rather than multiple dimensions. One possible reason for this gap could be the lack of a common definition in the museum field of what activities count as sustainable or the differences between institutional priorities. It is possible that museums do not prioritize environmental sustainability, yet this is commonly the first thing they think of when asked for a definition of sustainability. Museum professionals are more likely to follow the recommendations of different museum associations rather than academic research and identify which activities are considered sustainable. A consequence of the lack of standards is that professionals have a different definition of sustainability than researchers.

The Primary Research presented in this dissertation proposal attempts to answer the questions that museum professionals are increasingly asking: what changes are museums making in practice to become sustainable and what factors determine museums' sustainability efforts? The research results (Article 3) show that although cultural objectives are a priority for a museum, on average, the museum managers who participated in the study ranked economic sustainability as the most important, with environmental sustainability the least important and cultural and social sustainability in between. Museums only made efforts in actions if they were already part of their daily practice. This is why it is important to develop strategies and methods that strengthen all sustainability dimensions at the same time and why a complex approach is important. The next task for academic research is to present the best practices where these aspects are combined and for this, closer cooperation between academic researchers and practitioners would be desirable.

For museums, embracing sustainability goals can be an excellent differentiating strategy, especially among the younger generation, as Article 4 (A4) confirms, pointing out that the majority of young people already follow this multidimensional, conscious approach to life and expect this from museums as well. Museums can develop closer relationships

with their visitors if they develop marketing strategies to encourage them to engage more closely and return. Families are a particularly important target group for them, as research has shown that adults who have had a number of positive museum experiences as children are more likely to become museum visitors (Article 5). In her study, Nielsen (2015) sought to support the idea that the sustainability of a museum depends on its relevance to the community and visitors. Since sustainable development is linked to the needs of current and future generations, measuring progress requires first and foremost assessing these needs.

Museums, especially in our region (Central and Eastern Europe), still have significant gaps in their sustainable practices (Article 1 and Article 2) and need to make a more conscious effort to be more integrally linked to the society in which they operate. Referring to the research of Moldanova (2016) who identified two narratives related to the intergenerational sustainability of cultural institutions: an institutional resilience narrative and an institutional distinctiveness narrative. Together, institutional resilience and distinctiveness lead to the development of institutional capital that helps formalised organisations survive and sustain. Sustainability capital acts like a bank savings account: when money is tight and times are hard, organisations can spend some of their capital to recover from environmental shocks or they can choose to use this capital to invest in the future and explore new ways forward.

I.2.6. Conceptual framework for the primary research

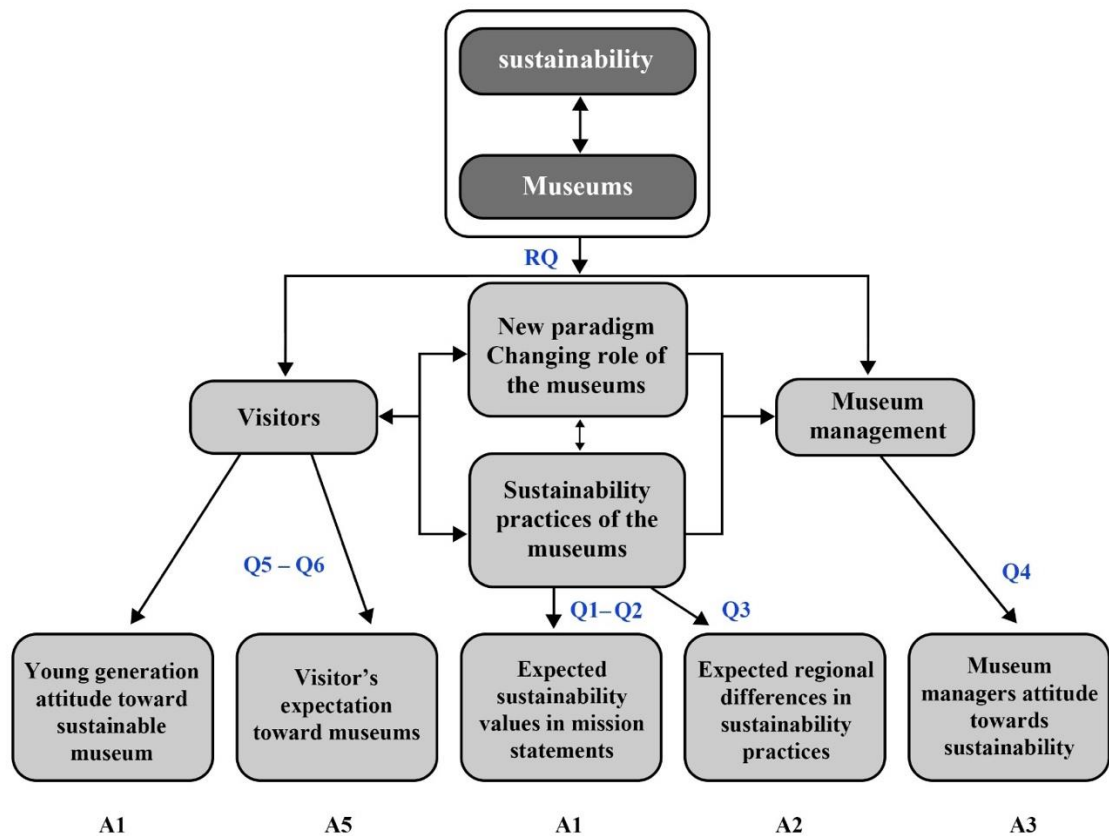


Figure 7. Conceptual framework for the primary research, own editing

Museum professionals have for some time been increasingly concerned about the changes affecting museums: dwindling public funding, changing visitor expectations, the challenges of new technology, the growing focus on the environment, the widening gaps between different social groups. How do museums need to change to stay relevant? As the problem is very complex, a response was sought that could address all these challenges at once. The 21st century has brought with it a new paradigm of sustainability that can point the way to a solution. The research sought to find out what progress museums are currently making in this area and what preferences visitors and museum managers have regarding the complex issue of sustainable museums.

Table 6. Conceptual framework for the primary research

Research goals	RQ	Article
to analyze how European contemporary art museums have incorporated sustainability into their mission statements	<p>Q1</p> <p>What sustainability practices characterize European contemporary art museums based on the information set out in their mission statements?</p> <p>Q2</p> <p>Are there regional differences in the sustainability contents of the mission statements? What are the differences between mission statements in CEE and non-CEE countries' museums?</p>	A1
to investigate the progress in the adoption of sustainable practices at European contemporary art museums along four pillars	<p>Q3</p> <p>What are the sustainability practices of European museums based on information available on their website?</p>	A2
to find out what opinion preferences Hungarian museum professionals have about sustainability, what are the similarities and differences in their views.	<p>Q4</p> <p>What are the most important criteria for a sustainable museum?</p>	A3
to determine museum visitors' preferences related to the most important sustainability elements of museums	<p>Q5</p> <p>What are the elements of museum sustainability that Generation Z prefers?</p>	A4
to identify key elements that make a museum family-friendly and to define criteria for this designation.	<p>Q6</p> <p>What are the criteria for family-friendly museums?</p>	A5

Source: own editing

Q1 What sustainability practices characterize European contemporary art museums based on the information set out in their mission statements?

Research on sustainability in museums typically focuses on one dimension of sustainability, with little research on a holistic understanding of sustainability. Research on how museums align with sustainability is not a new topic, but rare in the context of contemporary art museums. The paper aims to analyze how European contemporary art museums have incorporated sustainability into their mission statements. The study uses a qualitative discourse analysis method to examine the content of the missions of 50 European contemporary art museums.

Are there significant regional differences in the sustainability contents of the mission statements? What are the differences between mission statements in CEE and non-CEE countries' museums?

Q2 Are there regional differences in the sustainability contents of the mission statements? What are the differences between mission statements in CEE and non-CEE countries' museums?

During the research, we considered it important to explore whether there are regional differences between European museums. The former socialist countries of Eastern Europe have a number of social, economic and political specificities that may have an impact on the sustainable functioning of museums.

Q3 What are the sustainability practices of European museums based on information available on their website?

This paper investigates progress in the adoption of sustainable practices at European contemporary art museums according to four pillars of sustainability. Museums take various steps to adapt the goals of a sustainable future in their operation. Qualitative content analysis was used to capture how sustainable are European contemporary art museums and what are the differences between different European countries.

Q4 What are the most important criteria for a sustainable museum?

Museums play a unique role in cultural sustainability by preserving the heritage of their communities and allowing cultural capital to be accumulated and passed on from current generations to future generations. In the course of their development, museums have acquired a wealth of knowledge through continuous and in-depth research. The question is how should museums change in the 21st century to meet new challenges and become sustainable and play a catalytic role in advancing human culture? The aim of our research

is to find out what opinion preferences Hungarian museum leaders have about sustainability and what are the similarities and differences in their views.

Q5 What are the elements of museum sustainability that Generation Z prefers?

Museums and researchers require knowledge of how museums think about and practice sustainability to understand how sustainability considerations can further be incorporated and institutionalised into museum practice according to four pillars: environmental, social, economic and cultural. A systematic literature review was carried out to explore the theoretical background of sustainable museums. This study, which used Q methodology, was designed to determine museum visitors' preferences related to the most important sustainability elements of museums.

Q6 What are the criteria for family-friendly museums?

In their traditional role, museums are cultural mediators, sources of information and research. However, as the needs of consumers with regards to museums are changing, institutions should instead focus on the opportunity to participate, learn and experience. The aim of our study is to identify key elements that make a museum family-friendly and to define criteria for this designation. The framework was constructed based on the analysis of in-depth interviews with families with constructive grounded theory.

I.3. Research methods applied

This chapter describes the research methods and data collection used in the articles included in the dissertation. Qualitative methods were carried out: qualitative content analysis and critical discourse analysis (CDA) to investigate museum websites and missions, Q methodology to assess the preferences of museum directors and young museum visitors, and grounded theory to analyze the needs of families.

I.3.1. Data collection

Secondary and primary data collection were conducted in research.

A systematic literature review was carried out as secondary data collection, the methodology of which is briefly described in this chapter and the details of the analysis are presented in a journal article (A4).

During the primary data collection, museums' web pages were analyzed (A1, A2) and museum directors (A3), young museum-goers (A4) and families (A5) were asked to participate in the research.

I.3.2. Systematic Literature Review

Four-phase literature review

A systematic review of the literature was necessary to explore the theoretical background of a sustainable museum. The process of literature review was carried out in four steps: the first step is conceptualization, which means the selection of the database, the definition of search terms and the criteria for selection (SR1). The second and third step is the two-phase review process, which means the selection of studies based on title and abstracts (SR2- SR3), followed by the selection of articles based on reading the full content of the articles. The fourth step is the analysis and processing of the articles (SR4)

SR1 Conceptualisation - research design and criteria

The search was carried out in the Scopus database using the keywords: Museum and Sustainability and with the following criteria: keywords searched in the title, abstract and keywords of the articles in the subject area Museum and Sustainability. Document type: article, source type: journals.

Relevant articles had to meet the following criteria:

1. the study should focus on sustainability, including different aspects: environmental, social, economic and cultural
2. it must be a journal article published between 2000 and 2020 to identify sustainability trends in the museum field
3. articles published in English in an international peer-reviewed journal
4. ranked Q1-Q3 by Scimago

SR2-SR3 Two-stage review process

After a keyword search, the selection of articles was made through a two-phase review process. The number of relevant studies included in the sample was reduced based on the title and abstract of the articles. The reasons for exclusion were: articles that related to open-air museums or libraries in addition to museums were not included, the context of the research was archaeological sites, and museums that were concerned with the presentation of intangible intellectual heritage were excluded. From the geographical scope of the research, we excluded regions that are considered to be very different from the European cultural sphere and irrelevant in this sense (different cultural background, indigenous). Based on the focus of the research, we excluded also articles that addressed sustainability issues with a strong engineering focus (e.g. building solutions, climate control, energy management, humidity measurement, restoration techniques, information technology issues)

SR3. Compliance definition of articles.

Articles were selected at this stage for which only the abstract was available and the full article was not accessible online. Several articles were also excluded from the selection which were interesting in content but over-generalised, did not contribute to the theoretical underpinning and did not include empirical research.

SR4. Analysis

The qualitative analysis was based on the identification of the theoretical underpinnings of the thesis, the main contributions to the topic, research questions, new insights, empirical methods and data sets for sustainability models.

I.3.3. Critical Discourse Analysis (CDA)

Critical discourse analysis is a collective term for theoretical and methodological trends that combine micro-level linguistic analysis with the analysis of the context, i.e. the macro-level (Páprádi 2018). The discourse analysis is based on the ideas of the discourse history school, which is named after Ruth Wodak (Wodak & Meyer 2001, Géring 2017). This research approach and method understand the social production of texts as a reality-making practice. The central concept and object of analysis of CDA is the discourse, which is "a form of social action that plays a role in the production of the social world - knowledge, identity, relationships - and thus in the maintenance of social forms." (Jørgensen-Phillips 2002: 5). Using the method of critical discourse analysis, the mission statements available on museums' websites were investigated. The aim of the research was to analyze how European contemporary art museums have incorporated sustainability into their mission statements.

In the discursive analysis of the mission of museums, the aspects to be analyzed emerged through the examination of the texts themselves, in an iterative process. For example, in the present research, one aspect of the discourse on the social role of museums in Europe can be seen as describing the different socio-politico-economic context in which they operate. But of equal importance are the international sustainability professional recommendations, as well as the literature and theoretical approaches to museums' social role and the national and international research on different dimensions of sustainability (Géring, 2015).

Through an iterative coding process, we developed a set of investigative criteria and an associated coding scheme by repeatedly reading and analysing the introductory texts of the first 20 randomly selected museums.

Rationale for the choice of method

Museum discourse is under-researched, especially the processes of positioning and meaning-making. Museum discourse analysis can tell us a lot about the values according to which museums create knowledge and the role these might play in future practices. It can also give an idea of the message it wants to convey to its audience and the language it uses to communicate it.

I.3.4. Content Analysis

In defining the main features of content analysis (CA), Klaus Krippendorff (2004) emphasised that it is a research technique that, while analyzing texts, seeks to draw conclusions not only about the texts themselves but also about their context. On this basis, content analysis is a suitable method for organising the textual information contained on individual websites into a coherent and generalisable structure.

Coding process

Based on the research question, the categories, themes and aspects that researchers should consider when collecting data are defined. A code list is then developed and completed by the analysts in the form of a research diary. The categorization scheme built on this basis is a list of questions where the questions are formulated in a form to be decided: whether or not the theme/programme/initiative etc. appears on the website. The dichotomous question format increases the reliability of the data (Schutz 1958), which is a particularly important consideration when coordinating the work of several coders. In the course of the research, the code list is used to generate the codes from the texts, and the codes are then used to create a database that can be analyzed.

It is advisable to carry out a pilot study first. Two people independently analyze a fixed number of samples, then compare and discuss the answers until there is at least 98% agreement.

Rational for the choice of method

In content analysis, the interpretation of the data should take into account all other textual and non-textual contextual elements that may have an impact on the corpus of texts under analysis. On this basis, content analysis is therefore a suitable method to organise the textual and visual information contained in each website into a coherent and generalisable structure and to formulate it into a database that can be analyzed and interpreted (Géring 2017).

I.3.5. Q-method research

Methodology: qualitative preference analysis and quantitative factor analysis

Physicist and psychologist William Stephenson (1902-1989) developed the Q-method in the mid-20th century. Stephenson examined participants' perspectives and considered the participants as their variables, thus examining the correlation between participants rather than between perspectives. The Q-method combines the characteristics of qualitative and quantitative research methods. It is qualitative because it focuses on the subjectivity of opinions and attitudes, but analyzes and evaluates the data quantitatively (e.g. factor analysis, correlation). Q-methodology helps to systematically investigate human subjective opinion making and decision making. No two people perceive the world in the same way, and these different perspectives are used to create typologies in this research method (Hofmeister & Tóth-Simon, 2006).

In Q-method research, participants rank statements related to the research topic according to their individual preferences. This exploratory analysis allows us to identify the typical statements that characterise each opinion group, i.e. statements about which opinion groups differ (discriminative statements) and which statements do not discriminate according to any factor (consensus statements).

The Q method is most commonly used with samples of 15-50 participants (Danielson et al. 2012). Participants in a Q survey are purposively selected (i.e. not randomly chosen) according to their interests. For example, they may be policy makers, professionals in a particular field, people living in a particular area or affected by a particular problem. Respondents should be selected to represent the views of those interested in a particular topic, rather than to represent the population as a whole.

Participants receive both verbal and written explanations of the survey and instructions on how to complete it, in which they are asked to first sort the statements into three groups based on whether they agreed, disagreed or were undecided/neutral. Once the statements are grouped, participants are asked to place the statements along the Q-sample grid from -3 to 3. After each statement is placed, an individual sorting pattern emerges that could be compared with the sorting patterns of the other participants.

Data processing

Commonly PQMethod 2.35 software is used to process the data. First, a correlation matrix between the Q-samples is generated and then factor analysis is performed. As a result of the factor analysis each group of opinions are separated and the Q-ordering that is on average characteristic of that group of opinions is produced.

Based on the individual preference rankings, the method produces a certain number of factors, then Varimax rotation is conducted since the factors explain 60% of the variance, which is the minimum criterion.

For each factor (group of opinions), the so-called normalised factor values (Z-score) can be calculated for the statements, which, using the measure of variance, show how much the assessment of a given statement differs from the main average in each group. Once the characteristic Q-ordering for each opinion group has been obtained, it is possible to analyze the level of the statements: a) which statements are rated approximately identically in each group: "consensus statements"; b) which statements are strongly differentiated between groups: "controversial statements".

Rationale for the choice of method

Due to its exploratory nature, the Q-method can answer potentially complex and socially controversial questions (Watts & Stenner, 2008) and focuses on identifying and interpreting respondents' views (Davis & Michelle, 2011). In a Q-method study, participants develop their own preference set by subjective ranking. Methodologically, the advantage of ranking statements is that it captures how people tend to relate these ideas to each other (in contrast, participants in a questionnaire rate statements one by one and may even score each statement equally, so the final result can only be interpreted separately). The Q method is a good way of examining the comparative system of responses.

I.3.6. In-depth interviews

Method: Grounded theory (GT)

The grounded theory (GT) method was chosen for the research. In addition to the two main methodological approaches, Glaser's classical (1967) and Strauss-Corbin's (1998) approach, many other subtypes have appeared in the literature. For our study, we chose the constructivist approach, which is related to Charmaz's methodology (2006), the main distinguishing feature of which is that it recognizes that the researcher him/herself is an important part of the research process.

This method allows for a preliminary mapping of the literature and for it to influence the researcher's thinking and provides an opportunity to use preliminary theoretical frameworks. As theoretical and practical experts on the museum theme, we have gained significant previous experience that influenced our attitude and decision in our choice of method.

In-depth interviews

There are many types of interviews, each with its particularities. In our research we used in-depth interview, which is a qualitative data collection method that allows for the collection of a large amount of information about the behavior, attitude and perception of the interviewees. Questions are open-ended and can be customized as per the particular situation.

Non-probability sampling

There is a wide range of sampling techniques. In our research we used non-probability sampling, which is defined as a sampling technique in which the researcher selects samples based on the subjective judgment of the researcher rather than random selection.

Data analysis

The grounded theory process starts with the identification of an area of interest followed by the various stages of data collection, analysis and concept development and ends with the representation of axial coding in diagrammatic form. With regard to the analysis of the data, each interview should be accompanied by a memo. The first few interviews should be transcribed verbatim, then a line-by-line analysis is made to identify the full range of possible codes. The codes are then grouped together to form clusters that might have conceptual value in identifying patterns. Once patterns are identified, open coding is followed by the more focused axial coding. This means that codes are clustered on the basis of their explanatory relationship to each other.

Rationale for the choice of method

As the concept of a family-friendly museum had not yet emerged as a formal strategy, but rather as a semi-structured interview to explore the perceived and real perceptions and attitudes of museum professionals and families, the use of semi-structured interviews was justified to explore the perspectives. This type of qualitative interview provides a flexible guide or roadmap around a list of themes and the researcher is able to probe, explore and ask further questions, exploring the subject area in depth (Patton 2002).

As there is no specific theory that allows for the formulation and testing of hypotheses, our research adopted a grounded theory approach as discussed above.

