

The Current State and Challenges in Democratizing Small Museums' Collections Online

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ABSTRACT

This article focuses on the problematic democratization of small museum collections online in Cyprus. While the web has enabled cultural heritage organizations to democratize information to diverse audiences, numerous small museums do not enjoy the fruits of this digital revolution; many of them cannot democratize their collections online. The current literature provides insight into small and large museums' challenges worldwide. However, we do not have any knowledge concerning small Cypriot museums. This article aims to fulfill this gap by raising the following research question: What is the current state of small museum collections online in Cyprus, and what challenges do they face in democratizing their collections online? We present our empirical results from the interview summaries gathered from six small museums.

INTRODUCTION

Cultural heritage digitization and online accessibility offer an unprecedented opportunity to democratize museum collections. Online collections, typically presented on institutional websites, represent the world's culture, an increasing trend toward a world where information is digitally preserved, stored, accessed, and disseminated instantaneously through a global and interconnected digital network. Consumers search for information on the web has enabled cultural heritage institutions to democratize their collections online, yet most small museums have not benefited from this process and do not have their collections online.

As a result of the above-mentioned problem, digital versions of small museum collections are primarily inaccessible, meaning less access to information "knowledge." There is a clear need for small museums to remain relevant by publishing their collections online. Small museums must move quickly into the digital world. Current literature provides insights into the challenges they face worldwide. However, we do not have knowledge regarding the situation in Cyprus. This study aims to fill this gap by researching small museums in Cyprus and asking the following research question: What is the current state of small museum collections online in Cyprus, and what challenges do they face in democratizing their collections online?

What Is a Small Museum?

Museums are defined as small based on their annual budget and number of staff. The American Association for State and Local History (AASLH) defines museums as small if they have an annual budget of less than \$250,000 and limited staff with multiple responsibilities. Other factors such as the size of collections and the physical size of the museum could further categorize a museum as small. Katz set the same budget and set the staff number at five or less.¹ Honeysett and Falkowski put the budget at \$300,000 and five or fewer employees.² Miller notes that the average small

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museum has just two full-time employees and a budget of less than \$90,000.³ Watson by contrast defines small museums as ones that grew out of the community they serve.⁴

For the purposes of this article, a small museum is one with more than one but less than five full-time employees not including museum custodians. Categorizing a museum based on its budget is difficult and contentious since often museum staff are funded by another body, such as a municipality.

LITERATURE REVIEW

Cultural heritage institutions such as galleries, libraries, archives, and museums (GLAMs) were among the first organizations to digitize information by creating databases whose access was granted locally to institutional cardholders (Horan, 2013). The process of digitization is of paramount importance, with museums eager to offer online access to their physical collections.⁵ Online collections provide a range of opportunities, including the facilitation of knowledge sharing and the creation of a participatory environment that promotes information exchange.⁶ Through their online presence, museums can present their collections to a global audience.⁷ The accessibility of digital knowledge opens the door for further knowledge to be generated and enhances the educational reach of cultural institutions.⁸ Online collections create opportunities for small and geographically isolated museums to deliver learning opportunities to audiences around the world, something all museums should aim for.⁹ While larger museums have done well, smaller ones have not been as successful.¹⁰ Much of past knowledge is stored in small museums, whose importance in preserving cultural heritage should not be underestimated.¹¹ They sometimes add far more to social capital than larger national ones.¹²

Though the need for museum collections online is recognized, there are limitations. If it was simple, every museum would be online.¹³ However, most small museums are not online.¹⁴ Their collections remain digitally inaccessible to future generations.¹⁵ Oberoi and Arnold have gone so far as to maintain that information absent from the internet can be regarded as nonexistent.¹⁶ On the other hand, in rare cases where small museums have their collections online, they target human consumers.¹⁷ The information is stored in isolated data silos incompatible with automatic processing. The challenge is to make collections discoverable via online search engines and metadata aggregators.¹⁸ The issue appears to have been ongoing for many years as Gergatsoulis and Lilis maintain that the web lacks semantic information and it has proved challenging to process such a massive set of interconnected data as mentioned 18 years ago.¹⁹ Clearly, online collections must be understood and used efficiently both by humans and machines, because machine-consumable content will end up in human-consumable content.²⁰

The Current State and Challenges

Small museums find it difficult to publish their collections online. Most large museums have undergone a digital transformation, but few small ones have.²¹ The museum survey by Tongue in 2017 showed that the number of museums planning to publish their collections online decreased from 40 percent in 2016 to 24 percent in 2017, although only 8 percent had already gone online by 2018.²² The survey in 2020 by Network of European Museum Organisations (NEMO) on digitization in European museums shows that an average of 20 percent of museum collections in Europe as a whole are online, and the median is 10 percent. Surprisingly, 43 percent are digitized but not online, meaning the public has access to less than half of the existing digital items.²³

