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Original Article

Analysis of the digital strategy of the Museum of Gastronomy and its influence on visitor satisfaction levels in times of pandemic

Análisis de la estrategia digital del Museo de la Gastronomía y su influencia en los niveles de satisfacción de los visitantes en tiempos de pandemia

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ABSTRACT

The research sought to determine significant differences between the levels of satisfaction in two independent samples, both made up of groups of visitors to the Museum of Gastronomy in its virtual and face-to-face modality. In addition, with the help of a rubric, the level of use of digital technologies used in the museum was analyzed. The methodology was descriptive and explanatory with quasi-experimental design *exposfacto*. Visitor satisfaction data were collected through two questionnaires with reliability levels of 0.817 and 0.859 respectively. The hypothesis test was performed with the Student's T test. The P-value obtained was lower than the value of Alpha, which was considered 0.05. Therefore, significant differences were evidenced between the means of both groups of museum visitors, being the group of virtual visitors, the one that obtained higher levels of satisfaction. It is concluded that the virtual version of the museum in times of pandemic generated more satisfactory experiences than the face-to-face experience.

Keywords: Digital strategy; digital museum; satisfaction levels.

RESUMEN

La investigación buscó determinar diferencias significativas entre los niveles de satisfacción en dos muestras independientes, ambas conformadas por grupos de visitantes del Museo de Gastronomía en su modalidad virtual y presencial. Además, con ayuda de una rúbrica, se analizó el nivel de uso de las tecnologías digitales utilizadas en el museo. La metodología fue de nivel descriptivo y explicativo con diseño cuasi experimental *exposfacto*. Se recogieron los datos de la satisfacción de los visitantes a través de dos cuestionarios con niveles de confiabilidad de 0,817 y 0,859 respectivamente. La prueba de hipótesis se realizó con la prueba T de Student. El P-valor obtenido fue menor al valor

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de Alfa, que se consideró 0,05. Por lo tanto, se evidenció diferencias significativas entre las medias de ambos grupos de visitantes del museo, siendo el grupo de visitantes virtuales, el que obtuvo mayores niveles de satisfacción. Se concluye que la versión virtual del museo en tiempos de pandemia generó experiencias más satisfactorias que la experiencia presencial.

Palabras clave: Estrategia digital, museo digital, niveles de satisfacción.

INTRODUCTION

In October 1969, the University of Los Angeles, California (UCLA), for the first time, connected a network computer remotely to another computer at the Stanford Research Institute (Botella, 2018). The creation of the *Arpanet*, what we know today as the Internet, had been achieved. Since then, almost half a century has passed and a series of important changes have occurred, such as, for example: the significant increase in the speed of the Internet and also all the technologies around it. According to Montiel (2004) "the gigantic development of the information, telecommunications and audiovisual industries, now enhanced by the digital revolution, has caused structural transformations in current societies, and given rise to new forms of human experience" (p.48). As is the way of visiting museums today, but not only museums, for (Mst, 2017), "digital technologies have been incorporated more into our lives and have impacted the functioning of institutions such as the State, business and the family" (p.3).

It is difficult to think these days not being linked to virtuality. Today we coexist in a world where there are so-called digital natives, which are groups of individuals who are born and almost immediately in their first days of birth are users condemned in perpetuity to the use of the various digital platforms that exist, whether through of android cell phones and electronic tablets. But, in addition, there is another category preceding digital natives, who are those who were not immersed in the Internet from the first days of their birth, this other group is called digital immigrants, individuals who have had to almost obligatorily learn all this digital culture, in order to be current. in the sphere of daily and professional life. So, we could say that digital technology today is inherent to human life, just take a look at the streets and see the almost idyllic connection with them. In restaurants you see people eating and at the same time looking at the cell phone screen, you also see people walking through the streets, without looking ahead, but at the *smartphone* screen; It is even everyday to see people driving motor vehicles and at the same time checking their phones. These examples demonstrate the reckless connection that the individual can have with digital technology, but that is not always the case; digital technology is also used, aiming to satisfy the real needs and complex problems of man.