II. STATEMENT OF CONJOINT WORK

The thesis presents the following journal articles:

Article 1 (A1): Fehér, Zs. & Ásványi, K (2023). Differences in sustainability approaches from the mission statements of CEE and other European contemporary art museums, *Journal of Contemporary Central and Eastern Europe* (*accepted*)

Article 2 (A2): Fehér, Zs, Ásványi, K. & Jászberényi, M. (2021). Fenntartható múzeumok az európai régiókban. *Észak-Magyarországi Stratégiai Füzetek*, 18 (3). pp. 92-102. ISSN 1786-1594

Article 3 (A3): Fehér, Zs. (2023). Múzeumok a fenntarthatóság keresztmetszetében. *Magyar Tudomány*, 2023/184 (1). pp. 73-83. <https://doi.org/10.1556/2065.184.2023.1.8>

Article 4 (A4): Ásványi, K. & Fehér, Zs. (2023). Generation Z perspectives on museum sustainability using Q methodology, *Muzeológia a kultúrne dedičstvo* 2023, 11:1:19-35 doi: 10.46284/mkd.2023.11.1.2

Article 5 (A5): Ásványi, K., Fehér, Zs. & Jászberényi, M. (2021). The Family-Friendly Museum: Museums through the eyes of families, *Muzeológia a kultúrne dedičstvo*, 9:1:21-40 doi: 10.46284/mkd.2021.9.1.2

Since the publications are co-authored, the contribution of each author should be presented. To provide a detailed description, the framework created by Brand et al. (2015) has been employed which is a standard method of author statements in international journals

Table 7. Statement of conjoint work

General data	A1	A2	A3	A4	A5
Journal	Journal of Contemporary Central and Eastern Europe	Észak-Magyarországi Stratégiai Füzetek	Magyar Tudomány	Museology and Cultural Heritage	Museology and Cultural Heritage
Status	accepted	published	published	published	published
Language	English	Hungarian	Hungarian	English	English
Publisher	Taylor and Francis Ltd.	University of Miskolc, Faculty of Economics	Akadémia Kiadó Zrt.	Faculty of Arts Comenius University	Faculty of Arts Comenius University
WOS, Scopus MTA-list	Q2	C	B	Q2	Q2
Scimago Journal Rank	0,17	-	-	0,2	0,2
First author contribution	Conceptualisation Methodology Investigation Writing	Conceptualisation Writing Investigation	Conceptualisation Methodology Investigation Writing	Conceptualisation Methodology Writing	Conceptualisation Methodology Writing
Second author contribution	Writing Review and editing Visualisation	Methodology Writing	-	Data curation Resources Investigation Writing	Investigation Methodology Writing
Third author contribution	-	Supervision Validation	-	-	Supervision Validation

Source: own editing

III. THE ARTICLES³

III.1. Differences in sustainability approaches from the mission statements of CEE and other European contemporary art museums

Reference: Fehér Zs. & Ásványi K. (2023). Differences in sustainability approaches from the mission statements of CEE and other European contemporary art museums, *Journal of Contemporary Central and Eastern Europe* (*accepted*)

Abstract

Research on sustainability in museums typically focuses on one dimension of sustainability, with little research on a holistic understanding of sustainability. Research on how museums align with sustainability is not a new topic, but rare in the context of contemporary art museums. The paper aims to analyse how European contemporary art museums have incorporated sustainability into their mission statements. The study uses a qualitative discourse analysis method to examine the content of the missions of 50 European contemporary art museums. From a regional perspective, in general, an openness towards sustainability and a holistic approach is less visible in the mission, but more so in non-CEE countries. Environmental management, economic stability and innovative, proactive behaviour are also stronger in non-CEE countries. In terms of societal roles CEE museums are primarily concerned with educating society, while non-CEE museums are already playing the role of the agent of change in social transformation.

Keywords: sustainability, museum, Europe, CEE, discursive

Introduction

Museums play a unique role in sustainability by preserving the cultural heritage of their communities and ensuring the accumulation and transfer of cultural capital of current generations for future generations. In addition to their core functions of collecting, preserving, and researching, museums have additional functions. In the modern approach, education is now emerging as an essential museum function. The post-modern

³ The articles have been only formally adapted to the dissertation, but the content has been not changed.

perspective, on the other hand, emphasises the role of museums in sustainable development (Pop & Borza 2015).

Museums are under increasing pressure to be sustainable and to rethink their traditional scope and practices (Janes 2010). The International Council of Museums (ICOM) keeps redefining the role of museums: “The museum is a non-profit, permanent institution in the service of society and its development, open to the public, which acquires, conserves, research, communicates and exhibits the tangible and intangible heritage of humanity and its environment for the purposes of education, study and enjoyment” (ICOM 2007). As the definition, however, does not sufficiently reflect the complexity of the 21st century, the current responsibilities of museums and the challenges of the future, the new definition was adopted in Prague in August 2022. The new version places greater emphasis on the role of communities, introduces a new element of openness, accessibility, and inclusiveness for the general public, and appears the sustainability as a new phenomenon: “A museum is a not-for-profit, permanent institution in the service of society that researches, collects, conserves, interprets and exhibits tangible and intangible heritage. Open to the public, accessible and inclusive, museums foster diversity and sustainability. They operate and communicate ethically, professionally and with the participation of communities, offering varied experiences for education, enjoyment, reflection, and knowledge sharing.” (ICOM 2022).

The International Committee for Museums and Collections of Modern Art (CIMAM) is actively involved in discussing issues affecting museums and society (CIMAM 2022). They are the museums best placed to reflect authentically on the social problems of our time, bridging the gap between the active art community and contemporary society. (Campolmi 2013).

The mission statement plays a key role for an organisation, as it contains the most basic information about the organisation, such as what its purpose is, what product or service it provides, who its users are and how it differs from its competitors. Previous research has shown that the more specifically sustainability is reflected in an organization's mission, the more likely its sustainability practices and performance will be higher (Lopez & Martin 2018).

The mission articulates a vision of the role of museums in society and, in relation to this, interprets the mission and goals of museums. If we understand museums as social institutions, one of the cornerstones of their functioning is the question of legitimacy and social acceptance (Bronn & Vidaver-Cohen 2009), which goes hand in hand with

the question of the role and responsibility of museums in society. The challenge for museums in the 21st century is to play a role in sustainable development (ICOM 2020). However, this is not only a challenge but also an opportunity, as museums can develop the image of museums by shaping public discourse and public debate.

Research on sustainability in museums typically focuses on one dimension or sub-dimension of sustainability, with little research on a holistic understanding of sustainability for museums (Pop & Borza 2015, Pop et al. 2019). To the best of our knowledge, the exploration of sustainability in the museum context from a regional perspective has not been addressed. The research by Pop et al. (2019) focused on the extent to which it specifically examined the potential for implementing sustainability practices in one country. Based on the case of Romania, they formulated influencing factors that may be relevant for identifying regional differences as the presence or absence of problems related to natural hazards caused by climate instability and the different levels of cultural consumption. Cultural context needs to be considered when interpreting the findings.

This paper analyses the sustainability of European contemporary art museums based on the information set out in their mission statements. Discourse analysis was used to examine the mission statements of 50 contemporary art museums. We identify the main dimensions of sustainability in the context of museums that form the framework of the study, and then describe the methodology and present the results. Finally, we draw conclusions and make suggestions for future research directions.

1. Literature review

Sustainability is more than just combination of the different sub-dimensions. However, the understanding of sustainability differs between museums and corporations, as corporations are profit maximising, whereas museums are typically not profit oriented and need to engage in sustainable behaviour with a wider range of stakeholders than profit maximising organisations. The complexity and diversity of sustainability in museums is illustrated in the following section and summarised in Figure 1.

1.1. Sustainability in museums

The role of sustainability in museums has been addressed in several previous studies, but the authors have taken different approaches to the issue.

According to Soini and Dessein (2016), the relationship between culture and sustainability can be approached in three ways.

– Culture in Sustainability, where culture constitutes the fourth pillar of sustainability.

- Culture for Sustainability, where culture plays a mediating role between the three pillars.
- Culture as Sustainability, where culture is at the centre and is an overarching dimension of the other three pillars.

Pop & Borza (2015) and Pop et al. (2019) have interpreted the relationship between museums and sustainability from a different perspective, with the two approaches being fundamentally complementary and linked to the museum's mission. Museums for sustainability: how museums contribute to sustainable development by being culturally sustainable; what museums can do to enhance quality of life and achieve economic growth (Pop & Borza 2016a). Sustainability for museums: how museums' sustainable practices can contribute to the fulfilment of the cultural mission, how museums approach sustainability, what are their practices. In one case, culture is a resource for achieving sustainability goals, in the other case, it is a goal achieved through sustainability, which together help museums to fulfil their mission (Cerquetti & Montella 2021).

Pop & Borza (2016b), however, stated that economic stability is a prerequisite for sustainability, i.e., a museum must be economically sustainable in the first instance, and only then can it address the other pillars of sustainability. The economic sustainability of museums is mostly understood in the literature in terms of funding, but it is important to complement this with the role of the market and the impact of innovation and technology (Fehér et al. 2021). However, achieving economic stability is a challenge for museums, and in many cases, therefore museum managers do not address the issue of sustainability (Ferika & Nazli 2018). However, we also see approaches where museums take advantage of the competitive advantage of the term 'being green' (Pop & Borza 2015, Pop et al. 2019).

In this paper we do not explicitly interpret museum sustainability along the sustainability pillars, but rather follow the principle of Alshuwaikhat & Abubakar's (2008) academic sustainability model of building on economic sustainability. Sustainable museum practices are interpreted and categorised along environmental issues, social issues and the functions of the institution. Within the dimensions, sub-dimensions can be linked to several dimensions at the same time, and their interconnections are indicated in the sustainability museum model illustrated in Figure 1.

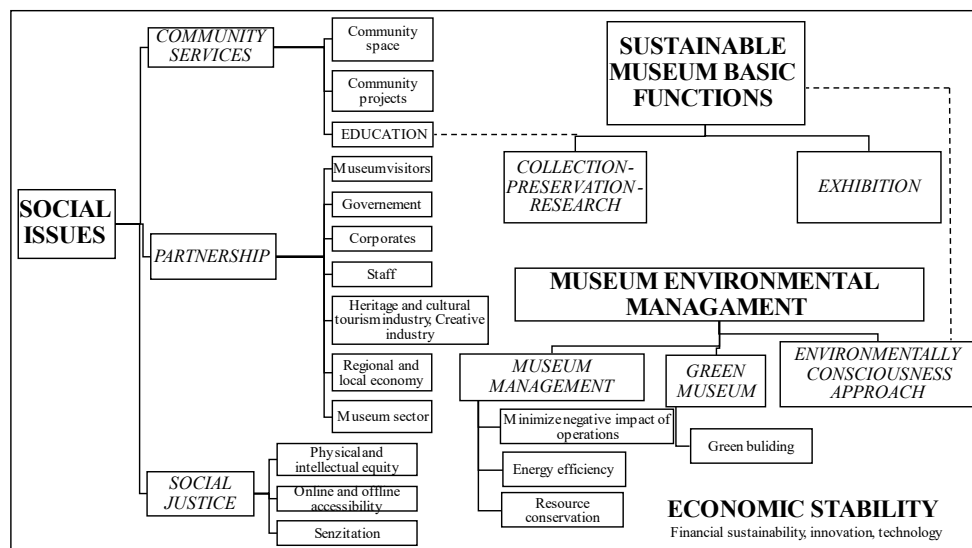


Figure 1. The museum sustainability model

Source: Own representation

1.2. Museum Environmental Management

Environmental management is essentially about operating in an environmentally conscious way, which includes museum management (Pop & Borza 2015) and the green design of museum buildings (Sterrett & Piantavigna 2018). Pencarelli et al. (2016) highlighted the reduction of energy consumption as one of the main tasks of environmental management, while other researchers (Rota et al. 2015) conceptualised it as a reduction of the environmental impact of cultural activities. Sutton et al. (2017), however, also considered waste management, water efficiency, carbon footprint measurement and green consumption as an important part of museum management. Reducing the consumption of natural resources and recycling of resources was also highlighted by Lambert & Henderson (2011). According to Wickham & Lehman (2015), within resource allocation and use, museums should also address pollution management, vehicle management and renewable energy use (Sterrett & Piantavigna 2018). More efficient use of resources can also be facilitated by technological

innovations (Bell et al. 2008), such as eco-save light bulbs, environmental impact measurement of equipment (Lambert & Henderson 2011), and lighting and climate control (Bickersteth 2016). Arroyo et al. (2016), on the other hand, approached this topic from the perspective of natural resource conservation and biodiversity protection. The green building design of museums has also been addressed by several researchers (Brophy & Wylie 2013, Newell et al. 2016), as well as related eco-design (Sterrett & Piantavigna 2018). However, in the approach of Fehér et al. (2021), the communication of an environmentally conscious approach is also part of environmental sustainability.

1.3 Social issues

The social sustainability issues are divided into three sub-dimensions: partnership, community services and social justice.

Partnership can take the form of contributing to the development of society (Arinze 1999). One of the key stakeholders is museum visitors, which includes offline visitors as well as online visitors. Developments in information and communication technology provide a much wider market for museums than physical visitors. (Gustafsson & Iijla 2017) There is a need to broaden the existing visitor base, which requires an audience-centred approach (Siu et al. 2013, Di Pietro et al. 2014). The development of partnerships is also essential from a financial funding perspective, where the museum also receives public funding, corporate or private donations, and volunteers are part of these stakeholders (Adams 2010). The presence of trained and responsible staff is also critical for the socially sustainable development of museums (Silence 2010). The role of museums has broadened in the 21st century, becoming key partners and actors in heritage and cultural tourism, as well as creative and innovative industries (Gustafsson & Iijla 2017). Museums can contribute to sustainable development by adding economic value to creative industries; they contribute to wealth creation, job creation and employment for regional and local economies (Reeves 2002). However, an important part of this partnership is also the potential collaborations with other actors in the museum sector (Li & Ghirardi 2019).

Pop & Borza (2015) highlight social issues through community engagement, as museums engage people emotionally and intellectually (Campolmi 2013). Several researchers (Belfiore & Bennett 2007, Azmat et al. 2018) see the social sustainability of museums in the creation or strengthening of communities, i.e., it is essential to build a deep, long-term relationship with as wide an audience as possible (Virto et al. 2017). Visser (2014) highlights active communities, groups of people who meet regularly and

create together in online or offline spaces according to their common interests, opinions and values. Throsby (2016) argues that museums' social mission is to serve the community and the public, and to create value for future generations. Museums have the potential to shape socially responsible behaviour in communities through exhibitions and events (Pencarelli et al. 2016, Manna and Palumbo 2018). Just (2014) has also highlighted the increasing commitment of museums to community development, inclusion-involvement, and the coordination of social and learning activities. As community spaces, museums are emerging as new community centres (Jung 2011). The museum of the 21st century can be seen not only as an institution but as a living organisation and a social platform that acts as a catalyst for community development, engaging museum visitors, even through personal interaction with artists (Ásványi et al. 2020). The educational function of museums is also steadily growing, which helps to transmit community beliefs and practices (Harkönen et al. 2018), through which they can raise awareness of important and current social issues. Advances in technology are also helping museums to become agents of social cohesion and to contribute to the understanding of history and cultural diversity by increasing young people's knowledge (Pencarelli et al. 2016).

The social justice subdimension is used in terms of the distribution of cultural opportunities within society. Aurel et al. (2017) argue that the museum has a responsibility to reach all groups in society. Public access can be increased through the development of technology and digitalisation (Guccio et al. 2016). At the same time, the dimension includes accessibility in both physical and intellectual terms (Pencarelli et al. 2016), which aims to interpret art in a way that is understandable to all, i.e., to avoid elitism in the museum, which would exclude certain groups (Belfiore 2002). Social justice also involves differentiated sensitization of different target groups (Arinze 1999), creating a socially inclusive society (Belfiore & Bennett 2007, Azmat et al. 2018), i.e., by connecting individuals and communities, they can bring about social change towards acceptance and inclusion (Crooke 2016).

1.4. Sustainable Museum Functions

The basic function of museums, from a sustainable perspective, is to preserve collections and maintain quality (Pop & Borza 2015), and cultural resources should be preserved not only for the present but also for future generations (Blagoeva-Yarkova 2012). Lambert et al. (2014) argue that a sustainable museum should consider, preserve and present the tangible and intangible heritage, artistic production and the knowledge

and skills of different social groups, communities and nations. Modern technology also facilitates the digitisation of collections management (Mamrayeva & Aikambetova 2014), thereby contributing to cultural and environmental sustainability. In the context of collections management, Ásványi et al. (2020) even point out that it would be worthwhile to find alternative solutions to replace current air travel, which would reduce the environmental impact of travelling with artefacts. According to Campolmi (2013), in addition to preserving cultural values, ensuring understanding is part of cultural sustainability, i.e., an exhibition should be professionally unobjectionable and made understandable to the general public by other means (Ásványi et al. 2020).

Exhibitions provide an appropriate arena for museums to bring the public closer to different social and environmental issues: democratic worldviews, peace between families, communities, and nations (Arinze 1999), environmental issues (Aguayo et al. 2020). Museums are also responsible for shaping the cultural tastes and preferences of visitors, so they must not only meet the needs of visitors, but also stimulate community interest in a particular direction. Through their exhibitions, museums' involvement in debates on environmental and social issues (Sutter 2008) can influence visitors' attitudes. Social changes in Europe are also changing and expanding the cultural diversity of the population, and the ageing population with more leisure time is broadening cultural expectations towards museums (Pencarelli et al. 2016).

2. Method

In order to gain a deeper understanding of the phenomenon of social roles in museum discourse, we apply the Critical Discourse Analysis (CDA) method, including the ideas of the discourse history school associated with Ruth Wodak (Géring 2017, Wodak 2001). The method goes beyond a purely linguistic analysis in interpreting the notions of text and discourse, and goes beyond the narrow context of the text to include social structures and processes in the focus of analysis.

In our research, we will examine the practices and regional specificities of contemporary art museums in different social contexts within a framework of sustainability, based on their mission statements. There are differences between CEE and non-CEE countries in their financial and economic development (Andries et al. 2016), which could also affect museums' sustainability approaches.

After the selection of the corpus of texts and the coding and data collection, part of the analysis and interpretation is the inclusion of the social context in which the European

museums' activities are situated, which serve as a basis for the structures that determine the current interpretative frameworks and the concrete communicative acts themselves.

The following main and sub-research questions were formulated:

RQ: What sustainability practices characterize European contemporary art museums based on the information set out in their mission statements?

RQ1: How do museums thematize and define their role in sustainability, and what do they indicate as their main goals in their mission statements?

RQ2: To which dimension of sustainability do museums contribute most?

RQ3: Are there significant regional differences in the sustainability contents of the mission statements? What are the differences of mission statements between CEE and non-CEE countries' museums?

We do not have an exact count of the number of art museums and, within that, the number of fine art and contemporary art museums. We have included museums from all European regions in our sample, with 1 museum from each country as a general principle, and 2-3 museums from larger countries with significantly more museums. Only relatively young museums, established around the 2000s, deal exclusively with contemporary art, but in this research, we use the term contemporary art museum to refer to museums that include contemporary art in their collections and exhibition programmes. Based on their prior professional knowledge of the activities of European contemporary art museums, the researchers selected 50 museums, which can be analysed to provide a comprehensive picture of museum practice in Europe. Only the publicly available mission statements were selected. As there are no official requirements for the structure of a mission statement, they were diverse in their structure. A total of 16 CEE and 34 non-CEE museums were selected for the sample. The websites of all museums were scanned, and the mission statements were stored in a database.

In discourse analysis, the coding system is developed by reading and analysing the texts themselves. To make the process transparent, the list of codes identified in the mission of the first 20 museums was used to analyse the other museums, and codes with very similar meanings were merged to reduce the number of codes. Along the lines of the research questions, we examined the roles, tasks and objectives explicitly or implicitly articulated by each museum in relation to sustainability. After analysing the first 20 museums, a total of 17 codes related to the dimensions of the sustainability model were included in the code system. The mission statements of the other 30 museums were then

analysed, and this list was restructured, the codes that were found relevant were left in and those that were not mentioned before were added. The resulting code system is representative of the social roles and purposes of contemporary art museums. Although our approach to discourse analysis uses almost exclusively qualitative analyses, we have also examined the frequency of its occurrence. This helps us not only to see a list of the goals and concepts used in the discourse, but also to get an idea of the regional spread and differences in their use.

3. Findings

The analysis has identified the roles and purposes of contemporary art museums in managing (collecting, preserving, researching, and displaying) the art values of the present and making them available to present and future societies. Along these priorities, cultural practices that define a sustainable museum in the 21st century can be outlined. A total of 15 role codes were identified and analysed along 215 subcodes. In Table 1, we have aggregated the role codes in 50 museums and, where relevant, highlighted the codes in museums in CEE countries, which highlights the objectives and roles along which different practices exist in these countries.

Table 1. Frequency of codes identified in missions by region

Codes	CEE		non-CEE	
	Number of Museums (n=16)	Rate of Museums (%)	Number of Museums (N=34)	Rate of Museums (%)
Sustainability issues				
1. Innovative and proactive behaviour	2	12%	12	35%
2. Sustainability	1	0,6%	10	29%
Museum Environmental management				
3. Environmental management	1	0,6%	5	15%
Economic stability				
4. Economic issues	3	19%	10	29%
Sustainable basic functions				
5. Collection	13	80%	25	73%

6.Exhibition	13	80%	18	53%
7.Art centrality	10	62%	13	29%
8.Supporting scientific research	10	62%	15	44%
9.Achieving professional recognition	3	20%	13	29%
Social issues				
10.Educational role	10	62%	13	29
11.Partnership	10	62%	15	44%
12.The meeting place of art and society	8	50%	13	29%
13.Community involvement	9	56%	10	29%
14.Accessibility	9	56%	20	59%
15.Influencing society through art	7	44%	22	65%

Source: Own representation

3.1. Sustainability issues

Innovative and proactive behaviour

In their mission statements, 14 museums claimed to be “*open to exploration and new perspectives and prospects on contemporary culture*” (EMST). It is best illustrated by Tate Modern’s mission statement by highlighting the fact that museums need to rethink what their core mission is, where they want to take the lead and what they want to adapt to: “*We will redefine museum experiences for the 21st century, offering a greater depth and range of experiences and offering visitors multiple points of engagement with our collection and ideas about art.*” While museums in Central and Eastern Europe have expressed openness to new things, museums in other regions of Europe have already shown more confidence and leadership: “*We must dare to push boundaries and take new paths in the way we manage our tasks. Proceeding from our fundamental stability, we want to challenge ourselves and to not be afraid for experiments to fail.*” (Moderna Museet) The following areas outline the future renewal of museums: ‘to seek collaboration, and to find new perspectives and the playful joy of gaining new ground’ (Moderna Museet), digital renewal and a changing museum experience – “*digital*

leader, providing the leading online resource” (IMMA), museums should be “*open to transformation*” (Weseburg Museum).