A report by Flynn in 2018 reveals that most historical society collections are not accessible online.²⁴ According to Honeysett and Falkowski, the majority of museums in their survey in the US have less than 10 percent of their collections online.²⁵ According to a survey by Axiell in 2017, only 21 percent of museums have a complete collection online, 27 percent more than half, 38 percent less than half, and 14 percent have no collections online.²⁶ In 2020 Beaudoin pointed out that approximately 32 percent of US art museums with holdings provide online collection systems that are openly available to the public, while 13 percent do not even have an institutional website.²⁷

Avgousti, Papaioannou, and Gouveia indicated that even if small museums manage to give online access to their collections, they are often stored in isolated data silos incompatible with automatic processing.²⁸ The museum survey by Vernon Systems in 2016 showed that 82 percent of museums do not use any machine-consumable standards.²⁹ Furthermore, only 11.9 percent use Dublin Core as a metadata standard, 3.6 percent Darwin Core, 1.2 percent EAD and 8.3 percent other. Further, the existence of individual collections online, maintained by different organizations, brings challenges to the discoverability, sharing, and reuse of resources.³⁰ Metadata aggregation is a frequently utilized strategy in which centralized organizations, such as Europeana,³¹ collect associated metadata to make resources more discoverable and usable.

Why do we witness such low levels of online publishing in small museums? And why are online collections not in a format that is searchable and easy to find? According to the relevant literature, small museums lack resources and skilled staff to move to the digital age.

Current Obstacles

A key obstacle in the digitization of small museum collections is insufficient resources. Large cultural heritage institutions have much greater access to funds.³² According to Klimper, while the internet has had a tremendous impact on the democratization of European culture, insufficient financial resources remains a significant challenge for small museums.³³ Irina Oberlander from the Institute of Cultural Memory has pointed out that small and medium-sized museums with limited budgets are digital age victims.³⁴ Laine-Zamojska stressed that small museums, which are often entirely run by volunteers, cannot afford to digitize or make their collections available to a wider audience.³⁵ Therefore, online access to cultural heritage in these small institutions is minimal.

The NEMO report in 2020 showed that insufficient staff is another major obstacle for museum digitization and online accessibility.³⁶ Small museums are understaffed.³⁷ This is confirmed by Gallery Systems, who noted that small museums face their own set of collection challenges.³⁸ With smaller team sizes and limited staff hours, it is difficult to operate. The museum survey by Tongue in 2017 showed that 73 percent of museums did not have dedicated staff to manage online collections.³⁹ This means that collection management is given to staff who already have a full job description. Avgousti, Papaioannou, and Gouveia pointed out that museums do not usually hire experts to plan, develop, deploy, and maintain a digital collection, but delegate the task to museum staff who are often limited in technological skills,⁴⁰ while Wigodner and Kearney mentioned that small museums typically have fewer (if any) employees devoted to web publishing.⁴¹

Fewer employees often means a lack of skilled personnel. In the aforementioned survey, no museum with fewer than 50 staff members reported employing a computer expert.⁴² Additionally, Honeysett and Falkowski mention that two-thirds of museums have one or no IT personnel.⁴³ In

addition, the same concern has been observed in small university libraries, whereby 67 percent did not have an IT expert.⁴⁴ Further, small museums do not have suitable technology, and in many cases, the staff is not technologically adept.⁴⁵

Additionally, Klimper affirms that the internet promise of providing access to European culture is hampered by a lack of technological skills.⁴⁶ Considerable expertise in Semantic Web technologies is needed to expose machine-consumable content to the “Web of Data.”⁴⁷ Finally, in-depth knowledge of modeling, along with programming skills, are also essential needs.

Complexity of Technology and Metadata Issues

The NEMO report in 2020 showed that less than 20 percent of museum collections are online.⁴⁸ As already mentioned, this may be attributed and related to the prerequisites of online collections as they include complex technology or the need for online platforms. Additionally, Avgousti, Papaioannou, and Gouveia pointed out that small museums do not have suitable technologies.⁴⁹

Within the discussion on the Semantic Web (also known as Web 3.0, the World Wide Web’s extensions that make Internet data machine-readable via applying standards), Corlosquet stated that one of the significant challenges is getting Semantic Web data annotations to the end-user applications. If this is achieved, there will be faster adoption of the Web of Data. Moreover, while content management systems (CMS) significantly aid the production of online content by end users, the problem of allowing the user to produce Semantic Web content remains elusive.⁵⁰

Further, Velios discusses the problem of understanding Semantic Web concepts concerning complex setups.⁵¹ Such setups may be bewildering for those humanities scholars without a technical background. He mentions that the Semantic Web does not offer the necessary tools to accommodate data easily.