This overwhelming digital avalanche was already coming, it is well known that, in the world, technological advances are accelerating more and more. According to the former director of the Massachusetts Institute of Technology (MIT), in recent decades there has been an acceleration of humanity's neuronal vibration. Because of this speed, it is known that, in the last hundred years, there has been much more

and technological development than the entire body of knowledge accumulated by man in his entire history (Negroponte, 1995). And this is naturally reflected in the digital technologies. For Radabán (2018), the most important changes are occurring in information and communications technologies (ICTs), which today are essential in professional and daily tasks. However, in the ISO/IEC 2000 Guide for the management of information technology services, they warn that despite the great advances in information and communications technologies, the outlook is discouraging because situations such as equipment still occur. that crash, systems that go down, interrupted services, poor customer service (Telefónica, 2009).

It is also important to consider the context that was experienced worldwide due to the SARS-CoV-2 virus, which has brought with it a pandemic that forced mandatory confinement. This phenomenon pushed cultural organizations, such as museums, to reinvent their processes, using digital technologies as a great ally. In this same sense Paredes *et al.* (2020), state that:

> The digital transformation has accelerated as a result of mandatory quarantines and social distancing imposed by most governments in the world, forcing states and companies to look for alternatives that allow them to continue working and be connected with daily activities; as well as, allowing the interaction of users with companies and services to occur with the greatest possible use of digital technologies (p.16).

A situation that left the possibility for the majority of museums to continue operating in the market and for enthusiastic museum users to visit them virtually remotely.

The problem of museums in the digital age

According to Linarez (2008), the history of museums has occurred in parallel with the history of humanity. However, these days with the dizzying advance of science and technology, new problems and challenges are looming for museums in Peru, problems that have to do with the dormant digital transformation. According to figures from the National Institute of Statistics and Informatics (INEI), of the total population aged six and over that uses the Internet, 94.5% of the population surfs the Internet to obtain information, 83.0% do so. uses to communicate (mail or chat) and 66.0% use the internet to carry out entertainment activities (INEI, 2019). In this same sense, García (2019) mentions "digital technologies, associated with socioeconomic and cultural globalization, promote more information and diversified entertainment, spaces to debate and participate, access to goods, messages and services not available in the nation itself" (p.11). However, today in Peru, the use of digital technology in the communication and exhibition processes of museum collections is deficient. In general terms, the main problem is always that of lacking sufficient money flows to make technological implementations that allow museums to embrace digital transformation. According to Riofrío *et al.* (2019) state that "museums lack financial funds to operate on a day-to-day basis and addressing important long-term projects is unfeasible" (p.7). So, if the economic resource is insufficient, obviously this will be detrimental to the

use of digital technologies by museums, considering that digital technologies naturally cost and have high prices, then this scenario of scarce economic resources and high technological costs , make the perfect combination for museums not to address digital transformation. However, museums, among other cultural industries, must adopt measures that allow them to avoid these challenges, and embrace digital transformation as quickly as possible, so as not to be left behind in time. According to Finlev *et al.* (2017), consultants from the Inter-American Development Bank (IDB), in their report on the future of orange economies mention that "in the decade to come, artists, creative and cultural industries, will add new digital and physical media to their set of instruments" (p.3). So, in this digital era, museums have a task ahead of them and it is not easy. As stated (Maceira, 2009) "museums face certain challenges to respond to the new demands and expectations of society, as well as the conditions of the contemporary world" (p.7). And they are demands, many of them for digital services such as digital collection or communication through social networks, this idea is also supported by Mas (2018),which states that "in this context, social networks in general and Facebook in particular can offer many opportunities" (p.185).

Therefore, digital technologies should be fully present in museums, especially in museums located within historical centers, as is the case of the Museum of Gastronomy that is located within the Historic Center of Lima, a historic center that according to Deza de la Vega (2020), "it transmits its exceptional universal value, due to its extraordinary cultural importance that transcends borders" (p.6). Therefore, an initiative of museums in these times should be to break their limits and cross borders with the use of digital technologies, an idea of the International Council of Museums (ICOM), which seems like a metaphor, but in reality it is not. . This phrase is published on their website, and says verbatim: *Museums have no borders; They have a network*, alluding to the virtual exhibition of web museums that today cross borders thanks to the Internet. But, we must not forget that museums have multiple roles, such as educational ones, which today have evolved and are developed with greater scope through digital technologies, technologies that have exponentially facilitated the connection between museums and communities. In this same sense, Alemán (2006) states that "museums must be mediators between heritage and the community" (p. 16), with the difference that today there is a new connection option for museums and for society. , a virtual option that will contribute to museums to fulfill the roles of disseminating heritage, exhibiting it and communicating its contents via the web. In this same sense, Navajas, as cited in Alemán (2011), urges "that we understand the new museology as a social science, whose main objective is to serve society through the communication of its collections" (p.116). . Without a doubt, new communication technologies are a bridge between people and museums, as Elisondo and Melgar (2015) state, "information and communication technologies allow people to access information about certain cultural heritage sites. and natural to those who