Sustainability

A general commitment to sustainability was identified in the mission statements of 11 museums along 6 subcodes. Two non-CEE museums use the term “*sustainable approach*” in their mission statement in general (Serralves Museum, Reina Sophia). As museums are fundamentally social institutions, their operation and responsibility for a sustainable future is primarily seen in this context, as highlighted by three non-CEE museums (MACBA, MAXXI, MUDAM): “*MAXXI’s mission is therefore that of promoting and developing this sense of continuity, projecting it towards the future*”. Only one museum from an Eastern European country mentioned that its activities should be based on sustainable practices that consider environmental and social impacts, emphasising the two pillars of sustainability: “*rest on sustainable practices that take into account environmental and social impacts*” (Ludwig Museum, Budapest). Five non-CEE museums have defined their operations along similar principles (Moderna Museet, ARoS, Weseburg Museum, Gulbenkian Museum, Museum der Moderne Sazlburg). Their missions reflect the approach of Cerquetti and Montella (2021), whereby museums seek to fulfil their cultural objectives along sustainability goals.

3.2. Museum environmental management

Environmental management

Although some museums have indicated that environmental emergency is one of the most important challenges of our time (Centre Pompidou) and that they envisage their operations taking environmental impacts into account (Ludwig Museum Budapest, Moderna Museet, Museum der Moderne Sazlburg, Weseburg Museum), only one museum has indicated that it aims to become a green museum (ARoS).

3.3. Economic stability

As a fundamental approach to economic stability, disciplined and efficient resource management is mentioned only by a museum run by a foundation, partly by public and partly by private actors (Serralves Museum). In connection with responsible human resource management, the importance of establishing transparent pay categories and defining managerial and senior management responsibilities is emerging (Kiasma). Two institutions mention the leading role of museums in the creative sector (Reina Sophia,

MAXXI) and one in cultural tourism (KUMU). The development of a new economic model has emerged as an important aspect for two museums (Tate Modern, Reina Sophia), which will allow museums to operate more flexibly and implement innovative initiatives. However, a topic – the importance of involving private collectors, sponsors and patrons – has also appeared in five museums, suggesting that the promotion of culture is an important aspect of museum practices and that museums are consciously striving to give prestige to their high-quality art projects for the business world, know-how transfer, to implement different cultural engineering projects (Centre Pompidou), the role of the museum as a player in the art business (Museum Folkwang), to promote economic equality by offering a free-entrance day for all museum visitors once a month (Kiasma), „*self-financed art museum that values good business methods and practices*” (MO Vilnius). It presents and reinforces the importance of the fine arts and visual culture in the value system of the global community, increasing self-generated revenue (Tate Modern). The findings of previous authors (Pop and Borza 2016; Ferika and Nazli 2018) are confirmed by the mission statements, which emphasize that although achieving economic stability is a challenge, it is an important prerequisite for addressing other dimensions of sustainability.

3.3. Sustainable Museum Functions

Collection and exhibition

Collection, which is the core activity of museums, is one of the most frequently mentioned functions, both in CEE and non-CEE countries. 38 museums defined their collection functions along 23 subcodes. As a concept closely related to collecting, 9 subcodes were identified under the exhibition code, which 31 museums highlighted in their mission statement. One of the key issues in Museum Folkwang’s approach is: “*In a changing society, how holdings should be treated and collections advanced?*” Since an “*Art collection is a record of dynamic phenomena and developments, occurring locally and globally*” (MMA), it is important for collecting to recognise and respond to these phenomena. The approach of “*collection in dialogue with works of contemporary artists*” (S-M.A.K.) also defines the activity of contemporary museums, i.e., museums not only exhibit works but also establish a dialogue with the artist. This approach is also highlighted by museums in Central and Eastern Europe, as the presentation of new, innovative, and relevant artistic trends and the importance of “*collaboration with their authors*”. Reina Sophia also draws attention to the role of the community: “*Collection does not tell a compact and exclusive story; it is an archive of communality. It is not an*

obsessive desire to preserve and conserve everything, but rather only that which the members of the community consider pertinent or that forms part of their actions". As Pencarelli et al. (2016) claimed, visitor diversity can broaden the offer of museums, but at the same time the responsibility of the museum is to shape the community and not to satisfy needs (Ásványi et al. 2020). However, the codes identified in the other non-CEE museums confirm Ásványi et al.'s (2020) thought: highlight themes that impact our societies, based on the freedom and creativity of the artists, exhibition space serving as an ideal framework for shared experiences, a deeper understanding of collection, brighten up the urban space of the museum.

Art-centricity

For contemporary art museums, art has an important and prominent role. In this context, 23 museums have defined their aims in a total of 20 subcodes. Subcodes typical for museums in CEE were the following: more space for the previously neglected contemporary art (Moderna galerija), taking an active role in the promotion of local art abroad (MUS), promoting art as a valid component of social life, which makes our human existence complete and more valuable (Museum Sztuki Lodz), incubator for new ideas for domestic and foreign artists (Ludwig Museum Budapest, KUMU). These ideas confirm the claim of Sutter (2008), that museums can shape the attitudes of visitors by addressing different themes.

Supporting scientific research

Scientific, research-based work was identified in the mission statements of 25 museums, and roles were identified along a total of 16 subcodes. The importance of research is fundamental for all museums, as museums are institutions engaged in scientific activities and prove to be a good platform for research: 'A museum's operations, its collecting and exhibiting activities provide an empirical platform for both scholarly and experimental research approaches and projects which, in particular, place the focus on the future of the museum: a museum's "mission" in a changing society' (Museum Folkwang). The museums are involved in collaborative research projects at national and international level to strengthen partnerships, with education playing a prominent role. Reinforcing the importance of communication in science, supporting, and accommodating art historians and theorists that specialise in museology codes also underline the importance of research, the significance of which has not been emphasised in previous research.

Achieving professional recognition

Museums, like other academic institutions, seek recognition and prestige and want to be high on the professional map. 32% of the museums have defined in their mission statement the professional recognition they seek. Subcodes identified within this topic are high-quality international collaborations and recognition, which is based on the cutting edge of discourse, artistic research, applying different and untraditional strategy.

Education

The role of education is more prominent in CEE museums, with 62% highlighting their educational role, which is mainly focused on the mediation of art, supporting the understanding of contemporary art and expanding the creative abilities of individuals, compared to 29% in non-CEE countries. It is also important to note that the subcodes identified in the educational role of museums are also the codes that define museums as creative locations for learning, inspiring knowledge of the world and oneself through art, encouraging critical thinking, and offering opportunities for a deeper understanding of things. Education is a platform where aesthetic action can shape experience, create new forms of political subjectivity, and make each individual an agent capable of creating meaning (Sommers and Gabriel Marian 2019). The task of the art museum is to communicate research-based information about the interpretations of life found in art. As highlighted by Harkönen et al. (2018), a strengthening of the educational function is visible.

3.4. Social Issues

The thematic structure of the discourse of social participation is characterized by the fact that the range of social roles thematised by museums, ie not only rarely appearing in the discourse, but legitimately present, is very wide. In our analysis, we identified 6 social role codes and 116 subcodes.

Partnership

The vision of museums is to become part of a kind of network, whether it be an artistic, social, or economic connection. Several different subcodes emerged related to this topic: collaboration and exchange views, creative cross-fertilisation, cooperation with the state, with relevant foreign museums, galleries, collections, curators and critics, local cultural institutions, international foundations, think tanks and universities. As a result of this collaboration emerged a unique development model consisting in co-constructing. An image of the museum appears as a kind of space for negotiation as they are organizing a heterogeneous network of partnerships. These collaborations are based on positive and reciprocal approach to multiple fields and disciplines, to generate spaces

for negotiation rather than mere representation, to serve as an active link, constantly building a dialogue: within the museum team itself and in their pursuit of creative ideas in collaboration with the business, academic and art communities. The diversity of potential partners in the missions also demonstrates the wide range of ways in which a museum can contribute to the development of society through its collaboration with partners.

Meeting place of art and society

Museum as a meeting place for art and society appeared more prominently among museums in CEE, with around 50% of the museums in the region defining their role in this category, compared to 29% in other regions. Typical subcodes for museums in CEE are the following: the museum as a *space for dialogue*, an appropriate environment for contemporary audiences to interact with the heritage of past and present generations of artists, a *living space*, a place for spending time together and talking, for gatherings with or without a special occasion, a *hub for creativity*, a space of discovery, mutual inspiration and reflection. The codes also show that museums in CEE are more interested in being community spaces, the importance of which has been highlighted by Jung (2011), whereby they can be catalysts for community development (Ásványi et al. 2020).

Visitor engagement – Community involvement

20% of museums have defined the way they engage visitors: to mediate art for people, to embrace, challenge, and inspire people to influence thinking about the nature of art and its value to the world, to encourage the audiences to develop their own interpretations, to discuss and share their experiences, to engage local and international audiences in a deeper understanding of our present times through art and culture. The importance of engaging visitors and the community has been highlighted by authors such as Pop & Borza (2015) and Azmat (2018), and the mission statements confirm this. During the analysis, we identified codes that reflect the role of communities: the Museum is made up of people: the artists, the team, and the public. An important goal was to communicate adequately with the public, to create an active community, to make museum visits a part of everyday life. Visser (2014) also articulated the need for active communities, which is already identified in the mission statements.

Accessibility

Visitors are one of the most important target groups for museums. 38% of museums said that they would like to reach a wider audience, from diverse backgrounds and ages, from

different starting points, with an emphasis on accepting groups with special needs, which creates a flexible environment. This supports the conclusions of Pencarelli et al. (2016). 32%, however, also feel that it is their responsibility to promote access to art and culture for a maximum number of people, so they do their best to be accessible and inclusive, because art is for everyone. Art is not just for an elite but includes experiences and visions for the many. The Internet provides free and easy access for as many people as possible.

Influencing society through art

In Central and Eastern Europe, museums emphasise their educational role, while in other regions of Europe 52% of museums see their role as influencing society through art: *“A piece of art in a museum isn’t just meant for contemplation. It helps us learn social responsibility, dialogue, critical thinking, and influencing reality.”* (MMO). The museum functions *“as a channel for freedom of speech and expression”* (Kiasma) and is responsible for *“building a freer society”* (MACBA). As a part of society, it plays the role of *“the agent of change in society”* (Moderna Museet) and *“adds a new perspective to the visitor’s life, triggering social transformations by empowering visitors and users to engage in intense democratic, cultural and educational behaviours”* (ARKEN). To ensure equal opportunities for everyone, to fight against racism and discrimination, and for inter-gender equality and respect, not expecting everyone to know or master the same things. The Gulbenkian Museum emphasises in its mission statement the need to promote *“dialogue between different eras and civilisations, especially between the West and the East”*, which is also closely linked to our main research question through raising awareness of regional differences. Sensitising society (Arinze 1999) and fostering social acceptance and inclusion (Crooke 2016) are already important goals for museums.

Conclusions

Although the sustainability of museums is a relatively new concept, it has been a topic of debate for many scholars (Pop et al. 2015). Museum associations worldwide have tried to explain this concept, to formulate the measures that museums should take to achieve sustainability and, finally, to stress the importance of the internal and external transformation of museums towards sustainability. However, it seems that many museums are not able to implement this new management philosophy because of the challenges they face.

The aim of the study was to identify sustainability practices that characterize European contemporary art museums based on the information set out in their mission statements.

15 codes were identified through a discursive analysis of the mission statements of 50 museums. There is already an openness on the part of several museums to adopt a sustainability approach and not only to implement specific sustainability practices. Based on the dimensions identified in the literature, we categorised the codes along sustainability themes. The results show that economic stability and the need for it is highlighted by several museums as a core condition. Environmental management, although encompassing a wide range of activities in the literature, is nevertheless scattered, and generalised in the missions. Museum buildings are typically not suited to designing environmentally sustainable systems, therefore, sustainable action in the field of environmental management can be taken in relation to the core function of the museum rather than by highlighting environmental problems and raising awareness of environmental sustainability issues through collections and exhibitions for educational purposes. The social roles and the areas related to the core function of the museum were the most prominent sustainability themes, i.e., the dimensions in which museums can contribute most to sustainable development.

Regional differences emerged on several points. In general, an openness towards sustainability and a holistic approach is less visible in the mission of museums, but more so in non-CEE countries. Environmental management, economic stability and innovative, proactive behaviour are also stronger in non-CEE countries. However, sustainability practices arising from the museum's function are more prominent in CEE museums, with art-centredness, sustainable management of exhibitions and collections, and a stronger research base. In terms of societal roles, the picture is mixed from a regional perspective, with education and community engagement being more prominent in CEE museums, while accessibility and impact on society are more prominent in museums in non-CEE countries. We can conclude that CEE museums are primarily concerned with educating society, while non-CEE museums are already playing the role of the agent of change in social transformation. An important role is the emergence of Partnership, which is more pronounced in CEE countries and is typically related to the linkage with cultural partners according to the sub-codes, while in non-CEE countries the importance of linkage with the economic sphere is also reflected.

After the mapping of the thematic structure, we can identify a further research direction in the question of whether some kind of correlation network can be drawn from all this, i.e., whether a typology of social roles communicated by museums can be developed, which is methodologically and substantively well captured. Our study investigated the

ways in which museums present sustainability in their mission statements and the differences between museums in CEE and other countries, thus contributing to both museum management and sustainability research. Research on the sustainability of museums is not a new topic, but it has not been explored before in terms of missions. The novelty of the research is further enhanced by the fact that there has been no research on museum sustainability specifically in the context of European contemporary museums. However, the present study was limited to exploring the mission of museums and did not analyse other sources of information from museums that could provide additional information on museums' attitudes towards sustainability. Therefore, in the future, it would be worthwhile to extend the research to analyse the information and strategy documents of the museums' entire website and to explore other methodologies, such as case studies. The results contribute to the discussion on the role of museums in society and highlight that the mission statement can also be an indicator of sustainability, setting out values and a strategy for the future for museums and their stakeholders.

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III.2. Sustainable museums in the European regions

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Abstract: This paper investigates progress in the adoption of sustainable practices at European contemporary art museums along four pillars. The issue of the sustainability of museums is an important and hot topic in international cultural life, especially in the context of ICOM's call for a new definition for museums for a sustainable future. Museums take various steps to adopt the goals of a sustainable future in their operation. Qualitative content analysis was used to capture how sustainable the European contemporary art museums are and the differences between the different European regions. As a result of our research, we present the proportion and level of achievement of the sustainability objectives by the examined museums, taking into account the expansion of their role. During the analysis of the website of European contemporary art museums, it was outlined that the different economic backgrounds as well as the post-socialist political environment also influence the role of museums in the sustainability process.

Keywords: sustainable museum, cultural sustainability, content analysis, region

Introduction

The turbulent economic, social, and political changes of the 21st century are forcing museums to rethink their role and develop sustainable strategies for their operations. Perhaps never before have economic and cultural actors thought so much alike in terms of their utility to society and their legitimacy, and the need to redefine their roles in terms of sustainability is becoming more pressing. In a sustainable society, culture has social, economic, and environmental dimensions, and museum professionals and academic researchers are increasingly concerned with how museums practice sustainability, and their research seeks to explore how sustainability in museums can be embedded and integrated into museum practice (Hedges 2021).

Environmental sustainability for museums refers to operating and communicating environmental sustainability (Chung et al. 2019). Social sustainability includes addressing social problems, the role of museum education, reaching all groups in society, prioritizing certain disadvantaged groups, and engaging audiences (Ayala et al. 2020). Economic sustainability is mostly defined in terms of funding (Orea-Giner et al. 2021). The cultural sustainability of a museum can be defined along the lines of collecting and preserving artworks, determining the tastes and preferences of visitors, and engaging artists (Getzner 2020).

Museums play a unique role in cultural sustainability by preserving the heritage of their communities and ensuring the accumulation and transfer of cultural capital from current generations to future generations. However, additional functions build on the core function of museums. In the modern approach, education is already emerging as an essential museum function. The post-modern view, on the other hand, emphasizes the role of museums in sustainable development (Pop & Borza 2015). However, the changing role of museums does not mean that the former roles are less important, but that new roles should be built on them. In our research, we have focused on contemporary art museums, as they exist in the same social, political, and economic context as other public institutions and are increasingly tasked with doing what is expected of any public institution in a democratic society - fulfilling a public purpose (Wyszomirski 2002).

To gain a deeper understanding of the issue of sustainability in contemporary museums, our research examined the extent to which sustainability is a common phenomenon in European contemporary museums and whether there are regional differences. To shed light on this, we seek to answer the following key research question:

Based on the information available on their websites, what are the sustainability practices of European contemporary museums?

There are four main findings from our research. First, our research systematically examines the criteria and requirements for sustainable museums. Museums have the primary task of preserving their collections and should therefore strive for cultural sustainability as a priority. Secondly, we will present the current practices of contemporary art museums in Europe, which will allow us to provide an overview of the current situation and thus provide an opportunity to compare expected future changes. Thirdly, this article will provide insight into the differences between the practices in different European countries and identify the common elements that

underlie the concept, regardless of the context. Fourth, our research adds to the empirical literature on sustainable museums. Our research contributes to the theoretical background of sustainable museums from the perspective of contemporary art museums. After an introduction, we review the literature and the relevant research background and then summarise the theoretical framework of the topic. In our primary research, we interpreted the sustainability criteria of European contemporary art museums, for which we conducted a qualitative content analysis of museum websites. At the end of the study, we present the sustainability levels that the museums have achieved.

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Environmental sustainability in museums

In the case of environmental sustainability, we can understand the role of museums on two levels: on the one hand, as an organization, how much attention the museum pays to the environment in terms of its building and its operations, and on the other hand, how it can raise awareness of the importance of the environment as a museum and cultural institution. The concept of organizational sustainability focuses on the allocation and use of factors such as human and economic resources (Wickham & Lehman 2015), the use of renewable energy, water use, waste management, pollution

management, vehicle management, or other eco-management of the building itself (Adams 2010). Museums can bring audiences closer to the environment through exhibitions (Bedno & Bedno 1999), by encouraging conservation, raising awareness of pollution, valuing and protecting nature's diversity, using products efficiently, and minimizing waste (Reeves 2002).

Social sustainability in museums

Four main focus points of social sustainability have been identified. Just (2014) shows, through a case study of a Danish museum's engagement with society, that museums around the world are increasingly engaging in CSR activities such as community development, inclusion, and social and learning activities, which are opportunities, innovations, and competitive advantages for museums. As community spaces, museums are emerging as new community centers (Jung 2011). The museum of the 21st century can be seen not just as an institution but as a living organization and a social platform that acts as a catalyst for community development. Paradigm shifts with the emergence of new museology have influenced the way professionals and visitors interact (Bodnár et al. 2017). The relationship between the museum and the visitor is realized through dimensions of addressability, interactivity, and engagement (Gheorghilas et al. 2017). In the 21st century, which is rushing and undergoing constant changes, it is necessary to respond to key and constant challenges such as a partnership in the development of society, reaching all groups in society, and differentiated sensitization of different target groups (Arinze 1999). Visser (2014) highlights active communities, which are groups of people who meet regularly and create together in online or offline spaces according to their shared interests, opinions, and values. Museums play an important role in improving people's lives, creating or strengthening communities, reducing crime, and creating a socially inclusive society at the community level (Belfiore and Bennett 2007, Azmat et al. 2018).

Economic sustainability in museums

The economic sustainability of museums is mostly understood in the literature from the perspective of funding, but it is important to complement this with the role of the market, and innovation and technology also have a role to play in strengthening this pillar. The components of the financial sustainability of museums are public funding, fundraising, own income, and other sources of income, and an important part is the number of volunteers and volunteer hours (Adams 2010). Museums are a cultural attraction that strengthens the cultural offer of cities, often an instrument in the regeneration process

of cities (Trinh & Lam 2016). The role of museums has broadened in the 21st century. Museums can contribute to sustainable development by adding economic value to the creative industries of the economy; they contribute to wealth creation, job creation, and employment through innovation, creativity, and problem-solving for regional and local economies (Reeves 2002).

Cultural sustainability in museums

Cultural sustainability is seen as the fourth pillar of sustainable development and can be defined as the consideration, preservation, and presentation of tangible and intangible heritage, artistic production, and the knowledge and skills of different social groups, communities, and nations (Lambert et al. 2014). The cultural leg is separated according to three functions, one is the sustainable management of collections, and the other is the responsibility to maintain the quality and the content of art. In the 2010s, research focused on the visitor as an active interpreter who creates his or her interpretation of the work based on his or her own experiences, associations, does, bats, and identity, making the museum an open work that is completed by the visitor (Lambert 2010)

Summary of literature

The elements that can strengthen the sustainability of a museum have been identified along the four pillars. However, some elements are not clearly linked to only one pillar, but often these elements can enhance the sustainability of a museum from the perspective of two pillars or even affect all four pillars.