Vavliakis, Karagiannis, and Mitkas postulate that even for the mainstream use of the Semantic Web in the cultural heritage community, easily operated tools are also required.⁵² Cultural heritage institutions are encouraged to start processing and publishing content with semantic technologies. Still, the tools which can undertake such a considerable task continue to lack user-friendly features.

Daradimos, Vassilakis, and Katifori claim that small museums use content management systems to publish their collections online.⁵³ However, using a general-purpose CMS (e.g., Drupal) comes with great difficulty, primarily due to the lack of technical information such as Dublin Core fields, as nontechnical staff cannot be expected to know how to install and configure appropriate modules within Drupal to enable the entry and publication of this metadata.⁵⁴ However, there has been little development of the current CMSs regarding user-friendly tools targeting the implementation of semantic markup annotations. The integration of CMS into Semantic Web technologies will increase cultural heritage knowledge dissemination remarkably.

Further, the absence of robust and easily usable tools is considered a central challenge that continues to pose obstacles concerning the rapid adoption of Semantic Web and Linked Data.⁵⁵

Antoniou and van Harmelen explain that the Semantic Web’s adoption relies on developing new and straightforward tools.⁵⁶ The Semantic Web is also being based on the adoption of the existing technology rather than on new scientific solutions. Modern and easy-to-use tools will facilitate the

Semantic Web's adoption compared with what is available in the current conjuncture. However, only a small number of institutions use semantic technologies. Tim Berners-Lee, the brains behind the Semantic Web, points out that the machine-readable web is always farther off compared to the human-readable web.⁵⁷

In cases of large and well-funded organizations or museums like the BBC or the British Museum, it is possible to work with Semantic Web technologies. On the other hand, small museums will have difficulties with the Semantic Web's smooth implementation.⁵⁸

It is pivotal to emphasize that challenges related to the implementation of machine-consumable content by museums rely heavily on adopting existing technology rather than on scientific approval. As Antoniou and van Harmelen have underlined, the most significant needs are observed in the areas of easily accessible tools that are approaching nontechnical communities. The most significant technological progress will lead to a more advanced Semantic Web compared to what can be achieved today.⁵⁹

METHODOLOGY

Data Collection Methods

Interviews are regularly used in qualitative research for data collection.⁶⁰ Structured interviews lead to more specific answers, usually in a controlled environment. In unstructured interviews, there are no set-in-advance questions, and the interview can be very broad, open, and exploratory. Semistructured interviews fall in the middle, as they allow both a few specific questions to be addressed and space for extra information via deviating from the set questions. This is the main reason why they are one of the most popular and widely used methods of data collection.⁶¹ The interview type selected depends on the questions to be asked and the research method.

The current research aims to collect a comprehensive understanding of a problem. Therefore, semistructured interviews were the ideal tool, and an interview guide containing open-ended questions was developed.

Selection of the Sample

The researcher selected museums based on nonrandom criteria. Techniques for nonprobability sampling methods are often suitable for qualitative research. Nonprobability sampling's aim is not to test a hypothesis about a large population but to establish an initial understanding of a small community or a population under research. The current research targets small museums in Cyprus. Therefore, a nonprobability sampling method was used to select small museums.

The small museums contacted were not always responsive. However, we managed to conduct interviews with six small museums in Cyprus using the snowball sampling method, where the researcher asked the interviewee to refer other people for conducting future interviews.

Sample Size

In the current study, the sample population is homogeneous, meaning the population is related to small museums in Cyprus. When the population is homogenous the sample size should be at least 4 to 12 cases. In cases of heterogeneous samples, for example in small museums from around the world, the sample size must be at least 12 to 30 cases. In more complex cases such as ethnographic or grounded theory, the sample size must be larger.

In our case, we started with two cases and continued until data saturation was achieved, the point in the research when no new information is discovered in data analysis.⁶² Cyprus has 34 museums of which 10 are small (for this survey, defined as having one full-time and fewer than five total employees). We interviewed six of the 10 small museums and reached data saturation after interviewing the first four.