Based on Pop et al. (2019), we interpreted the relationship between the pillars as meaning that the core activity of museums is the preservation of the collections themselves, and therefore they should strive for cultural sustainability as a priority. If the museum acts as part of society in the spirit of social sustainability, it can increase the number of visitors, thereby improving its economic sustainability. By taking steps towards environmental sustainability, which is most important for an organization, reducing its use of resources, it can also achieve a more economically sustainable institution by reducing costs.

Research Methodology

The issue of the sustainability of museums is an important and timely topic, which is noticeably present in national and international cultural life. This research aims to analyze the content of European contemporary art museum websites within the concept of the sustainable museum. In the present study, a content analysis, including quantitative data but essentially qualitative, is used to investigate the extent to which

sustainability is a common phenomenon in European contemporary art museums and to identify regional variations. In defining the main characteristics of content analysis, Krippendorff (2004) emphasized that it is a research technique that, while working with texts, seeks to conclude not only about the texts themselves but also about their context through their analysis. In qualitative content analysis, the interpretation of the data must take into account all the other textual and non-textual contextual elements that may have an impact on the corpus of texts under study. On this basis, content analysis is therefore a suitable method to organize the textual and visual information on individual websites into a coherent and generalizable structure and to formulate it into a database that can be analyzed and interpreted (Géring 2017).

In our research, we investigate whether and which shifts of emphasis exist in the sustainability pillars of different contemporary museums in Europe. Comparing different industries and areas in the European region is important in determining possible directions for development (Zsúnyel 2006), and therefore we consider it essential to explore regional differences and similarities for our topic.

Our main research question is: What are the sustainability practices of European contemporary museums based on the information available on their websites?

Typically, only relatively young museums, founded around the 2000s, deal with contemporary art, but for this research, we define contemporary art museums as those museums that include contemporary art in their collections and exhibition programs. Based on their prior professional knowledge of the activities of European contemporary art museums, the researchers have selected 19 museums, which can be analyzed to obtain a comprehensive picture of museum practices in the different EU Member States. The sample of museums has the following characteristics: they have between 400,000 and 120,000 objects in their care, between 40,000 and 6 million visitors per year, between 35,000 and 1,000 employees, and the oldest museum was founded in 1860 and the youngest in 2011.

Along with our main research question, we defined the categories, themes, and criteria that we considered when collecting data. A code list was developed and completed by the analysts in the form of a research diary. In our framework, we looked at museum activities related to the 4 pillars of sustainability (environmental, economic, cultural, and social) (Figure 1).

The categorization scheme constructed during the research was a list of 20 questions, which were formulated in a form to be decided: whether or not the

topic/program/initiative etc. would be featured on the website. The dichotomous question format increases the reliability of the data (Schutz 1958), a particularly important consideration when coordinating the work of several coders, and the keywords helped in iterative analysis. First, a pilot study was carried out. Two people independently analyzed ten web pages, then compared and discussed the responses. All the websites in the final sample were analyzed independently by at least two people and then compared and discussed until there was at least 98% agreement. Codes were used in the data collection, e.g. '1' indicated that the feature was on the website and '2' that it was not. The coded content was interpreted qualitatively.

Environmental	<ul style="list-style-type: none"> • (1) use of renewable energy • (2) eco-construction • (3) exhibitions / programs related to the environment • (4) communicating environmental awareness
Social	<ul style="list-style-type: none"> • (1) the appearance of social problems in the exhibition and in the educational program • (2) attention for disadvantaged groups • (3) online programs for different audiences (professional, educational, co-art) • (4) online pedagogical interactive programs (workshop)
Economic	<ul style="list-style-type: none"> • (1) fundraising / sponsors, • (2) the emergence of volunteering, • (3) e-commerce: (3a) credit card payment, (3b) webshop, (3c) online tickets, (3d) the museum's circle of friends, (3e) differentiated ticket prices, (3f) free of charge
Cultural	<ul style="list-style-type: none"> • (1) collection policy • (2) presentation of collection (image, text) • (3) collection search, other additional content • (4) involving artists in programs.

Figure 1: The analyzed categories of the four pillars

Source: own editing

Results

The present research was conducted in the winter of 2020, so the 19 European contemporary art museums in the sample had already experienced a noticeable change in their online content as a result of Covid-19. Museums are primary sites for personal encounters, physical experiences, and impressions, but the closure during the pandemic period has brought to the fore issues such as hybrid museums and virtual interaction with visitors. Whether the situation created by the pandemic will lead to a paradigm shift in the way museums operate and interact with their audiences in the long term is

not the subject of our research, but it is important to stress that our survey was conducted in such a transitional situation.

In our research, we have analyzed the websites of museums along the four pillars of sustainability (environmental, economic, social, and cultural) (Table 1), and have presented quantitative data to illustrate the presence or absence of pre-defined aspects. At the same time, the content of the 18 museums' websites was interpreted qualitatively. Significant differences between museums in the Western and Eastern European regions were found mainly along the economic pillar. Eastern European museums are much less able to take advantage of the opportunities for economic diversification, lack an extensive circle of friends, do not have significant sponsors, and volunteers, and do not exploit the potential of e-commerce on their websites. The lack of an economic pillar and the resulting difficulties are partly due to the socio-political environment in which museums operate and partly to the fact that they have not yet been able to build strong links with their communities and become integrated and indispensable to them. Their exhibitions and programs are positioned primarily for professional visitors, so they have low visitor numbers, which is partly reflected in low ticket sales and partly in a lack of sponsorship. Typically, these museums, while having a significant collection, employ a small number of professional staff. In these countries, there is a need for better management of cultural assets and stronger cultural marketing.

An exception among the former socialist countries of Eastern Europe is the KUMU contemporary art museum in Estonia, which has been designed in line with good Western museum development practice, with an attractive modern building, a large-scale exhibition and program, and an integral part of the region's cultural tourism circuit. Southern European countries tend to attract a larger number of tourists and therefore have a more favorable visitor profile than Eastern European countries. Two out of the three institutions achieved the same level of sustainability along the 4 pillars as the Tate Modern in London, which is important to emphasize because previous research has suggested that regions with a stronger visitor focus have a much stronger focus on cultural marketing and audience development (Cuenca-Amigo & Makua 2017). However, this research shows that these differences are starting to disappear.

Contrary to our expectations, we were not able to identify any content on environmental awareness in the museums of the Nordic countries (Sweden, Denmark, and Finland, which were included in our sample) that would suggest that they are particularly engaged with this topic. Similarly to other European museums, they do not include this

aspect of their operations as a priority, despite the well-known importance they attach to environmental protection. Based on the results, it is likely that they incorporate sustainable practices into their core activities and do not highlight them specifically on their websites.

The leading contemporary art museums in Western European countries have diverse online content on their websites, communicate to a very wide audience and have a wide range of professional and economic activities. They have a significant network of friends and sponsors. However, our research shows that there is no longer such a clear distinction between museums in the more economically developed regions of Western Europe and museums in other regions, based on the factors we have examined in terms of sustainability. Economic viability is a very important factor, but social embeddedness and cultural value transfer are priorities for museums.

Table 1. The scores of analyzed museums

	Region	Environmental pillar (max. 4 points)	Social pillars (max. 4 points)	Economic pillar (max 8 points)	Cultural pillar (max 4. points)	Level of sustainability (max 20 points)
Múzeum neve						
Tate Modern/ United Kingdom	Ny	3	4	8	4	19
Museo Nacional Centro de Arte Reina Sofia / Spain	D	3	4	8	4	19
MAXXI / Italy	D	3	4	8	4	19
mumok / Austria	Ny	3	4	8	4	19
Centre Pompidou / France	Ny	2	4	8	4	18
Museum Ludwig / Germany	Ny	2	4	8	4	18
Van Abbe Museum / Netherlands	Ny	2	4	8	4	18
Moderna Museet / Sweden	É	2	4	7	4	17
Serralves Museo / Portugal	D	3	4	6	4	17
Zacheta / Poland	K	2	3	8	4	17
S.M.A.K. / Belgium	Ny	1	4	7	4	16
Kumu Art Museum / Estonia	K	3	4	5	4	16
MSU / Croatia	K	2	4	7	3	16

Kiasma Finland	/ É	3	3	6	4	16
Ludwig Museum Hungary	/ K	2	4	6	4	16
MG+MSUM/ Slovenia	K	2	3	7	3	15
Louisiana Museum of Modern Art /Denmark	É	2	3	7	3	15
Museum Umeni /Czech Republic	K	1	3	5	4	13
MNAC Romania	/ K	1	2	5	3	11

Source: own editing

The summary (Table 1.) on the sustainability of museums shows the pillars along which museums have higher values, which are strengths, and lower values, which are weaknesses. The values identified can provide useful information for the museums studied on future directions for improvement, and knowledge of better-performing museum practices can help the museum sector as a whole to become more sustainable. Our research confirms that museums are striving for greater performance primarily along the lines of cultural sustainability, but also that integration into society is important to them. In this respect, regional differences are beginning to disappear, with the Danish museum in our sample scoring at the maximum on these pillars, just like the Hungarian one. The third pillar is economic operations, which is important for museums, but there are already differences in this area and the results show that these weaknesses weaken the sustainability indicators. As the literature indicates, museums are the least focused on environmental sustainability. It is extremely costly to convert existing museum buildings into eco-buildings and a comprehensive energy management policy would be needed to switch to renewable energy consumption. Professional recommendations, conference papers, and debates already indicate that museums recognize the importance of this, but meaningful change in this area is only possible in the medium to long term. Museums can do their best to promote and disseminate an environmentally conscious approach as widely as possible.

Sustainability level 18-20: Museums at this level scored high on all pillars and considered cultural and social as well as economic and environmental aspects important, including museums from Western and Southern European regions.

Sustainability level 15-17 points: at this level, there is a weakening of the economic perspective, but the cultural and social pillars are still of high importance, with museums from all regions in this category, but typically from Eastern Europe, former socialist countries, and Northern Europe.

Sustainability level below 14: At this level, the importance of developing not only an economic approach but also social embeddedness and cultural value transfer and an environmentally conscious approach is lagging behind that of other museums. Two museums from our sample from Eastern European former socialist countries were included in this category.

We also considered it important to include the Ludwig Museum in Budapest in our sample, so that we can reflect on the situation in Hungary in our research on the European region. The Hungarian museum scored 16 points along the sustainability pillars. Based on the data, we can conclude that it scored maximum points along the social and cultural pillars but still needs to strengthen its performance along the economic and environmental pillars.

Summary

The museums studied operate in different regions of Europe, in very different economic and social contexts. In our study, we found that the existence and level of the four pillars of sustainability reflect the viability of museums and the importance of their role in society and that it is therefore particularly important for their operations to be linked to the environment that surrounds them and without the support of which they cannot be sustainable.

Based on the literature, we have identified the criteria for sustainable museums, complemented by the results of a qualitative documentary analysis of the sustainability practices of European contemporary art museums, and explored regional differences. Our study made suggestions for charting these directions for European contemporary art museums.

Benedek (2020) argues that innovation should be fully subordinated to sustainable development goals, a framework that could guide the development of sustainable practices in museums, which could be explored in further research.

In the present study, only European contemporary museums are examined, and only 19 of them, and it would be worthwhile to include more museums to get a more complete picture of the sustainability practices implemented and the regional variations outside Europe. A larger sample size would allow us to explore the situation and also investigate

the various influencing factors such as collection size, number of professional staff, and annual visitor numbers. A qualitative content analysis, complemented by professional interviews, would subsequently provide an opportunity to gather more in-depth information and explore explanations of implemented and missing practices. Complementing this with a demand-side survey could provide insights into consumer expectations of museum sustainability.

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III.3. Museums in the Intersection of Sustainability

Reference: Zsuzsanna Fehér (2023): Museums in the Intersection of Sustainability, Magyar Tudomány, 2023/ 1 pp.73-83

Abstract:

Museums play a unique role in cultural sustainability by preserving the heritage of their communities and allowing cultural capital to be accumulated and passed on from current generations to future generations. In the course of their development, museums have acquired a wealth of knowledge through continuous and in-depth research. The question is how should museums change in the 21st century to meet new challenges and become sustainable and play a catalytic role in advancing human culture? The aim of our research is to find out what opinion preferences Hungarian museum leaders have on sustainability, what are the similarities and differences in their views. The research results show that the dimensions of sustainability are not uniform for Hungarian museum managers, and three distinct groups of perceptions could be identified: *exhibitor-centred innovator*, *collection-centred strategist* and *education-based manager*.

Keywords: cultural sustainability, museums, management, Q method

Introduction

In the broad societal discourse on sustainability, the main interpretative models have considered environmental, social and economic aspects as the fundamental dimensions, with the emphasis on balancing these three pillars, while culture has been considered as part of the broader 'societal' pillar. More recently, a growing body of theoretical and empirical research supports the importance of the role of culture, and the 'triple bottom line' approach paradigm of the theoretical framework of sustainability is being extended to include culture as a fourth dimension (Pop & Borza 2015).

Museums, as custodians of cultural values, like other institutions, have also experienced the need for structural and administrative changes to ensure their survival and sustainability in a future scenario that is constantly subject to change. Any institution that wants to survive in the future must be judged on its distinctive capacity to provide

value to society by building on institutional strengths and sensing specific community needs.

What is sustainability in museology?

Sustainability encourages the adoption of a set of values that allow museum professionals to do the same activities but from a different perspective. Therefore, museums are seeking to develop new partnerships, test new business models, keep up with current trends and practices, while constantly revising traditional beliefs.

Joost Dessein and colleagues (2015) outline how culture fits into the sustainability framework and the role it plays in each situation along three possible models (see Figure 1, where the darker shaded circles represent culture).

In the *Culture in Sustainability* model (Model 1), culture is given an independent, autonomous role and becomes the fourth dimension of sustainability. This approach considers cultural sustainability in parallel with ecological, social and economic sustainability, and sees it as an interrelated dimension of sustainability. In the *Culture for Sustainability* framework (Model 2), culture is seen as a mediator in achieving economic, social and ecological sustainability. Model 3, *Culture as Sustainability*, sees culture not only as a tool but as a necessary basis for achieving the goals of sustainability. In this approach, culture encompasses all other dimensions of sustainability and becomes an overarching aspect or paradigm of sustainability.

In the case of museums in this study, we consider it appropriate to examine the case along the lines of Model 1, i.e. the *culture in sustainability* framework, as museums as cultural institutions need to consider their economic, social, natural and cultural environment simultaneously in order to become sustainable.

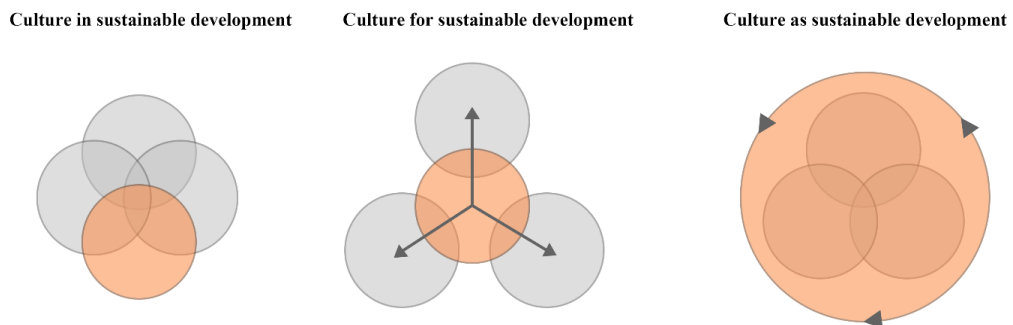


Figure 1:

Roles of culture in sustainable development process based on Dessein et al. (2015:29)

Sustainability of museums along the four pillars

Environmental pillar

Environmental sustainability is a challenge for museums. Running buildings, conserving collections in an energy-efficient way and the negative impact of transporting artefacts on the environment are forcing museums to develop new strategies. Research shows that museums can bring the public closer to the environment through their exhibitions and through the example of their environmentally conscious operations (Molina-Torres 2021). The future could bring a major breakthrough in the greening of outdated, energy-intensive museum buildings, of which there are a growing number of international examples, both ongoing and already implemented: the Alvar Aalto Museum, Helsinki, MAXXI, Rome (Aleksandrov 2021).

Social pillar

In recent years, it has become a priority for cultural institutions to reach out to communities, not only as a means of knowledge transfer, but also as a means of cultural awareness and development, as places that provide the possibility of crossing cultures and generations, where cultural content can be found and created (Llamazares de Prado 2021). At the same time, the educational role of museums is also essential to have an emotional and intellectual impact on society (Azmat et al. 2018).

Economic pillar

Museums are increasingly focusing on achieving not only their cultural and social goals, but also their economic goals. The opportunity for museums to grow is to improve the quality of their services while using their resources efficiently (Coman & Pop 2012). Innovation is another important dimension of museums' economic sustainability. Research shows that innovation has a significant and positive impact on the economic and social performance of museums (Camarero & Garrido 2008).

Cultural pillar

The accumulation of culture and professional knowledge in the museum environment can help answer the big questions of the present. Success in this task of value preservation can serve as a model for other areas. Sustainable collecting is one of the core tasks of museums, which involves a thoughtful concept of the collecting circuit and the continuous development of the protection of artefacts (Merriman 2008). It is increasingly often said at academic conferences that the great collecting era of museums

is over. Museums will store and preserve objects and focus on their use rather than further accumulation (Fehér & Ásványi 2022).

Empirical research methodology

The Q-method is a qualitative, but statistical approach that provides an opportunity to explore personal opinions and differences of opinion on complex social issues. The method is applied to small samples (between 10 and 50 respondents). In our research, we investigated the opinion preferences of fifteen Hungarian museum professionals along the four pillars of sustainability. Our Q-sample contained a total of thirty-eight statements, which we formulated based on the literature and our previous research. Participants were asked to first sort the statements into three groups based on whether they agreed, disagreed or were unsure/unclear. Once the statements were grouped, they had to place them on the Q-sample grid along each value from -3 to +3, which resulted in an individual ordering pattern that we could compare with the ordering patterns of the other participants.

PQMethod 2.35 software was used to process the data. Based on the individual preference orderings, the method generated eight factors, of which three factors were retained after Varimax rotation. After factor analysis, we can produce the Q-ordering of most characteristic of each opinion group from the participants' factor weights, and analyze at the statement level which statements were rated approximately identically in each group: 'consensus statements', and which statements were strongly differentiating between groups: 'controversial statements'.

Characterisation of opinion groups

Factor 1: Exhibition-oriented innovator

Factor 1 included seven participants' opinions, the group with the largest number of items. Their most preferred statements belong to the economic, cultural and social dimensions. Among the members of this factor, there is the greatest consensus that a sustainable museum is based on innovation, continuous improvement of museum services and the adaptation of new technological solutions. However, in their opinion, a new operating model may already be necessary for an economically stable service museum. After the importance of the economic dimension, the group favoured statements that reinforce the cultural dimension, suggesting that the museum could rethink its collection policy from time to time and include in its exhibition programme

exhibitions that are open for extended periods. International recognition is important to them, while they are uncertain how the importance of museums' scientific work translates to society. In addition to the cultural dimension, the group also preferred social claims about visitors. They agree that the focus of museum activity is gradually shifting from the collection to the relationship with the collection, which means that a sustainable museum in the future will be one whose success is based on developing relationships with visitors rather than on owning artefacts. Statements on the environmental pillar were not included in their top preferences. As the factor members emphasised innovation, continuous improvement of services and engaging with visitors through exhibitions, the group was named an exhibition-centred innovator.

Factor 2: Collection-centric strategist

The second factor consists of three museum managers. Their preferences touch on all four sustainability pillars, in the order of preference of the dimensions: cultural, social, environmental and economic. Along the cultural dimension, the members of the group fully agreed that the museums' collections could be expanded continuously and indefinitely. On the collections side, there is also a consensus among the members that in order to operate in an environmentally conscious way, it is possible to deviate from international requirements for the conservation of artefacts and adapt them to local conditions, and that museum collection policies can be changed. Along the social dimension, they believe that the most important thing is that the museum should not be afraid of taboo subjects, and that the museum needs to go beyond its walls to develop a closer relationship with its visitors, and they believe that the importance of the museum's scientific work can be translated into the society. On environmental issues, the role of the museum in shaping attitudes was highlighted, they believe that all museums can do their part to sensitise the public to environmental issues and disagree that these issues are less important for museums. As regards the economic dimension, they believe that museums cannot operate without supporters, they need to continuously improve their services and keep up with technological developments. They believe that museums lack practical knowledge about sustainability and need to develop their sustainability strategy.

The members of this factor highlighted the museum's function as a collector, and as they considered it important to be strategically grounded, they were labelled as collections-oriented strategists.

Factor 3: A leader based on education

The statements most preferred by the five experts in Factor 3 are related to the social, environmental and economic dimensions of sustainability, and although they are considered important, the cultural dimension is ranked fourth. In the order of preference of the members of this factor, the educational function related to the social dimension of sustainability is significantly ranked first, but they also agree that museums have a role to play in providing entertainment as well as education. Along the environmental dimension, it is considered important that museums can bring the public closer to the environment through their exhibitions, and it is not only natural history museums that can play a role in this. International and national professional associations of museums are increasingly encouraging museums to promote environmental protection in all possible ways, to set a good example in their operations and to address in their exhibitions the issues that have led to the climate crisis. The situation is a complex social problem and the way to address environmental issues is through the resolution of a number of social conflicts, so it is important that the members of the factor also agree that museums should not be afraid of taboo subjects. Along the economic dimension, they preferred statements that emphasise the need for continuous improvement of museum services and innovation, and that they believe that the economic sustainability of museums does not depend on the number of visitors. On the cultural dimension, they agree that the institution's collection policy can be changed and that the museum's prestige is not determined by its collection. The factor was given the leading name of education-based, as their main preferences included the educational and attitude-shaping function of the museum.

Differences between opinion groups

The differences between the factors highlight the points on which the opinion groups are most sharply divided. The difference between Factors 1 and 2 is most apparent in the fact that Factor 1 focuses on visitors and Factor 2 on the collection as the focus of a sustainable museum. The exhibition-centred innovator approach is closer to the service museum model, in which economic considerations are added to the professional aspects. The collection-centred approach focuses on the core mission of museums: collection, preservation and research, while also emphasising environmental sustainability.

Members of Factors 1 and 3 also have very different views on many things. Factor 1 is more concerned with the concept of a sustainable museum based on the number of visitors, the fact that museums live from their exhibitions and that a new operating model is needed to ensure economic sustainability. Factor 3, on the other hand,

emphasises the educational function of museums and their long-term social goals, and highlights the role of museums in shaping society, for example on important issues such as environmental awareness.

When comparing Factors 2 and 3, we can observe that members of the collection-focused factor believe that the prestige of a museum is determined by its collection and tend to accept that the economic sustainability of museums depends on the number of visitors, statements that the group emphasising the educational function does not agree with at all. According to them, a museum will be successful and sustainable if it can develop a more direct relationship with its visitors, and this can be measured by qualitative rather than quantitative indicators

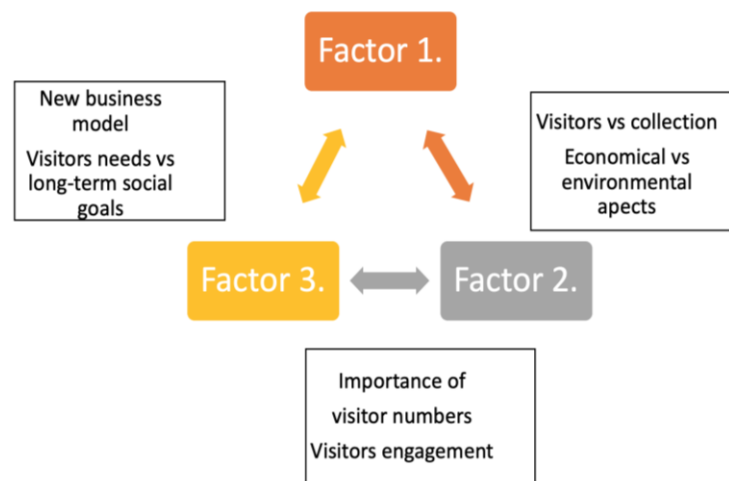


Figure 2: Differences between factors (own editing)

Similarities between opinion groups

Consensus statements are those on which the attitudes of the different opinion groups are similar, i.e. the groups either agreed or disagreed with the statement or were similarly indifferent to it. The results outline that museum managers are of the opinion that one of the most important tasks ahead is to develop a sustainability strategy for museums. Along the economic pillar, there is full agreement that they need to continuously improve their services and keep up with technological challenges. As regards the statements on the environmental dimension, all respondents agree that environmental issues are important for museums, but there is no consensus on how this affects their operations, the preservation of the collection and the transport of artefacts. All respondents agreed that for a sustainable museum, visitor access is one of the central

social dimension issues. It is equally important for them to reach outside the museum and to reach out to communities outside the museum. There is also consensus that a museum can rethink its collection policy from time to time to ensure cultural sustainability.

Non-consensus, but not divisive statements

This category includes statements that, while not consensus, were not divisive on any of the factors. These are the areas that are most easily converged. Among the preferences of the members of the three factors, we found two statements that neither represent agreement nor disagreement, both related to the museum visiting experience: interactivity makes it easier to reach younger generations and the museum of the future offers a personalised experience. These are areas in which museums have not yet made much progress, and the inclusion of AI in museum visits is one of the developments that could open up new horizons, and museums should therefore make a greater effort to learn about and apply these solutions.

Summary

There is a growing body of research on sustainability and a number of international museum organisations have made recommendations on the subject. In practice, however, it seems difficult to put this management approach into practice. This study, using the Q-methodology, aims to identify the most important criteria for a sustainable museum based on the opinion preferences of Hungarian museum managers. As a result of the research, three dominant perspectives could be distinguished: exhibition-oriented innovator, collection-oriented strategist and education-based leader.

By examining the different approaches of these leaders, we revealed that in their order of preference, different dimensions of sustainability appear as priorities. Members of the exhibit-focused innovator factor with the highest number of items ranked economic factors first, and based sustainable museum development on innovation. They are the ones who, compared to the other factors, consider visitor numbers to be the most important, expect their income to come from the success of their exhibitions, and agree that a new economic model may be needed to operate sustainably. Izabela Luiza Pop & Simona Sabou (2013) pointed out that museum sustainability is closely related to the cost per visit and the level of self-financing, so that this model can be successful if the museum generates as much of its own income as possible in addition to the support by the government. The members of this factor did not include environmental issues among their priorities, but previous research has shown that when innovation strategies are

applied in the museum sector, not only economic and social sustainability but also environmental sustainability is improved (Camarero & Garrido 2008). Collection-centred strategists consider the cultural dimension to be the most important and envision the museum of the future along the lines of sustainable collecting, which implies a thoughtful concept of the collection circuit and continuous improvement in the protection of artefacts (Merriman 2008). They believe that museums have a very important role to play in shaping attitudes towards social and environmental sustainability. Economically, the museum's operations are based on donors, continuous improvement of their services and strategic foundations.

Education-based managers preferred the social dimension of sustainability and emphasised the educational function of the museum. They also gave high priority to the environmental dimension, as they believe that museums have a key role to play in educating visitors about the environment, and research confirms that museums can bring the public closer to environmental issues through their exhibitions and through the example of their environmentally conscious operations (Molina & Torres 2021). The cultural dimension, on the other hand, is less prioritised among the members of the group. In their view, the museum's prestige is not determined by its collection, as the emphasis is gradually shifting from the collection to the relationship with the collection. The results show that, although museum managers approach the concept of a sustainable museum from different perspectives, economic stability based on innovation, social responsibility to reach communities and the transmission of cultural values are all important to them. However, the environmental dimension has not yet been integrated into the functioning of Hungarian museums, weakening the holistic approach to sustainability. The International Council of Museums (ICOM), the world organisation of museums, has identified the climate crisis as one of the most pressing challenges of our time, and has highlighted the role of museums in this important issue. Therefore, to achieve their long-term sustainability goals, museums will need to make the transition to a more environmentally conscious approach, and to do so, they will need to conduct further research and attract funding (Aleksandrov 2021).

In our research, we have explored that providing personalised museum experiences and opportunities for interaction is still a new field of museology. These may be new technological solutions to which museums are open, and we believe that these developments will contribute to the effectiveness of museums not only in cultural terms, but also in all dimensions of.

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III.4. Generation Z perspectives on museum sustainability using Q methodology

Reference: Ásványi K. & Fehér Zs. (2023): Generation Z perspectives on museum sustainability using Q methodology *Muzeológia a kultúrne dedičstvo*, 9:1:21-40

Generation Z perspectives on museum sustainability using Q methodology

Museums and researchers require knowledge of how museums think about and practice sustainability to understand how sustainability considerations can further be incorporated and institutionalised into museum practice on four pillars: environmental, social, economic and cultural. A systematic literature review was carried out to explore the theoretical background of sustainable museums. This study, which used Q methodology, was designed to determine museum visitors' preferences related to the most important sustainability elements of museums. The participants in the study were 24 museum visitors from Generation Z in Hungary. Data were collected through 37 Q statements. According to the findings of the research, young museum visitors can be distinguished into three groups (factors): Conscious, Experience-seeking, and Enthusiastic-to-learn visitors.

Keywords: sustainable museum, Q methodology, Generation Z

Introduction

Museums play a unique role in cultural sustainability in preserving the heritage of their communities and ensuring the accumulation and transfer of cultural capital from current generations to future generations. However, in addition to these basic tasks of museums, some have additional functionality. From a modern approach, education is an essential function of a museum. The post-modern perspective even emphasises the role of museums in sustainable development (Pop & Borza 2016).

Museums and researchers require knowledge of how museums think about and practice sustainability to understand how they stand in relation to this issue, and how sustainability considerations can further be incorporated and institutionalised into museum practice. The principles of sustainability associated with museums are related

to two main aspects: (i) building deep, long-term relationships with a range of audiences; and (ii) responding to changing political, social, environmental and economic contexts, and having a clear long-term purpose that reflects society's expectations (Virto et al. 2017).

The study examines the sustainability of museums in four dimensions: cultural, social, economic and environmental. In connection with the concept of sustainability, museums generally aim to achieve the greatest possible cultural, social and economic impact while having a minimal impact on the environment (Pop & Borza 2016).

Multidimensional diagnostic approaches in museum sustainability studies are required to detect problems and identify solutions. In the current literature, problems are identified using conventional qualitative and quantitative methods. However, problem details are ambiguous, and methodologies may presently be inadequate for their solution. Therefore, it is important to use different methods to identify issues in more detail before tackling them. For this reason, in this study we attempt to reveal museum-related challenges of previously unknown dimensions using Q methodology.

In our research, we focus on the preferences of museum visitors, as these individuals are some of the main stakeholders of museums. Among them, our special interest is in Generation Z, as it is this group that will comprise future museum visitors. To explore the problem, we identify the following research question:

RQ: What are the elements of museum sustainability that Generation Z prefers?

The remainder of this paper is organised as follows. First, we discuss the literature and relevant research background, followed by the proposed theoretical framework. Next, we present an overview of our empirical studies, followed by the details and results of the study. The paper concludes with a discussion of the theoretical and managerial implications as well as limitations and avenues for future research.

Sustainability in museums

The turbulent economic, social and political changes of the twenty-first century are also encouraging museums to rethink their roles and develop sustainable strategies for their operations. Museums have become public forums, shifting their primary mission from art collecting to mediation, addressing societal issues and strengthening their educational role (Hedges 2021). In a sustainable society, culture is important from a social, economic and environmental perspective, which is why it is of increasing relevance to museum professionals and academic researchers how museums practice sustainability. Researchers are seeking to explore how sustainability can be integrated

into museum practice (Campolmi 2013, Worts 2016, Pencarelli et al 2016, Loach et al. 2017, Hedges 2021, Jagadzisnka 2021). Museums collect, preserve and present tangible and intangible heritage and pass on knowledge and skills to future generations. Therefore, they can be considered essential components of cultural sustainability. Cultural sustainability is a transdisciplinary, constantly evolving term that can be organised around seven narratives: heritage, cultural vitality, economic viability, diversity, locality, ecocultural resilience and ecocultural civilisation (Soini & Birkeland 2014). According to the authors, while many of these “stories” are linked to economic, social and environmental sustainability, narratives of heritage and cultural vitality can be seen as forming the fourth (cultural) pillar of sustainable development. These two narratives, which focus on promoting and preserving cultural capital for future generations, are essential for museums and can thus be seen as essential tools for maintaining and building cultural sustainability. The principles of the sustainability of museums are related to two main aspects (Virto et al. 2017):

- Building a deep, long-term relationship with the widest possible audience;
- Responding to changing political, social, environmental, and economic contexts and developing a clear, long-term set of goals that reflect society’s expectations.

In many ways, the crucial question here is how museums need to change in order to play a catalytic role in promoting human culture. A more precise and comprehensive definition of cultural sustainability is needed to improve the contribution of museums to cultural sustainability, and there is a need to recognise and value the contribution of these institutions to a sustainable future (Loach et al. 2017).

Institutional survival alone is important, but ultimately not a sufficient goal for public and non-profit organisations (Moldavanova 2016). Moldavanova’s study approaches institutional sustainability as a two-tier concept that encompasses both institutional survival and the fundamental objective of sustainability in relation to ensuring intergenerational access to cultural values. By this, she means the ability of public institutions to persevere and fulfil their mission in the long run.

Museums could become valuable and exemplary actors in sustainable development (Gustafsson & Ijla 2017). In most of the studies sustainability is based on three pillars: the economy, society and the environment (Wickham & Lehman 2015), although in the case of museums more and more studies point to the importance of a fourth pillar: cultural sustainability (Stylianou-Lambert et al. 2014). In connection with the concept

of sustainability, the general aim of museums is to achieve the greatest possible cultural, social and economic impact, while having a minimal impact on the environment (Pop & Borza 2016):

- Environmental sustainability: the efficient use of resources.
- Social sustainability: community involvement.
- Cultural sustainability: preserving collections and maintaining their quality.
- Economic sustainability: maintaining a balanced and diverse budget.

Systematic literature review

A systematic literature review was carried out to explore the theoretical background of sustainable museums. The process of literature review was conducted in four steps: The first, conceptualisation, involves the selection of the database, the definition of search terms and the definition of selection criteria (S1). The second and third steps constitute the two-phase review process, which involves selection based on the titles of studies and the abstracts (S2), followed by selection based on reading the full content of the articles (S3). The fourth step is the analysis and processing of the articles (S4).

S1. Conceptualisation – research design and criteria

The search was carried out in the Scopus database using the keywords “museum” and “sustainability”. The search was carried out with the following criteria: keywords searched in the title, abstract and keywords of articles published in scientific journals on the subject of museum and sustainability.

The relevant articles had to meet the following criteria:

- Should focus on sustainability, including different aspects: environmental, social, economic and cultural.
- Must be a published journal article from the period 2000–2020 to identify recent sustainability trends in the museum field.
- Must be published in English in an international peer-reviewed journal.
- Must have a SCImago journal rank of Q1–Q3.

S2–S3. Two-stage review process

The search run with keywords resulted in 245 records. A two-phase review process was used to select the articles.

S2. The number of relevant studies included in the sample based on the title and abstract of the articles was reduced from $n = 245$ to $n = 79$. The reasons for exclusion were as follows:

- Articles that were related to open-air museums or libraries in addition to museums were not included, and research where the context was archaeological sites or museums dealing with the presentation of intangible intellectual heritage were excluded.
- From the geographical aspects of the research, we excluded regions that are considered to be very different from the European cultural area and irrelevant in this sense (different cultural background, indigenous).
- Based on the focus of the research, we excluded articles that dealt with sustainability issues with a strong engineering focus (e.g. building solutions, climate control, energy management, humidity measurement, restoration techniques, information technology issues).
- We excluded articles where abstracts were not available.

S3. After reading the full content of the articles to ensure compliance definition, the number of studies was reduced from $n = 79$ to $n = 64$. Articles were excluded at this stage if only the abstract was available and the full article was not available online or only for a fee, or if the topic was not focused on museum sustainability.

S4. Analysis

The qualitative analysis was based on the identification of the theoretical underpinnings of our research, the main contributions to the topic, research questions, new insights, empirical methods and data sets for sustainability models.

The time period was defined as 2000–2020. In the early 2000s, very few articles were published on the subject, the number increasing from 2011, the most important research being published in 2016–2018, and then the number decreasing again in the 2020s.

The published articles appeared in a very wide range of journals ($n = 64$). The journal with the highest number of relevant studies was *Sustainability* (Q1). The other major publication was the journal *Museum Management and Curatorship* (Q1), which also focuses on sustainability issues in museums. From a thematic point of view, we also consider the tourism-related journals to be important, but there are only a few articles in these. Within tourism, the problem of sustainable museums is an under-researched topic, and museums are not a focus of tourism research, which is also mentioned in the literature as a shortcoming.

Studies that take a theoretical approach see museums as social institutions whose focus is on fulfilling their cultural role and function and communicating this to society

(Campolmi 2013, Hedges 2021). Eleven articles were found that discuss the context relevant to the theoretical grounding and focus not only on one pillar of sustainability, but address the issue of museum sustainability in a complex way. The research pair Pop and Borza, who wrote several papers between 2015 and 2019, are the most prominent researchers on the topic and have examined museum sustainability upon 4 pillars, a complex approach that is unique in the literature. However, the majority of studies typically approach sustainability on just 1 pillar of sustainability. Of the selected journals, studies related to museum social sustainability were the most numerous (n = 23) followed by economic (n = 13), cultural (n = 10) and environmental (n = 7). A complex approach to sustainability fills the gap in the literature.

Articles were typically published in Europe (n = 24) and the United States (n = 14). Within Europe, a larger number of studies have been published in Italy, the United Kingdom and Romania. No such research published in an international journal has yet been conducted in Hungary.

Research has examined less the preferences of major stakeholder groups about sustainability in museums, so it is worthwhile to study the perceptions of museum visitors about sustainability.

Qualitative methods were mainly used in the articles (case study, in-depth interview, observation, etc.), much less research being done with the quantitative method (n = 7), the mixed methodology being used in 2 pieces of research. The use of the Q method is also novel in terms of methodology.

Environmental sustainability

In the case of environmental sustainability, we can interpret the role of museums on two levels: on the one hand, related to their function as organisations (e.g. how much museums pay attention to their environment in terms of the museum building(s) and operation), and on the other hand as cultural institutions (Ásványi et al 2021). Reducing the energy demand (SILVA et al. 2016) and minimising the carbon footprint of museum buildings is part of environmental sustainability (Sterrett & Piantavigna 2018), which can be enhanced by the environmental benefits of technological improvements (Chung et al. 2019), while at the same time promoting environmental awareness among visitors (Bättig-Frey et al. 2018, Han et al. 2018) through education (Aguayo et al. 2020) and activities (Araneo 2017) and involving communities and volunteers in their conservation activities (Staniforth 2010).

Social sustainability

The museum is a holistic and ecological institution in society (Jung 2011), with a responsibility to promote a more sustainable society (Clark & Button 2011), which can be achieved by reaching out to the widest possible audience (Loach et al. 2017, Araneo 2017) and by sensitising society (Kraybill & Din 2015). Distance learning and technological developments are also helping to widen the range of visitors (Aguayo et al. 2020). Showing socially sensitive themes (Gheorghilaş et al. 2017), engaging visitors through the use of technology (Jamaludin & Hung 2016, Rowe et al. 2017) and museum education (Collins 2015) are shaping a sustainable approach to society (Befiore & Bennett 2007).

Economic sustainability

The economic sustainability of museums is understood in the literature from the perspective of financial sustainability (Eppich & Grinda 2019), which is influenced by the market, innovation and technology. Advances in technology enable museums to achieve greater outreach, which increases their revenues (Kraybill & Din 2015). Quality, prestige, innovation, value for money and reputation have a positive and significant impact on the economic sustainability of museums (Virto et al. 2017). There is a positive and significant relationship between market orientation and the economic and social performance of museums, but the greatest performance-enhancing impact is due to technological and organisational innovation (Camarero & José 2008). However, there is often a trade-off between an artefact-based and visitor- and market-oriented approach (Errichiello & Micera 2018). Museums can also contribute to sustainable development by adding economic value to creative industries in the economy: by contributing to wealth creation, job creation and employment for regional and local economies and tourism through innovation, creativity and problem solving (Lindqvist 2012, Krisková 2021).

Cultural sustainability

Cultural sustainability was first defined by the World Commission on Culture and Development as ensuring intergenerational and transgenerational access to culture (Järvelä 2008). Cultural sustainability also implies that development takes place in a way that respects the cultural capital and values of society (Mpofu 2012). Cultural sustainability is based on the principle that present generations can only use and adapt cultural heritage to the extent that it does not limit future generations in their access, understanding and ability to live (Pereira 2007). Cultural sustainability has been differentiated according to two functions: on the one hand, the sustainable management

of collections (Merriman 2008, Sterrett & Piantavigna 2018) and on the other hand, the preservation of the quality of and responsibility for the content of art. In terms of the content of the collection, the museum is responsible for stimulating the interest of visitors in its different themes and for educating them about the issues related to sustainability (Bättig-Frey et al. 2018), thereby shaping the public's tastes (Gustafsson & Ijla 2017).

Research methodology

For our research we chose Q-methodology, which appeared to be appropriate for an exploratory analysis. With the help of the method, we could classify into groups the opinions of the sample (15–50 respondents). The method shows which of a set of statements are typical or representative ones, and thus which ones characterise each group – that is, which statements differ among opinion groups (“compromise statements”) and which ones cannot be used to distinguish one factor from any other (“consensus statements”). With the Q-method, the selection of statements related to the topic of research is of central importance. We examined the criteria for sustainable museums in line with the four pillars explored in the literature based on the results of earlier empirical research, in-depth interviews with museum professionals related to the topic, and sustainability concepts.

From the selected statements, a Q-sample can be constructed that participants are typically given in printed form and asked to arrange using a scale of (dis)agreement ranging from -3 to +3, but we conducted the present research online because of the pandemic situation, replacing the set of cards with an Excel table. Preliminary pilot studies have demonstrated that such online research can be conducted that is of the same quality as that which uses physical materials (Davis & Carolyn 2011). When formulating statements, care should be taken to ensure that they are comparable, as subjects are asked to classify them in pairs according to the different values of the classification scale. Factor analysis was undertaken on the completed Q sample using the computer program PQMethod to reveal typical opinion groups.