Conducting the Interviews

In preparation for the interviews, we contacted the interviewees by phone and email, informing them about the interview. Information on the size of the staff was gathered by contacting the museum. While ten museums met the definition of small, only six agreed to participate in the research.

First, a pilot test was conducted on two interviewees to identify any problems with the interview guide. Based on this pilot test, we made changes and corrected mistakes. Due to the COVID-19 pandemic, interviews were conducted via internet-based technologies, mostly Zoom, a video telephony software program, chosen because of its ability to record video.

The interview length was about 20–25 minutes, and all participants had the option to choose Greek or English as the interview language. Due to the pandemic and logistic challenges, it took about six months to identify subjects and conduct the interviews.

RESULTS

This section discusses the empirical results extracted from the interview summaries. Interviews were conducted in Greek (both authors are native speakers of Greek) and translated to English by the authors. Under the major headings of our research subject, we present our findings concerning our research question.

The Current State of Collections Online

Our results indicate that most small museums in Cyprus do not have an online presence.

Two of the six museums (4 and 5) do not have a website. The ones that do have websites created but not updated or supported for more than 15 years, and which therefore need replacement. Here are two representative comments: *“The museum has an old and simple website”* (respondent 1); *“[We have] a very old website that needs to be changed soon”* (respondent 3). The two museums that do not have a website, use/have used social media: *“The museum uses Facebook and Instagram”* (respondent 4); *“[We] used to have a Facebook page”* (respondent 5).

We discovered that five of the six museums do not have their collections online: *“The museum does not have any of its collections online”* (respondent 1); *“No online collections”* (respondent 4); *“We do not have any collections online”* (respondent 5).

Further, we learned that none of the museums use machine-consumable standards to achieve wider interoperability on the web: *“The online collections are only in a human-readable format”* (respondent 2); *“We do not use any machine-readable”* (respondent 3). However, museums understand the need and benefits of such solutions: *“Our goal is to have the online collection understandable by machines and share metadata online”* (respondent 2).

We noticed that all museums are willing to give online access to their collections, complete or partial, and agree that the primary goal is to disseminate information: *“The primary goal is to give access to museum collections for general use”* (respondent 1); *“To put it another way, to communicate information, knowledge to scholars and the general public”* (respondent 2); *“To reach as many people as possible and spread those collections online to a variety of audiences”* (respondent 3); *“The main reason that online collections exist is that it is the tool to reach more people and disseminate those collections online to diverse audiences, researchers, and the public alike, in other words to disseminate knowledge”* (respondent 4); *“To disseminate knowledge and information to more people such as students and researchers and the general public”* (respondent 5).

Museums also view online collections as a marketing tool that can bring more people to the museum’s physical space: *“[Online collections] can work as a marketing tool, people that can view our collections online may visit the museum physical space”* (respondent 4); *“The main goal is to be found”* (respondent 5); *“Tourists coming to Cyprus can use the system and find out about our collections and the museum”* (respondent 6). Clearly, museums are eager to give online access to their collections. The goal is to disseminate information and attract more people to their physical premises.

When asked about the goals of publishing machine-consumable content online, findability was most significant: *“Nowadays, people are using search engines to find the information they are looking for. And since the information is not in a machine-readable format and understandable by search engines, it creates difficulties to be located online”* (respondent 1); *“[The goal is] to make the collections more findable”* (respondent 2); *“... to be easily findable by search engines on the internet”* (respondent 3); *“[To] increase wider findability of the collections over the web”* (respondent 6).

Additionally, we discovered that some museums are not aware of the existence of machine-readable formats: *“I am not aware of machine-readable data”* (respondent 4); *“The museum is not aware of any machine-readable standards for wider web interoperability”* (respondent 5).

It is evident that findability is the main goal in online content. But it is also clear that some museums are not aware of the existence of machine-readable standards and such technologies.

The Current Challenges of Collections Online

Insufficient Resources and the Cost of Existing Solutions

Our study shows that museums’ insufficient resources and the cost of existing solutions are the main obstacles in having their collections online. Here are five representative comments: *“Lack of money”* (respondent 1); *“We got offers from different companies; however, the costs of existing solutions were well above our budget and possibilities”* (respondent 2); *“The main obstacle related to giving online access to the museum collections is the cost ... outsourcing this kind of work costs a lot of money that the museum does not have”* (respondent 4); *“Of course is the cost”* (respondent 5).