Targeted and theoretical sampling was used. One condition was that respondents should be active museum visitors. A total of 28 responses were received, of which 24 were evaluable. Participants received written explanations and instructions about how to complete the task, according to which we asked them to first arrange statements into three groups based on whether they agreed with them, disagreed, or were uncertain/neutral (Davis & Carolyn 2011). After the statements were sorted, they were

placed on the Q-sample grid according to values ranging between -3 and 3. As is common in Q-sample studies, the grid was forced, and quasi-normally distributed. The placement of each statement creates a custom sorting pattern, which can then be examined in relation to the sorting patterns of other participants. The opinions of adult members of Generation Z (typically born between 2004 and 2010) were examined, as it is this group that will comprise future museum visitors. Born in the late 1990s or later, they have grown up in a world of digital technologies in which it is no longer possible to live without the use of Web 2.0, mobile phones or other digital and communication tools (Dabija et al. 2019). Sustainability is important to them, as is the need for change towards sustainable development (Su et al. 2019). All participants were university students undertaking a BA or MA in different fields.

Findings and interpretation

To analyse the data, we used PQMethod 2.35 software. First, a correlation matrix between the Q-sorts was produced. The intuition behind Q methodology is that if Q-sorts are correlated between respondents, there is a degree of congruence in their opinions about a subject. Such clusters of respondents with shared viewpoints can be identified using factor extraction. When determining the four dimensions of sustainability preferences, we first examined whether there is any shared understanding of the latter between respondents. For this purpose, basic component analysis and varimax rotations were conducted. The distribution of the scores is shown in Table 1.

Table 1: Q-sort template

-3	-2	-1	0	+1	+2	+3

Source: Authors’ compilation

With the Q method, factor analysis is used to assign each respondent to each factor. Respondents with a high factor weight for a given factor can be said to have a similar Q-order (or a different Q-order from respondents assigned to other factors) – i.e. they

have roughly similar opinions about a given statement and thus they have the same “group of opinions”. Individuals who belong to different factors thus tend to have different (groups of) opinions. Statements for which the absolute value of Z is greater than “1” are generally considered to be characteristic of a given factor (Van Exel & Graaf 2022). Based on the individual preference sequences, the method generated eight factors, of which three were left after Varimax rotation (these factors explained 62% of the variance, which satisfies the condition of a minimum 60% variance level). Of the 24 participants, 21 were automatically assigned to a group through this factoring process. Using manual factor rotation, the remaining three participants were categorised to one of the three factors according to the largest value. The distribution of respondents in each factor was not uniform (12-8-4).

Characteristics of the factors

Factor 1. Conscious visitors

Regarding the preferences of visitors associated with this factor, all dimensions of sustainability are considered important, and the four preferences rated most strongly are related to one of these four dimensions (environmental, social, economic and cultural). The statements considered most valid were that a museum should be environmentally conscious, and that the economic dimension of museum sustainability is important. According to respondents’ opinions, museums are important actors in cultural tourism, indicating that the latter believe that this element can be one of the of museum sustainability, as social institutions play an important role in shaping society, should not be afraid of taboo topics, and must react boldly to social phenomena. For the members of the factor, innovation is of paramount importance, and in cornerstones this context knowledge transfer in a fun way is also expected, as individuals in this group consider museums to be places of entertainment. In terms of the cultural dimension, sustainable collection management related to the core activity of the museum was identified as important. Also important is that museums are comprehensively and physically accessible. In terms of the environmental dimension, activities related to environmental protection are considered important, as is the fact that a museum uses renewable energy sources.

The opinions of members of the factor differ most in relation to the role of museums’ use of digital information materials, and whether it is important to adapt to new technological expectations. There is also uncertainty about whether museums should be

“understandable” to everyone, while the claim that museums should not be required to maintain themselves from income from visitors was also a divisive issue.

Factor 2. Experience-seekers

Members of this factor most strongly agreed that the education-related element of the social dimension of sustainability is important. According to these individuals, it is important for museums to be a place for enjoyable learning – and in connection with this they expect museums to be innovative, and to keep up with the times, but they do not think that this only involves the use of digital information materials. A museum is basically considered a social institution, and is expected to be barrier-free in terms of both physical access and comprehensibility.

In terms of the economic dimension, similarly to respondents of the previous factor, the role of museums in cultural tourism is preferred, but respondents classified into this factor do not think that a museum should be profit-oriented or market-oriented. Among a museum’s cultural responsibilities, the maintenance of collections in a sustainable way is highlighted. Environmental issues were not particularly valued. The views of members of this factor differed most about the issue of cooperation with sponsors (in relation to the economic dimension), and regarding which goals a museum should strive for most: to represent professional quality, or to be more comprehensible to visitors. Related to this dilemma is another divisive issue: should a museum only be for those who want to learn? Respondents were also divided about whether a museum should respond to the social phenomena of our time. Members of this factor did not from the outset favour awarding museums a prominent role in environmental issues, so it is not surprising that one of the most divisive issues was whether museums should have environment-related exhibitions.

Factor 3. Enthusiastic-to-learn visitors

For the members of this factor the most important function and task of a museum is to be barrier-free in physical terms and regarding comprehensibility. In their view, museums are for those who want to learn, yet they do not think that museums cannot play an important role in providing experience, entertainment and recreation. It is more important for respondents classified into this factor that museums organise professional and high-quality exhibitions and programmes, even if these are not understandable to everyone. Members of this group believe that museums still have the task of sensitising visitors to social issues. In terms of the management of collections (an issue belonging

to the cultural dimension), respondents also consider it to be important that museums manage their collections in a sustainable way.

From the point of view of economic sustainability, like the members of the other two factors, enthusiastic-to-learn visitors consider this important and agree that museums should not be profit-oriented. This may be related to the fact that the latter believe that museums should play a role in the acquisition of knowledge and the transfer of knowledge, rather than seeking to strengthen their market-based position. As with members of the second factor, they do not prioritise environmental issues, and believe that there is no significant relationship between visitor expectations and museums' environmental awareness.

The most divisive issue for this group, as well as for members of the second factor, was whether a museum should collaborate with sponsors, and whether the museum should be free. Opinions are also divided as to whether museums have a role to play in helping solve problems that affect society.

Distinguishing and consensus statements

One of the more interesting uses of Q is that it can help clarify what groups of individuals agree or disagree about. Such results can be very helpful for building consensus or overcoming conflict. Toward this end, it is helpful here to present results from three categories:

- Points of agreement across dimensions (consensus points).
- Points of disagreement across dimensions (compromise points).
- Non-consensual and non-confrontational points regarding each dimension.

The first item highlights the areas which are mutually agreed on. The second identifies points of disagreement where compromise may be possible. The third looks at each dimension independently and highlights areas that were not consensual, but also not subject to strong disagreement (i.e. "non-confrontational" issues).

Similarities between factors

Based on the typical Q-ordering created using Z values we can determine those statements about which there were similarities among the factors. Members of all three factors think very similarly about two issues: they agree and consider important that museums should manage their collections in a sustainable way and preserve them for future generations, and they also agree that museums need active communities. Members of the factors awarded similarly low importance values to some issues: for example, with regard to museums being free of charge, there is only a slight agreement

that museums should be free, and there was also a consensus that museums can hardly keep up with the times. The role of museums in solving social problems and cooperating with sponsors is also uniformly considered of little importance.

Differences between factors

The differences between the factors point out which elements are most divisive. The contrast between the first and second factors is sharpest along the environmental dimension: members of the first factor agree that museums should have environmental activities, whether these involve eco-buildings and the use of renewable energy, or the use of only digital information sources, while members of the second factor consider this to be less important. Members of the first and third factors also think completely differently about many things. The sharpest contrast between them is perceived in relation to the educational function of museums. Members of the third factor say that museums do not have to reach out to all social groups, as museums and their contents are not understood by everyone. Also, they believe that artefacts themselves are more important than visitors, and consider it important that museum staff continue to maintain their training. In these matters, the members of the first factor have completely contrasting views. The contrast between the second and third factors becomes obvious in relation to the social dimension: members of the third factor value the professional and educational functions of museums more, claim that museums are for those who want to learn, that quality is more important than comprehensibility, and that a museum's role is to sensitise. In contrast, the second group believes that museums should not be afraid of addressing taboo subjects and reacting to social phenomena, and that comprehensibility is more important to them than quality. Another important difference is that members of the second factor believe that museums should not be sustained by visitor-related income alone, while the members of the third factor are in favour of museums generating their revenue this way.

Non-consensual and non-confrontational points from each perspective.

Among the factors, it is worth examining those statements for which there is no consensus, yet no major dissensus. These are the areas where mutual agreement may be reached. Examples include the opinion (social dimension) that museums are not understood by everyone, and that a museum's task is to engage visitors. In terms of claims about the environmental dimension of museums, the importance of a museum's environmental awareness and whether museums should organise exhibitions related to environmental protection are evaluated similarly.

Discussion

This study, which used Q methodology, was designed to determine museum visitors' preferences related to the most important sustainability elements of museums. The participants of the study were 24 young museum visitors in Hungary. Data were collected through 37 Q sentences. The main research question was the following: What are the sustainability elements of museums that Generation Z prefers?

Regarding the findings derived from the young museum visitors' opinions about sustainable museums, in general it can be concluded that members of Generation Z agree that it is important that museums manage their collections in a sustainable way and preserve them for future generations, and they also agree that museums need active communities. The results clearly agree with those of earlier research about the sustainability of museums, according to which the main task of the latter was found to be caring for and preserving their collections and establishing an active relationship with communities, as this is the only way to maintain their importance and value in the long run, and gain the support of society. These aspects were also identified in previous research (Stylianou-Lambert et al. 2014). Cultural sustainability is seen as the fourth pillar of sustainable development, and can be defined as taking into account the need for the preservation and presentation of tangible and intangible heritage, artistic production and the knowledge and skills of different social groups, communities and nations. Previous research linked the sustainability of museums to whether the latter meet the cultural needs of the community (Gustafsson & Ijla 2017).

According to the findings of the research, young museum lovers can be distinguished into three groups (factors): Conscious-, Experience-seeking-, and Enthusiastic-to-learn visitors. The opinion preferences of Conscious visitors show that a sustainable museum is envisioned according to the four dimensions of sustainability, and the economic, environmental, social and cultural dimensions of museums are considered equally important. Regarding Experience-seeking visitors, we can say that museums are basically considered social institutions and expected to be accessible both physically and comprehensively, and they are primarily seen as places for fun learning. In connection with this, museums are expected to be innovative and keep up with the times. The difference between the members of the Enthusiastic-to-learn factor and the other two factors is that the former think that museums are for those who want to learn, that professionalism is much more important than comprehensibility, that museums should cater to all social groups and that artefacts are more important than visitors.

Considering the proportion of respondents of the three factors, the majority of the members of Generation Z (12) consider twenty-first-century museums as operating responsibly in line with the principles of sustainability, the second most important issue (8) being that museums should be places of knowledge transfer through fun, while according to the third most held view (4) museums should strengthen their professionalism, even if this runs counter to the clarity of their presentations. In terms of examining preferences for the three factors, it is also worthwhile dealing with statements for which there is neither consensus nor contradiction. These are the areas that are easiest to approach, and those for which we can make further suggestions for museums. The research pointed to two important areas. One is the social dimension, and within this, to two statements: that “museums are not understood by everyone”, and that “museums play an important role in engaging visitors”. These two statements are very closely related, and the second can be interpreted as a response and a solution to the first suggestion. The more a museum strives to engage its visitors, the more it can expand the range of people for whom the museum will be understandable and enjoyable. The other such area was identified from statements about the environmental dimension. The importance of museums’ environmental awareness and the question whether museums should host environment-related exhibitions represents an opportunity for museums to rethink how they can influence visitors’ attitudes toward the environment. Visitors are unlikely to expect museums to host outreach environmental exhibitions, but if they can approach the topic within their own field with a sensitivity that visitors find authentic, they can also influence the latter’s attitudes. For example, a museum of contemporary art may host an exhibition that showcases artistic reflections and practices that strongly influence visitors’ emotions and make them think, thus perhaps influencing the way their attitudes evolve. The other issue is the importance of the environmentally conscious operation of museums, in relation to which museums can do most by setting a good example and introducing as many such practices as possible.

Our research makes four main contributions to the research on the sustainability of museums. First, the research systematically examines criteria and requirements associated with sustainable museums. It points out that the primary task of museums is to preserve collections, so they should strive for cultural sustainability as a priority. Second, the research provides insight into the differences and similarities between Generation Z opinion preferences and thus contributes to a deeper understanding of the sustainability of museums from the perspective of future museum visitors. It should also

be supplemented with demand-side research that investigates the expectations of museum visitors. Museums should strive to serve the communities around them effectively, and to do this, they need to explore their needs. By this we mean that they should recognise those expectations and also those visitors that they have not yet reached for different reasons, but whose quality of life could be significantly affected by them doing so. Museum management should support and encourage research that helps them learn more about pre-existing and potential visitors. Third, the research complements the empirical literature on sustainable museums and contributes to broadening the theoretical background with regard to sustainable museums. Fourth, the Q-method is used to explore the trends that characterise the engagement and mechanism of action of opinion groups. Research illustrates the current conditions, but also outlines desirable and possible future alternatives.

Conclusion

Museums play a unique role in cultural sustainability by preserving the heritage of their communities and ensuring the accumulation and transfer of cultural capital from current generations to future generations. However, in addition to these basic functions, they increasingly have additional ones, including the essential role of education. The post-modern perspective emphasises the role of museums in sustainable development. To date, little empirical research has been published on this topic.

In order to define the criteria for sustainable museums the preferences that affect museum visitors have with regard toward this topic should be identified, and solutions found. This study was designed to reveal the most important elements for sustainable museums from the perspective of members of Generation Z. The variety of results revealed through this study indicate that the Q methodology is a functional approach to diagnosing problems. Therefore, the findings may shed light on other studies related to the field. To sum up, the areas in which young museum visitors expressed a strong or moderate level of need reflect the idea that museums should manage their collections in a sustainable way and preserve them for future generations. These visitors also agree that museums need active communities. It is important for museums to pay attention to the needs of visitors who are increasingly aware, and to take into account that some visitors like to go to museums for leisure and entertainment purposes. Respondents desire that museums be accessible to everyone, while others mainly want to learn and expand their professional knowledge. In order to increase the range of knowledgeable audiences, museums need to involve their visitors. It is necessary to take into account

the changing roles and professional skill-related needs of museum experts. Further studies may concentrate on understanding the more specific needs of young museum visitors in the context of these issues. Further qualitative research is advisable in relation to visitor opinions/needs regarding elements of sustainability (e.g. to identify similarities and differences). We conducted our research online, although it would be worthwhile replicating the research through face-to-face interaction with even a small sample, and exploring the reasons for each preference.

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III.5. The Family-Friendly Museum: Museums through the eyes of families

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Introduction

According to studies on family leisure time, family relationships, especially positive experiences with family members, are the most important motivation factor for family leisure activities (Hallman & Bebow 2007). At the same time, researchers also highlight the conflicting finding that one's "own time" is as important as "family time" in family leisure activities (Schänzel & Smith 2014). Time spent with one's family is important for strengthening interpersonal ties and providing opportunities for joint experiences. Then again, one's own time and one's own interests are also important aspects when choosing how to spend free time; for example, parents may wish to break away from everyday life and escape the obligations of family life for a while.

In their traditional role, museums are cultural mediators, sources of information and research (Pop - Borza 2016). However, as consumers are increasingly demanding products and services that provide a sense of emotion, learning, being, and acting (Mehmetoglu & Engen 2011); museums should focus on participation, learning and experiencing instead of the simple act of being. Nowadays, museums are expected to go beyond the functions of collecting, researching and exhibiting, and to engage in experience marketing. This includes providing "fantasy, emotion and fun-driven" experiences, emphasizing symbolic meanings, hedonic experience and subconscious responses rather than focusing on tangible benefits, utilitarian functions and conscious processes (Holbrook & Hirschman 1982). In other words, museums are expected to provide visitors with an "experience" (Pine & Gilmore 1998, Bodnár et al. 2017) and any museum wanting to reach families must take these changes into account.

Museums are increasingly focused on the public and on creating programs, spaces and exhibitions to encourage visitors to return to the museum. Audience-centred initiatives focus on making museums an appropriate experience for all ages.

Numerous studies confirm that the impacts that affect us in childhood influence our whole lives (Anderson 2002). In early childhood, special emphasis should be placed on proper education and guidance, as this will form the basis for a person's socialization and integration later on.

Arts and culture can have a very positive impact on children by helping them develop their body, mind and spirit, as well as encouraging the harmonious development of their personality. This is why fairy tales, rhymes and songs are an integral part of everyday life at home, in kindergartens and schools, as they all help children adjust to the world and overcome their fears.

Among cultural programs, museums can play an important role in raising a child's awareness and intellectual knowledge. In the history of museums, the role of education has become increasingly prominent. Museums have become one of the most important institutions for out-of-school education. That is why it is very important for children to think back over the time they spent at a museum after their visit. However, this experience is influenced by many factors, such as the museum pedagogue, the building in which it is housed, the exhibition and any interactive activities.

Museums are increasingly becoming a place for family experiences. In the present research, therefore, we explicitly explore, from a family perspective, the factors that may be important during family museum visits to encourage families to return.

In this study, we sought to answer the following main research question: RQ: What are the criteria for family-friendly museums?

Our primary sources were in-depth interviews with families, which aimed to identify family-friendly elements in museums, providing a basis from which to formulate a possible definition and criteria for a family-friendly museum.

The concept of "family-friendly" can be interpreted in many different ways. Many authors have already defined it in tourism in relation to hotels (Csordás et al. 2018, Mintel 2004, Carr 2011) and festivals (Ásványi et al. 2019), but there is no definition specifically for family-friendly museums. The higher the level at which family-friendly facilities / services are available, the more you can count on a potential competitive advantage for a given museum. It is not enough to provide or maintain family-friendly facilities: additional services must be sought. Depending on their nature, additional services can increase satisfaction and, by putting the element of experience at the forefront, can also be a decisive factor in choosing a particular museum.

The concept of family-friendly museums is not limited to service packages and facilities built around families with small children, but it is certainly an authoritative part of the concept of the term “family-friendly”. Basically, two approaches can be identified: the “child-friendly” concept and the “multi-generational” concept, which takes into account the needs of several generations (Shuang & Lee 2020). The present study focuses on the multi-generational approach for museums.

The structure of the article is as follows: first a literature review is provided with a focus on families as museum visitors; then family motivations and the environmental attributes of museums are discussed. A detailed description of constructive grounded theory is presented. The findings arising from the interviews with museum-visiting families have been developed into a theoretical model which includes the elements or criteria that mark out an ideal family-friendly museum. In the conclusions, the implications of the findings for museum experts are discussed.

Families as museum visitors

Around the turn of the twentieth century, people became interested in the idea of a children’s museum, where the child is equal to the adult and both learn together. These museums encourage children to get to know themselves, respect each other and understand the world around them, as they explore culture, art, science and the environment. In 1899, the Brooklyn Children’s Museum opened in New York, launching this movement. Influenced by the example from Brooklyn, several museums were founded between 1913 and 1925, all based on belief in the “learning by doing” method. The 1960s and 70s were an important period in the development of children’s museums, focusing on children and their participation, not the exhibition (Karadeniz 2010). Generally speaking, it is usually better for children to visit such museums with family than group visits, as they have better control over what they see and how fast they move around the museum (Dierking & Falk 1994), which highlights the importance of families as museum visitors.

Indeed, museums are finding that not only children but families themselves represent an essential part and an increasing proportion of museum visitors (Dierking & Falk 1994). Various studies have shown that more than half of museum visitors are families (Diamond 1986). Families behave differently to other visitors: they typically spend more time in the museum as a whole and spend more of that time talking (Mcmanus 1987). However, each family has different values, knowledge, experiences and expectations (Borun 2002) and

these factors can be further influenced by cultural differences (Briseño-Garzón & Anderson 2012).

Nonetheless, there are few studies on families in a museum context. The greatest attention is paid to family programs, and most research examines the possibility of family learning and interaction.

Nowadays, children represent a great challenge; exposure to technology and different types of entertainment and leisure has made many young people unfocused and easily bored. At the same time, museums need to meet the expectations of parents as well. Family time is becoming more limited, people have many obligations and little free time, and it is not always easy to find programs that provide an enjoyable leisure experience for the whole family.

Examining family visits and community integration of families with autistic children is an important part of family museum research. Publications on this particular issue are very rare. However, there is a clear need to supplement the family-friendly museum criteria with the aspects of this special family group.

Family motivations – Function of museums

Families' motivations for visiting museums can be diverse, while museums must adapt their functions to fit the needs of families. It is therefore an important issue to reconcile and harmonize these two factors when designing the main functions of museums targeting families.

Research has shown that learning, socialising and family outings are the main motivating factors for families to visit museums (Hooper-Greenhill & Moussouri 2002). Sterry found that families often visit museums for social and entertainment purposes, but that it is also important for them to learn something and spend valuable time together (Sterry 2004). Dierking and Falk note that families visit different museums for social or educational purposes (Dierking & Falk 1994). Several researchers have observed that learning is typically not the primary motivation for families to visit museums (Kropf 1989) but rather a common outing (Hilke 1989, Borun 1977).

The emphasis on the educational function of museums is increasing by the day (Karadeniz 2010, Hrubá et al. 2019). However, museums serve several other functions for families, in particular as a suitable arena for building personal relationships, discussing family stories and building a common understanding (Dierking & Falk 1994).

Turning our attention to family-friendly museums, the literature shows that the main function of family-friendly museums is to encourage a combination of parent-child

interaction, education and shared entertainment (Conn 2010, Falk & Dierking 2000). Family-oriented museums are unique in that they encourage family members to play together, and to enjoy spending time together (Garner 2015).

For families, a visit to a museum is mostly a good opportunity to spend quality time together. In fact, families tend to spend more time with each other than focusing on the exhibition itself and the objects on display, suggesting that museums can provide a special environment for family communication. For this reason, an important goal for an effective exhibition is to encourage dialogue between family members (Silverman 1989). Museums aimed at families and children have the primary goal of welcoming children and parents and passing on knowledge to them in an interactive way, giving them the opportunity to spend their free time together in an entertaining environment where they learn in addition to having fun (Karadeniz 2010). Sanford examined family learning in 25 different children's museums, and found that time spent in a museum, participation in exhibitions, and interpretive discussions had the greatest impact on learning, suggesting that family-friendly museums provide essential educational functions (Sanford 2010).

Museums offer two main learning styles for families: guided learning, where family members go around the museum together, and self-directed learning, where individuals can explore separately and meet occasionally. In the second case, the role of parents becomes more important in family learning. Factors influencing family learning include: prior knowledge and experience, individual and group schedules, gender and the age of parents and children (Dierking & Falk 1994).

Research on interactions within the family (Swartz & Crowley 2004, Shine & Acosta 2000) suggests that parent-child interactions are more effective in exhibitions where parent involvement is strengthened and encouraged, if only because of the need for the parents to go beyond verbal interaction and engage in a physical, hands-on way (Brown 1995).

The aim of family-friendly exhibitions is to get as many families as possible to visit museums (attracting power), to encourage them to stay there as long as possible (holding power) and to facilitate better comprehension of the message of the displays (communication power) (Borun & Dristas 1997).

Museums are informal learning institutions that provide opportunities for social inclusion for people with disabilities. Langa et al. (2013) found that the most important motivations for families with disabled children to visit museums were: to be treated as members of a group, to be mentally stimulated, to gain more information, and to experience new things.

Two other important aspects for such families were spending quality family time together and the child's/children's interest in the exhibition. Interacting with other museum visitors, relaxation and socialization were not found to be important motivations (Langa et al. 2013).

Environmental features of museums – Family experience

According to Kropf, when visiting exhibitions, the experience of the family is most influenced by the type of exhibition, the environment of the museum and the interests of family members (Kropf 1989). Since the aim of our research is to determine the elements that make a museum family friendly, regardless of the museum's profile or the scope of the family's interests, the first and third of these factors are not considered in the present study. Melton developed a family activity model (FAM) in which he interprets family experiences in terms of the activity environment (environment novelty) and family interaction (interaction between family members) (Melton 2017). During the visit, the family-friendliness of the museum is determined by the environment that the museum creates, which influences the experiences of the families. The museum environment can be divided into the following sub-areas:

- factors independent of the exhibition, such as prior information, physical environment, people in the museum, activities outside the exhibition;
- factors related to the exhibition: displayed objects, programs, rooms for children;
- a combination of all of these.

The online presence of the museum is a factor that provides prior information for families before getting to the museum itself. However, the literature contains little to address the importance of this type of communication. Preliminary information, ticket prices and opening hours are all factors that can help or hinder families' decision to visit. Research by the Dutch Museum Association highlights the provision of free admission to some institutions as a family-friendly factor (Boer 2011).

When entering the museum, the physical environmental factor that affects families is the extent to which it feels family-friendly and appropriate for children (Piscitelli & Anderson 2011). The clarity of the main information signs is an important criterion, as well as child-friendly displays at a height that can be viewed by young children and possibly even those in strollers (Sterry 2004).

Activities outside the exhibitions can also be very attractive to families, such as a playground and dining facilities. (Kropf 1989). With regards to the latter, restaurants should offer affordable, appealing, high quality food for children (Sterry 2004).

The role of museum staff is very important: friendly and helpful staff have been highlighted in several studies (Sterry 2004). While examining the quality of service in a children's museum, it was found that the empathy of staff was the most important factor (Maher et al. 2011). A large number of visitors consider their interaction with the staff to be the most memorable feature of their visit to the museum. Museum employees help visitors in active learning, encouraging them to communicate and interact. It is important to constantly train staff to be prepared for any situation, as they have to work with several generations at the same time (Villa 2006).

Other museum visitors also greatly influence the experience of families. For example, if people are standing in front of the exhibits, blocking the children's view, families will tend to move on, only stopping where they have access (Kropf 1989).

Among the factors related to the exhibition itself, there are many possibilities in terms of the displayed objects to strengthen the family-friendly nature of the museum. It is important that the exhibited objects are well lit so that children can see them clearly, and, where permitted, touch them safely (Kropf 1989). Children learn most by asking questions, playing and commenting on games, discovering things (smelling, touching, tasting, etc.), so there is a need for images and symbols that children can read or listen to in their own language, and that they can physically interact with (Dooley & Welch 2014). The experience is facilitated by tangible displayed objects and devices that affect all the senses (Piscitelli & Anderson 2011), and these have been shown to increase the time spent at the exhibition (Kropf 1989). At the same time, if children have their own experiences related to the theme of the exhibition, they will have a more positive experience than in the case of practice-oriented, inclusive and multi-sensory exhibitions (Piscitelli & Anderson 2011), which shows that the family-friendly design of the physical environment itself is not sufficient to attract family visitors.

The experience of visiting a museum can be greatly enhanced by programs associated with the exhibition. The organization of events related to holidays and celebrations is typical in museums, as well as programs to help discover the exhibition or the collection (such as children's guides or treasure hunts). In several institutions, special programs are offered to children who come with their families (Boer 2011). In children's museums, programs and exhibitions are designed to encourage children to use their creativity during

their visit. These kinds of interactive programs allow children to tackle real life problems and gain practical experience and knowledge (Karadeniz 2010). For example, Sterry found that family visitors to the Victoria and Albert (V&A) Museum in the UK mostly came to see the general collection, but many stated they were also happy to visit special exhibitions, workshops or family-oriented programs and expected their children would be deeply interested by the museum (Sterry 2004). There are museum initiatives that expect active participation as part of the exhibition, for example through dressing and acting opportunities (Johanson & Glow 2012).

A room specially designed for children can promote practical learning, encourage curiosity and creativity, and provide an opportunity to explore, but the size of the room can also be a decisive factor (Kelly 2002). Kids Island in Australia is a children's museum aimed at 0–5 year-olds that has developed a game-based learning environment to facilitate shared discovery and interaction between children, parents, peers and museum staff (Dockett et al. 2011). In several cases museums use so-called exploratory, liberating rooms to invite people to participate in an interactive, creative and active exhibition. These interactive spaces provide a greater opportunity for learning than traditional exhibitions, as they do not only require passive observation, but also introduce various tasks, lights and sound effects to provide visitors with an exploratory experience. In addition, these opportunities help families communicate more and learn from each other through tasks (Villa 2006).

If parents and children interact together, joint attention is significantly more likely to develop, which has proven to be an effective tool to support family learning (Povis & Crowley 2015). However, in most cases, parents are only willing to participate in games and explorations in the museum if the context is appropriate and favourable for adults (Kanhadilok & Watts 2014).

In terms of the museum environment, the visiting experience of families with disabled children is enhanced by the following factors (Langa et al. 2013, Lussenhop et al. 2016, Kulik & Fletcher 2016).

In terms of factors independent of the exhibition, it is worth highlighting the importance of the website, from which visitors can obtain preliminary information about the museum environment and the expectations of behaviour in the museum; in some cases, there may even be a separate website / menu item for families of children with disabilities. Websites can also provide information on which periods are crowded, highlighting quiet periods appropriate for autistic people; they may also draw attention to quiet spaces, which is

another important criterion for many on the autism spectrum. When entering the museum and moving around it, it is also important to have spacious exhibition spaces or a quiet room where people can relax. It is also very important to provide clear signs, plenty of detailed maps, indications of the nearest exits and toilets, which can provide a safe environment. The opportunity to interact with the museum staff and volunteers is a major factor in the quality of museum experience in this case, as it is important that family members can ask for help and support if needed. It is very important for the museum to organize special events for parents with disabled children where there are fewer crowds, less stress, and the children can easily connect with others.

Regarding factors related to the exhibition, the experience for many children with disabilities can be enhanced through multisensory interactive exhibitions.

According to Lussenhop et al., the components of a successful visit for families with disabled children are: fun, involvement, learning, sufficient time, a pleasant and relaxed experience, something to connect with, and the intention to return. On the other hand, barriers include the cost of a visit, loud noises, crowds, and the reactions of other visitors during an average museum visit, all of which can prove frustrating for such families (Lussenhop et al. 2016).

Research methodology

The aim of this study was to get to know and understand museums better, and to explore the layers of meaning of the family-friendly museum system supported by empirical research. Based on the literature, family-friendly museums raise a number of issues that could be researched qualitatively to understand and explore them better. The main questions of our research are: Why do families go to a museum? What factors influence families' museum experience? What would an ideal family-friendly museum look like?

Research objectives and research questions

In our research, we wanted to explore the process of visiting a museum and the factors that determine the museum experience and characterise the ideal museum from the perspective of families, through the analysis of in-depth interviews conducted with visiting families. The aims of our research were:

- to determine the criteria the families considered when selecting the museum or exhibition they want to visit;
- to explore the factors influencing the museum experience; and
- to analyse experience factors.

In formulating our research questions, we relied on the literature and the experience of museum professionals. To examine the concept of a family-friendly museum from the family members' perspectives, we focused on Hungarian families where a museum visit is a common family experience and the child is accompanied by both parents.

After formulating our research problem, the following main research question and sub-questions were formulated:

RQ: What are the criteria for family-friendly museums?

Q_1. What are the most important motivating factors for families to visit a museum?

Q_2. What are the factors that affect families' museum experience?

Q_3. What are the characteristics of an ideal family-friendly museum?

Research methods

In our research, we conducted semi-structured in-depth interviews. We interviewed a total of 10 families. During the interviews, we followed the pre-defined questions, but not in a fixed order; rather, we adapted the course of the interviews to the given situation.

The grounded theory (GT) method (Mitev 2012) was chosen for the research. In addition to the two main methodological approaches, Glaser's (Glaser 1992) classical and Strauss-Corbin's (Strauss & Corbin 1990), many other subtypes have appeared in the literature. For our study, we chose the constructivist approach, which is related to Charmaz's methodology (Charmaz 2000), the main distinguishing feature of which is that it recognizes that the researcher him/herself is an important part of the research process. This method allows for a preliminary mapping of the literature and for it to influence the researcher's thinking and provides an opportunity to use preliminary theoretical frameworks. As theoretical and practical experts on the museum theme, we have gained significant previous experience that influenced our attitude and decision in our choice of method.

Research group

The research was carried out in Hungary. Non-probability sampling was used and families included in the sample were selected based on a defined set of criteria. One of our expectations was that the sample should include families who visit the museum regularly and have done so at least once in the past year. Two additional conditions were that both parents must be present during the family museum visit and that the children were younger than 14 years old. Most of the families interviewed live in Budapest and in the catchment area of the capital. A total of 20 in-depth interviews (10 mothers and 10 fathers) were used. The average length of the interviews was 30–45 minutes, and the

digitally recorded audio files were later transcribed. When analysing the sample, the anonymity of the parents was ensured and the following names were used to cite the answers: mothers: #M1 – #M10, fathers: #F1 – #F10. The museum experiences of the parents participating in the study were related to different museums (art, science, local history), in order to obtain a broad picture of families' expectations, as our goal was to be able to define family-friendly criteria regardless of the museum's profile.

Data analysis

The data obtained from the analysis of the interviews were processed in open coding. We typed the interview texts word-for-word, then numbered each line and went through line by line underlining the codes we considered important line by line. In the next step, the codes were organized into categories and the resulting groups were given content names. We organized our categories into thematic units that reflected the family as museum visitors, family motivations, factors influencing the museum visit experience, and the process and criteria system of family-friendly museum visits. After exploratory open coding, the connection points between the given categories were identified (axial coding). Based on the representation method developed by Corley & Gioia (2004), we show how we grouped the raw data into concepts and then topics and what dimensions we developed by integrating all aspects of the theory (Figure 1).

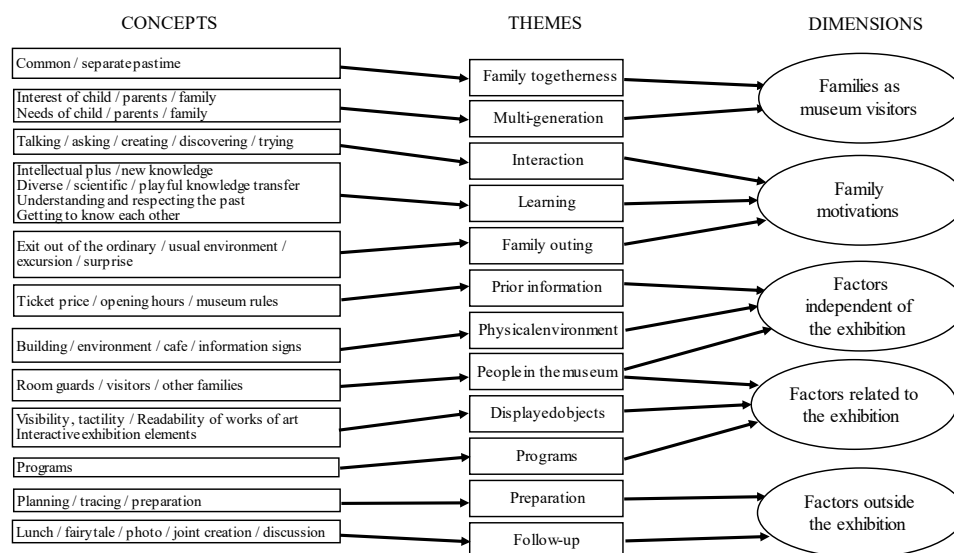


Figure 1: The structure of codes

Source: prepared by author based on graphical structure schema of Corley and Gioia (2004)

Results and interpretation

Almost every family visits a museum with a different background of knowledge and experience. Their experiences related to the given topic are variable. They come with children of different ages. The question of whether the visit to a museum is a part of a larger trip or is arranged instead of a missed weekend program is also an influencing factor. In the same museum, conditions may change from time to time: some exhibitions may attract a large number of visitors, huge crowds may form and, as a result, additional protective measures may be introduced to protect vulnerable artefacts, making it difficult for families to comfortably visit the museum. The mood, interest and physical condition of parents and children also greatly influence how they later remember a visit to a museum. The aim of our research is to explore the most important elements of a family-friendly museum that can be applied independently of these hidden dimensions. In the next section, we summarize the results based on the dimensions that are relevant to creating a family-friendly character.

Families as museum visitors

In almost all interviews, the parents said they prefer family museum visits to other leisure programs because it improves family togetherness, which was a recurring element in almost all interviews, as expressed by #M1: *“We rarely get together like this in everyday life.”*

However, it is important that this time spent together is a positive experience and relaxing for everyone, that the children do not have to be constantly disciplined, and that they are involved in the exhibition so that the parent can immerse themselves in the topic. For example, *“It is difficult to go to a museum with a family: the child is hungry, she or he has to go to the bathroom or just gets bored”* (#F1).

It is an important factor to have shared experiences: *“they can be together and enjoy the exhibition and the games all the way”* (#M2). Family members should have fun not just separately, but also enjoy the museum visit together: *“good to do and to experience something together”* (#M3).

We examined the museum visit experience from the perspectives of family members of different generations, and explored how parents define when the family, parent or child also feels good in the museum: #F2 suggested a good experience was had by all *“If the museum provides a program that the child is happy to deal with, and the parent/grandparent as well.”* For many families, the attitude is that the child comes first, and if he or she feels good, the parent will also feel good, although that does not necessarily mean a shared experience. However, there are programs in which all ages can

find the right entertainment for them, *“for example, a child imitates animals, mother reads educational texts, and father photographs them”* (#F3).

Family motivations

One motivation for a museum visit is that it offers families the opportunity to move together through the experience: *“We manage to break away from everyday life, we are completely committed, we have finally found a program that is both useful and an experience”* (#M4). A visit to a museum can be a surprise for a child, or part of a trip, the point is the common outing and enter *“another dimension”* (#M4).

There are parents who mention learning as the main factor of motivation: *“I almost always feel good, I always find something interesting, and I feel best when I learn something new that complements my previous knowledge”* (#F4). Meanwhile, for other parents, a visit to a museum is enjoyable if it allows them to interact with their children, talk and explore the exhibits in a diverse, playful way: *“I like the bustling, playful places where it gives something plus, not just dry material”* (#F5).

Within the family, the motivations of the mother and father may also differ and they may formulate criteria for an enjoyable museum program for the child based on different perspectives. For example, in one family, from the mother’s point of view, *“understanding and respecting the past”* and expanding knowledge were the most important things for her child: she considered the experience a positive one *“if someone tries to pass on knowledge from their point of view, explain things at their [the child’s] level, lead them and they can marvel at things, participate in them, touch them and create”* (#M5). From the father's perspective, the important thing is to broaden the child’s horizons and make the most of the social learning that arises from the visit: *“we learn a lot about each other, we talk a lot afterwards, we try to set a good example for the child”* (#F5).

Environmental features of museums – Family experience

During the in-depth interviews, we asked parents to recall their most positive and negative museum experiences. In analysing the recalled memories, we identified several experience factors that are closely related to each other and significantly influence the experience of museum visits, and their combined presence can have a long-term impact on the family’s museum visiting habits.

Factors independent of the exhibition

The characteristics of a family-friendly museum that emerged from the in-depth interviews confirmed the results noted in the existing literature, but provided a much more

detailed picture of how families experience museum visits, how they prepare for them, what different aspects come to the fore depending on the child's age and what individual expectations of exhibitions and museum services parents have.

For families, visiting a museum can be very costly, depending on how many family members take part, so one thing that matters a lot is the ticket price, to what age discounts apply and to what extent. As #F6 notes, *“It’s good to have child(-rate) ticket or when it is free for them”* (#F6), highlighting that this is an important factor in designing family-friendly access. However, parents also mentioned that in many cases, *“expensive souvenir items”* evoked the negative feeling of being unable to buy a memory for their child in connection with their museum experience.

For family visits, smaller exhibitions and notification of periods when large crowds can be avoided are ideal; *“short opening hours”* can also be a problem for families.

In terms of the physical environment of the museum, old buildings can either be an obstacle to barrier-free design, or it can make services more difficult. The *“lack of information signs”* was often mentioned as a problem, with families getting lost, returning to the same site several times, and/or becoming separated and struggling to find each other.

An important aspect highlighted by parents was the importance of cultured and courteous behaviour by museum staff and their treatment of children. For example, #F7 the experience positive *“If they [staff] communicate with them [children] according to their level. The educators need to be prepared and open to children’s associations, so very good dialogues can be developed”*. It can be a negative experience if *“the behaviour of the guard is not visitor-friendly”* or if the visitors feel *“the guards were constantly in our corner”*. It can also be difficult when there is a large crowd or if parents have to stand in line with a child too much, and of course visitors might also be disturbed by each other.

Factors related to the exhibition

According to our informants, children enjoy visiting a museum if they can gain insight into things, if they can evolve, and if they do not have to behave like an adult; a child might have a negative experience if *“he notices that somebody is watching what he is doing, how much time he spends in front of a picture”* (# F8).

An important aspect in art museums is the opportunity for children to create in addition to contemplate, whereas in a history museum it is important for children to be able to experience what they see embedded in an interesting story. Museum experts can greatly influence the positive experience of families if they approach the design appropriately,

from the perspectives of children and adults. This was well understood by respondents, who noted that it was important for museum educators to *“know that the needs of adults and children are different, since artworks are also approached differently by them, and they can separate and connect children and adults at the right time”* (#F9).

Guided tours through the exhibition for all members of the family should be conducted in an interpretable and enjoyable way. One satisfied father noted, *“The program was led by very professional museum educators who took us through an exhibition which was not easy to interpret. The child really enjoyed being occupied and we were also happy that the child was enjoying it”* (#F10).

An important feature of family-friendly exhibitions is to provide hands-on experience. This can be difficult to achieve in many museums, because it also depends a lot on the theme of the exhibition. *“It is good to present the exhibition in an interactive, playful way, there are tangible objects, it affects all our senses and we can learn from it”* (#F6). In terms of displayed objects, families focus on visibility, tactility, readability, all presented in an interactive way.

In connection with the exhibition, it is important that, in addition to the objects on display, there are programs that specifically target families. This is because, at first hearing, people might not necessarily think that a museum can be family-friendly; however, the appropriate program can motivate families to come to a museum: *“We’ve been to the museum without kids before, but not with the family yet. We’ve seen a family weekend program. We didn’t really know much about it, we thought we’d go together because both my wife and I love modern art. We were curious what we could do here with a child, we didn’t have many expectations”* (#F5).

Factors outside the exhibition

Parents, as experienced museum guests, also articulated how much responsibility the parent has in preparing for the museum visit and selecting an exhibition that suits the child’s interests. In addition to taking into account the time needed for the museum visit, the child’s mental health, physical condition and endurance must also be considered. It is also important that the parent feels comfortable in the museum and discusses the experiences gained in the museum even after the museum visit.