Insufficient Staff (Time) and Skilled Staff (Know-How)

According to our findings, staff limitations are another obstacle small museums face in providing online access to their collections: *“The existing staff has so many other responsibilities mostly related to research and museum daily functions”* (respondent 1); *“Populating all the material to a new system requires a lot of time and staff that the museum does not have”* (respondent 2); *“The museum’s limited staff”* (respondent 4); *“The limited staff of the museums is a problem”* (respondent 6).

Further, interviewees shared that the lack of know-how is another obstacle to digitizing and making accessible museum collections online: *“We do not have the technical knowledge. Of all of the staff members, no one has technical knowledge ... this means that we must hire a person that has this kind of knowledge”* (respondent 1); *“We do not have a dedicated staff to work specifically for this function”* (respondent 6).

Complexity of Technology (Existing Systems)

According to our research, the existing technological complexity is another major problem: *“The lack of easy-to-use tools that we can use at the museum [is a problem]”* (respondent 1); *“Creating a content model selecting all necessary fields is a very complex and time-consuming process”* (respondent 2); *“We need tools that are user-friendly, easy to use with nontechnical complexity without requiring a too specialized technical know-how”* (respondent 3); *“The technological complexity that is involved”* (respondent 5); *“Hosting your own online collections due to the maintenance and technical knowledge is another issue that small museums are facing”* (respondent 6).

Insufficient Infrastructure

Our research revealed the lack of technological infrastructure was an obstacle: *“The lack of infrastructures ... we cannot work with this kind of old infrastructure ... we cannot work with a computer that is 20 years old, this is impossible ... [we have] only one old computer that is connected to the internet”* (respondent 1); *“Primary challenges related to technological infrastructure”* (respondent 3); *“The existing infrastructure of the museum, we have old computers”* (respondent 4); *“Hosting your own online collections due to the maintenance and technical knowledge is another issue that small museums are facing in Cyprus. This is why we use external platforms”* (respondent 6).

Not Machine Consumable

The complexity of technology was highlighted as the biggest challenge in publishing collections online in machine-consumable formats: *“Easy-to-use solutions”* (respondent 1); *“Selection of the appropriate technology, there are so many standards for machine-readable data making the selection process extremely hard”* (respondent 2); *“The complexity of technology is the main obstacle”* (respondent 3); *“If the system we use can automatically create machine-consumable content this will help”* (respondent 4); *“The platform that publishes the collection human-consumable content can at the same time publish in machine-understandable content will solve the problem”* (respondent 6).

For some, machine consumption is not a priority: *“It is not a first priority of the museum”* (respondent 5); *“The museum is not familiar with machine publishing”* (respondent 6).

The complexity of technology and the lack of easy-to-use tools are among the biggest obstacles to publishing machine-consumable content.

DISCUSSION AND CONCLUSIONS

Existing online collections and/or museum resources should be researched further as they may not be completely digitized and accessible to different audiences online. With one-third of small museums in Cyprus providing access to their collections online, there are many opportunities to help small museums to give access to their collections to benefit information knowledge democratization.

We discovered that the lack of resources and infrastructure are two significant challenges small museums in Cyprus face in providing online access to their collections. Our results show no museum partners with national institutions, such as universities or academic research centers. We assert that this collaboration can reduce costs and eliminate the need for infrastructure. At the same time, institutions, such as universities, usually have the technological know-how and can provide museums with new tools, free and open-source systems that focus on Cypriot small museum needs. Such tools, which can be found in our research, will help museums to drastically reduce the cost that is involved in buying such systems.

Moreover, we found that the lack of staff (time) is another challenge that prevents museums from having their collections online. We believe that developing new tools that can accelerate the process of generating, administering, maintaining, and uploading museum collections online will alleviate staff time. Our research also uncovered that small museums in Cyprus do not work with volunteers, as they have no time and resources to find and then train volunteers to museum work; we suggest museums must consider these options concerning the lack of staff (time).

Additionally, we learned that museums lack specialized staff (know-how), another significant challenge that blocks museums from democratizing their online collections. We anticipate that developing technology that requires less technical expertise will benefit small museums that do not have specialized staff (e.g., developers and information technology specialists). Further, help from external bodies such as universities may help. On the other hand, there are platforms available that do not need specialized technical knowledge. However, we discovered that the complexity of existing technology impedes museum collections online. We hope that creating less complex technology will enable museums to use and publish their collections online in human and machine consumable formats. Further, training of existing staff in new technologies is needed.

To sum up, small museums in Cyprus and the world need to invest in democratizing their collections online via digitizing, describing, and making their objects and collections available online. Simple and turnkey solutions for publishing and describing digitized objects are required. There is a will; we keep researching towards finding the most suitable case-oriented and affordable ways.

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