Our research outlined the need to examine families’ museum experiences in a much broader context. The experiences gained in a given museum are preceded by a preparation phase, and the visit is followed by a follow-up phase.

The preparation phase is when the family starts to plan a visit to the museum and looks up preliminary information. As one father explains: *“We like to go to a museum, [but] before that the children have to prepare for the museum visit. We discuss what they will see, and when we get there they already have some information”* (#F3).

The follow-up phase begins when after leaving the exhibition site, but while the family is still in the museum area, which makes it possible to extend the museum experience, for example, by having coffee or lunch in the museum garden or trying out the museum playground. As one parent puts it, *“Afterwards we let off steam”* (#M6). A joint photo also prolongs the museum experience, producing which the family can talk about afterwards. Another option is to create something together at home: *“... because we talked about it at home afterwards, and the child made drawings in Korniss’s style. It was a memorable and good experience because it had an ‘afterlife’”* (#M7).

Discussion and conclusion

In our study, our goal was to explore the criteria that make a museum family-friendly through in-depth interviews based on grounded theory. Based on the literature and research results, this study proposes a framework for family-friendly museums as shown in Figure 2.

Based on our findings, it can be concluded that the family represents a special type of visitor for museums. This is mostly determined by the fact that museums need to be able to provide an experience for several age groups at the same time, so a multi-generational approach is needed. Families’ motivations can essentially be categorised into three main groups: interaction, learning, and a family outing. The primary motivation may vary from family to family, but it is important for museums to provide all these functions. Museums should encourage interaction, which can take place within the family, between families, or between the family and museum experts and educators (Johanson & Glow 2012). In relation to learning, museums are responsible for sharing knowledge. In terms of a joint family outing, it is also the task of the museum to create a suitable program for several generations to experience at the same time, which can be quite a challenge.

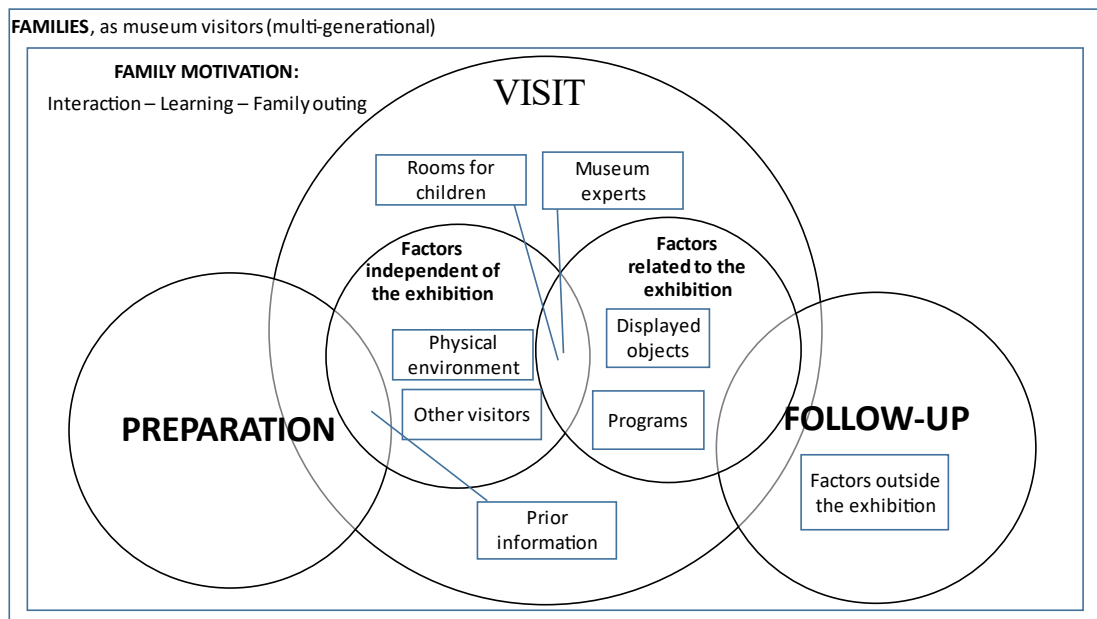


Figure. 2: Theoretical model

Source: prepared by authors

Several articles have contributed to the literature by exploring families as museum visitors. Some relevant studies have specifically investigated in the motivations of families to visit museums. However, these previous studies have focused on only one aspect of the family-friendly elements of museums. The present study adds to previous literature by offering a model of the family-friendly museum and exploring the criteria necessary for the realization of a family-friendly museum.

The results from the present study have the potential to be used by museums that target families. From the interviews with parents, we established some criteria for family-friendly museums which we summarise below. We identified aspects that museums may need to pay more attention during the preparation, visit and follow-up phases, and pinpointed the factors that are necessary to create an ideal family-friendly museum.

The preparation phase. In-depth interviews revealed that the majority of families prepare to visit the museum, gather information in advance, and judge the museum, exhibition and period of visit carefully. Museum experts can plan and communicate their services more effectively by understanding the perspectives of families. Families may struggle to enjoy a visit in a crowded exhibition space, so it is advisable to highlight the ideal period for family visits on the museum’s website or, ideally, mark time zones when only families are expected to visit, and when museum educational sessions are provided for all family members.

Another important factor is to evaluate the content/thematic aspects of exhibitions based on the perspectives of families. Not all exhibitions are interesting for all ages and there are some that do not engage younger children at all; visiting an age-inappropriate exhibition might evoke negative memories and even influence the family's desire to visit museums again in the long run. To help parents plan their visit, museums can also place downloadable information and educational materials on their website, which, in addition to practical preparation, allows parents to discuss the topic of the exhibition at home, thus helping to deepen the child's involvement when they finally visit.

It is also very important to provide discounts for families. Unfortunately, if visiting a museum comes at a high cost for families, it is a major drawback. Children are the museum visitors of the future – or at least, they may become so if they have positive experiences with their family while young. It is worth museums taking these aspects into account when setting their ticketing policies and to consider offering families discounted tickets or annual passes.

The visit phase. To ensure a positive museum experience, it is recommended that museums prepare staff to deal with families. Visitors with families can be spared a lot of negative experiences if the reception staff and the guards in the exhibition space adopt a family-friendly approach and attitude. There is a great need on the part of families to provide a separate room for children.

Signage and information is another important aspect. Rather than prohibitory signs, the signage should help people orient themselves in the museum space and provide information and education insights about exhibitions. Setting up information points can also help in this regard. Families benefit from support to discover the museum and the exhibitions through films and guided walks led by museum educators.

To support families, museums should make exhibits accessible and create interactive exhibition elements, for which the involvement of digital devices provides many new opportunities. Families will feel comfortable in the museum if the museum is a source of new experiences for all members, especially those can be implemented through discovery and interaction.

The follow-up phase. The museum visit does not end on leaving the exhibition itself. Indeed, it is important to offer families additional program options that complete the visit. There are pleasant walkways and playgrounds in the gardens of many museums, all of which are worth drawing the attention of families to as they leave the exhibition. According to the reports from parents, a joint conversation about what they have seen, or

further activities undertaken at home, such as drawing and viewing photographs, are also part of the museum experience. A useful guide for this might be a brochure or a workbook that can be downloaded from the website.

Finally, museums should ask families to give feedback on their visit, from which they can gain greater understanding of this perspective and improve their services. It can also be experienced as a positive gesture to thank parents for bringing their children to the museum.

Despite the richness of the contributions from our informants, our study has limitations. The first is that only Hungarian families were included in the sample. Thus the study could be enhanced in the future by interviewing families from other countries, which may reveal other perspectives. Other research into family tourism also analyses drawings made with children, which can provide additional information to support the development of family-friendly museum criteria. Other studies have examined families with disabilities as museum visitors; seeking the perspectives of such families would help achieve a more complete picture of family-friendly factors.

The family-friendly criteria identified on the basis of the interviews are in themselves worth further research, thus we consider it important to supplement our qualitative results with primary research that also measures quantitative elements. In the present study, we conducted interviews with families only, and developed our model based on the examination of the demand side. It would be worth also undertaking research on the supply side, that is, conducting interviews with museum specialists, to supplement our results and compare perspectives from the supply and demand side. An even more detailed definition of the criteria could be facilitated by undertaking benchmarking exercises in which we examine the website of family-friendly museums internationally using a content analysis method.

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IV. CONCLUSION

In this research, we have theoretically and empirically examined the sustainable museum phenomenon, defined the main criteria framework based on systematic literature review and mission statements of the museums and identified the museum professionals' and visitor's preferences. For this, five research studies were conducted which are presented in the five journal articles in the dissertation.

This study filled a gap in research, since several previous studies on the sustainable operation model of the museum (e.g., Stylianiou-Lambert et al. 2014; Pop & Borza 2016; Magliacani & Sorrentino 2021) and different sustainability dimensions of the museum (e.g., Han et al. 2021, Jurčišinová et al. 2021, Llamazares de Prado 2021, Ost and Saleh 2022) were identified, but empirical research on a complex approach to sustainable museum development has been very limited so far.

In this chapter, the research questions are answered, and the theoretical and practical benefits of the research are highlighted, together with its limitations and future research directions.

Research question (RQ): *How can a sustainable museum be defined based on the mission statements of European contemporary art museums and according the value preferences of museum professionals and museum visitors?*

IV.1. Responses to the research questions

The sustainable museum is future-oriented, its long-term strategy is characterized by a multidimensional approach. Its activities aim to achieve greater performance primarily through cultural sustainability, to manage its collection in a sustainable way and preserve it for future generations.

The economic stability is the core condition for this, to achieve this it should be innovative, proactive in building partnerships with economic and cultural actors, especially with the tourism sector, as it is an important part of cultural tourism.

In addition, the sustainable museum needs active communities and therefore it is important to pay attention to the needs of visitors who are increasingly conscious. It means taking into account the fact that some visitors like to go to museums to learn and expand their professional knowledge but some of them for leisure and entertainment purposes. In order to increase the range of knowledgeable audiences, museum needs to involve them as an active interpreter taking into account the new paradigm of personalized museum experience. Its relationship with visitors is based on the fact that a

visit to a museum does not start and end at the museum, therefore a multi-phase visitor experience should be designed by the museum professionals. Its role in shaping society is significant, focusing attention on marginalized communities, which contributes significantly to the idea of a sustainable future. It is also environmentally aware in the way it operates and communicates this approach to its visitors.

As a result of the research, the six sub-questions (Q1, Q2, Q3, Q4, Q5, Q6) were answered as follows:

Q1 What sustainability practices characterize European contemporary art museums based on the information set out in their mission statements?

Response to Q1:

The results show that economic stability and the need for it is highlighted by several museums as a core condition. Environmental management, although encompassing a wide range of activities in the literature, is nevertheless scattered and generalised in the missions.

The social roles and the areas related to the core function of the museum were the most prominent sustainability themes, i.e. the dimensions to which museums can contribute most to sustainable development.

Q2 Are there regional differences in the sustainability contents of the mission statements? What are the differences between mission statements in CEE and non-CEE countries' museums?

Response to Q2:

Regional differences emerged on several points. Environmental management, economic stability and innovative, proactive behaviour are also stronger in non-CEE countries. However, sustainability practices arising from the museum's function are more prominent in CEE museums, with art-centredness, sustainable management of exhibitions and collections, and a stronger research base. In terms of societal roles, the picture is mixed from a regional perspective, with education and community engagement being more prominent in CEE museums, while accessibility and impact on society are more prominent in museums in non-CEE countries.

Q3 Based on the information available on their websites, what are the sustainability practices of European contemporary museums?

Response to Q3:

In our study, we found that the existence and level of the four pillars of sustainability reflect the viability of museums and the importance of their role in society and that it is

therefore particularly important for their operations to be linked to the environment that surrounds them and without the support of which they cannot be sustainable.

Our research confirms that museums strive for greater performance primarily along the lines of cultural sustainability, but also for social integration. In this respect, regional differences are starting to disappear. The third pillar, which plays an important role for museums, is the economic approach, but there are already differences in this area and the results show that these gaps are also weakening sustainability indicators. As the literature indicates, museums are the least focused on environmental sustainability.

Q4 What are the most important criteria for a sustainable museum?

Response to Q4:

As a result of the research, three dominant perspectives could be distinguished: exhibition-oriented innovator, collection-oriented strategist and education-based leader. Although museum managers approach the concept of a sustainable museum from different perspectives, economic stability based on innovation, social responsibility to reach communities and the transmission of cultural values are all important to them. However, the environmental dimension has not yet been integrated into the functioning of Hungarian museums, weakening the holistic approach to sustainability.

In our research, we have found that providing personalised museum experiences and opportunities for interaction is still a new field of museology in Hungary. These may be new technological solutions to which museums are open and we believe that these developments will contribute to the effectiveness of museums not only in cultural terms, but also in all dimensions of sustainability.

Q5 What are the elements of museum sustainability that Generation Z prefers?

Response to Q5:

The results show that the areas in which young museum visitors expressed a strong or moderate level of need reflect the idea that museums should manage their collections in a sustainable way and preserve them for future generations. These visitors also agree that museums need active communities. It is important for museums to pay attention to the needs of visitors who are increasingly aware and to take into account that some visitors like to go to museums for leisure and entertainment purposes. Respondents desire that museums be accessible to everyone, while others mainly want to learn and expand their professional knowledge. In order to increase the range of knowledgeable audiences, museums need to involve their visitors. It is necessary to take into account the changing roles and professional skill-related needs of museum experts.

Q6 What are the criteria for family-friendly museums?

Response to Q6:

Based on our findings, it can be concluded that the family represents a special type of visitor for museums. This is mostly determined by the fact that museums need to be able to provide an experience for several age groups at the same time, so a multi-generational approach is needed.

We identified aspects that museums may need to pay more attention to during the preparation, visit and follow-up phases and pin-pointed the factors that are necessary to create an ideal family-friendly museum. Museums should encourage interaction, which can take place within the family, between families or between the family and museum experts and educators.

IV.2. Theoretical and practical contributions

Both our secondary and empirical research have led to new theoretical, practical, and methodological insights. The main contributions of the research are summarised in Table 1.

Table 8. Theoretical and practical contribution of research

N	Theoretical and practical contributions	Methodology applied	Related Q	Paper
1	Identifying 15 key sustainability thematic roles of the museums	Critical Discourse Analysis (CDA)	Q1	A1
2	Identifying the objectives and roles along which different practices exist in CEE and non-CEE countries	Critical Discourse Analysis (CDA)	Q2	A1
3	Identifying the proportion and level of achievement of the sustainability objectives of museums	Content analysis	Q3	A2
4	Identifying 3 dominant perspectives of Hungarian museum leaders for sustainable museum	Q method	Q4	A3
5	Novel identification of the potential tool for enhancing	Systematic literature review	Q4	A3

	sustainability: personalised museum experiences is the new technological challenge	Q method		
6	Novel synthesis of the literature on sustainable museum	Systematic Literature Review (SLR)	Q4	A4
7	Novel approach using the Q-method to explore the trends that characterise the engagement and mechanism of action of opinion groups.	Q method	Q4, Q5	A3, A4
8	Identifying 3 dominant perspectives of young museum visitors for sustainable museum	Q method	Q5	A4
9	Creation of model of multi-phase museum visit, new approach to be used by museums to target visitors	Grounded theory	Q6	A5

Source: own editing

- (1) The research complements the empirical literature on sustainable museums and contributes to broadening the theoretical background with regard to sustainable museums. The mission of museums in this context has not been examined before. The research has shed light on the value preferences that define museums and around which they can develop sustainable strategies.
- (2) The novelty of the research is that there has been no research on museum sustainability specifically in the context of European contemporary museums. Our study investigated the differences between museums in CEE and other countries, thus contributing to both museum management and sustainability research.
- (3) No previous study has measured and compared sustainability indicators at international level. The museums studied operate in different regions of Europe, in very different economic and social contexts. Their comparison is an important contribution to the theoretical literature of sustainable museums and museum management.

- (4) Research with Hungarian museum professionals has shown that there are several possible approaches to establishing a sustainable museum strategy. Through this research we have contributed to the application of sustainability in practice.
- (5) Among the preferences of the members of the three factors, we found two statements that neither represent agreement nor disagreement, both related to the museum visiting experience: interactivity makes it easier to reach younger generations and the museum of the future offers a personalised experience. These are areas in which museums have not yet made much progress, and the inclusion of AI in museum visits is one of the developments that could open up new horizons, and museums should therefore make a greater effort to learn about and apply these solutions.
- (6) Novel synthesis of the literature on sustainable museums. We have highlighted that the topic is under-researched in tourism.
- (7) The Q-method is used to explore the trends that characterise the engagement and mechanism of action of opinion groups. Research illustrates the current conditions, but also outlines desirable and possible future alternatives
- (8) The research provides insight into the differences and similarities between Generation Z opinion preferences and thus contributes to a deeper understanding of the sustainability of museums from the perspective of future museum visitors.
- (9) Several articles have contributed to the literature by exploring families as museum visitors. Some relevant studies have specifically investigated in the motivations of families to visit museums. However, these previous studies have focused on only one aspect of the family-friendly elements of museums. The present study adds to previous literature by offering a model of the family-friendly museum and sets up a multi-phase visitor model to help museums reach other visitor target groups.

Practical implications

Overall, my research findings provide an insight into the phenomenon of sustainable museums and explores the interfaces along which different interest groups in society can enter into partnership with it.

For museums

Museum professionals often use the term sustainability to mean environmentally conscious operations and economic stability. The research explored all dimensions of a sustainable museum, not only these 2 pillars but also the cultural and social aspects.

Building on the results of the research, each museum can develop its own strategy and identify the factors that make it perform well and those that make it less effective. The research has shown that sustainability is a very complex concept, which can lead museum professionals to be confused about it, but they can use the results of the research to embark on this long but seemingly inevitable transformation.

This study highlighted the most important elements for sustainable museums from the perspective of members of Generation Z. Young visitors are very important for museums and the research pointed out that today's young people are already very conscious museum visitors and have specific expectations. Based on this museums can plan their services and programs.

The research provides useful insights for museum management and helps them to develop partnerships with different stakeholders and to take proactive steps in long-term discussions with cultural policymakers.

In our study, we found that the existence and level of the four pillars of sustainability reflects the viability of museums and the importance of their role in society and that it is therefore particularly important for their operations to be linked to the environment that surrounds them and without the support of which they cannot be sustainable

For the tourism sector

Awareness of the concept of sustainable museums is an important element in the drive towards sustainable tourism. We hope that the dissertation will provide not only a scientific basis for further research (as there is a lack of studies on this theme) but practical contribution as well. Museums are a major attraction all year round and can encourage tourists to stay longer. It is therefore important for tourism professionals to develop partnerships with museums and to understand that it is not only blockbuster exhibitions that can be attractive, but that museums, as custodians of local cultural values, are increasingly important destinations for the conscious traveller. Within the sustainable museum framework, tourism professionals can see museums from a perspective that allows them to develop long-term strategic partnerships. As we pointed out earlier, art tourism, which is becoming increasingly dynamic, can be a unique opportunity for tourism and museums to collaborate.

For cities and local governments

Cities and regions have a lot to gain from museums. As well as providing academic work and value to communities, they are also important catalysts for a region's economy. However, it is also very important for policy makers to understand the values of

sustainable museums and the directions that museum development should take in the museum sector. It is important to see that museums are first and foremost social institutions with a strong scientific background and cannot only be an economic catalyst. However, they can also raise the prestige and reputation of a region, putting a city or region on the world map in areas where it would otherwise not be accessible. This has important implications for tourism development which is closely connected to attractions as well as image and branding.

IV.3. Limitations and further research directions

The study on the sustainability of European museums presented in this thesis was limited to exploring the mission of museums and did not analyse other museum documents that could provide additional information on museums' attitudes towards sustainability. Therefore, in the future, it would be worthwhile to extend the research to analyse the information and strategy documents of the museums' entire website and to extend the research by using other methodologies, e.g. case studies. There are also limitations to studies on museum expertise and on Generation Z visitors and family-friendly museum visits.

Methodological limitations

The dissertation is based on a qualitative methodology, a form of research that usually seeks to answer an open question, starts by posing it, is exploratory, favours induction and is usually based on qualitative data obtained through observation, interview and text analysis. This methodology was chosen in order to gain a deeper understanding of the phenomenon under study. In order to be creditworthy, several different methods were used to answer the research question.

However, the methodology does not allow for broad generalisations, and we would therefore consider it necessary to use a quantitative methodology as a follow-up to the research, especially for a wide range of museum visitors, where a questionnaire survey would be useful. This could include a large sample which also takes into consideration domestic and international tourists as well as local visitors.

Sample limitation

As sustainable museums are still a new concept among professionals and museum visitors, we first wanted to find out how Hungarian professionals and museum visitors perceive the topic. Therefore one limitation is that only Hungarian participants were included in the sample. Thus, the study could be further developed in the future by

including experts and visitors from other regions and countries (e.g. international tourists), which could lead to the exploration of additional perspectives, and further comparative research could be initiated.

Future research

Further research on the relationship between sustainable museums and tourism could be an important step towards developing future practices that aim to revitalise local cultures and maximise community well-being, giving space for a community-oriented approach to cultural tourism alongside an economy-oriented approach. As a museum professional, I would like to continue research on sustainable museums, taking a holistic approach and looking at how they interact with different stakeholders at local, regional and international level. I also want to explore how it can become a catalyst for sustainable development.

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