otherwise would not be able to enter" (p.18). As mentioned in the previous paragraph, only on certain complexes and not all heritage complexes. For example, in the virtual tours that are located on the website of the famous Louvre museum in Paris, you cannot see the human sculptures that Michelangelo Buonarroti sculpted on behalf of Pope Julius II; marble sculptures, made in macro dimensions and that were part of a large funeral project that was never finished. If one wants to observe this famous unfinished work of Michelangelo, they would have to travel to Paris and visit the museum in person.

Another very particular role of museums is the maintenance of the pieces in the collection. According to Aleksei (2009) "the museum has always given priority to the maintenance of its collections" (p.6). Pino (2018) mentions that "there are actors involved who have greater influence than others regarding the care of heritage, such as museums" (p.248). And it is these institutions that, with the help of expert art curators, restore and prolong the life of the pieces in the collection. This restorative action that was carried out in special places, without access to the public, today, thanks to the use of digital technologies, is no longer foreign to ordinary spectators. Now any individual connected to the internet can observe the restorations of very important works of art through the museum's social networks, via streaming. An example of the aforementioned is the practices of the National Prado Museum in Madrid, Spain. From its digital platforms, you can remotely observe how the restoration of important works is done, such as The Annunciation, the masterpiece of the Blessed and painter. Italian Fray Angélico In addition, you can see in real time the information given by the museum authorities, such as the apologies of the director of the National Prado Museum, Miguel Falomir, communicating that extraordinary the doors of the museum will not be opened due to the health emergency as a result of SARS-CoV-2, but at the same time, inviting the global community to enter through the museum's digital platform, which remained active.

Another role of the museum is educational. For the theologian and philosopher Knight (2015) "education, like learning, is a lifelong process, which can occur in an infinite variety of circumstances and contexts" (p. 26). Like, for example, on a visit to the museum. Furthermore, we must not forget the role of research, both roles, education and research are typical of museums and are developed as is natural today, in the digital paradigm. A clear example of this is observed in the scientific research produced in museums, which is disseminated immediately through digital platforms, crossing continental borders in 5G technology; Another example is observed in the museographic and museological educational offering offered at the prestigious National University of Distance Education (UNED) of Spain, which by the way is one hundred percent virtual. Returning to the specific case of museums, in their educational and research role, the similarity lies in the fact that both are cognitive processes, and to develop them, communication processes are naturally required. Núñez (2007) states that "it is important to be aware of the process, and it is necessary that the exhibition be conceived from the perspective of communication" (p.198). Communication for exhibition purposes, which naturally today is through digital technology.

MATERIALS AND METHODS

The research followed a quasi-experimental, *exposfacto* design with a quatitative approach, reaching descriptive and explanatory levels. We worked with two groups, each made up of 96 individuals, where one of the groups visited the museum in person, and the other group visited the museum virtually.

Two instruments were used to achieve the fulfillment of the research objectives, for the first objective:used the rubric to measure levels of use of digital technologies in museums. And for the second objective, which sought to determine if there are differences between the statistical means of both groups, two questionnaires were used to measure satisfaction; both questionnaires obtained scores of 0.817 and 0.859 respectively in the Cronbach's Alpha reliability test. The Kolmogorov-Smirnov normality test was performed, where a P-Value of 0.200 was obtained greater than the Alpha value that was considered 0.05. Therefore, it was considered that the data obtained came from a normal distribution, therefore, it was decided to use the parametric Student's T test to test the research hypothesis. To test the hypothesis, the reverse test was carried out where the null hypothesis was written, which declared the non-existence of significant differences between the groups, while the alternative hypothesis postulated that there were significant differences between both groups. The inverse test that was developed with the Student's T obtained a P-Value that was 0.000. Therefore, since it was lower than the Alpha value, the null hypothesis was rejected and the hypothesis that declared the existence of significant differences between both groups of virtual and in-person visitors to the Museum of Gastronomy was accepted.

Analysis of the level of use of digital technologies in the Museum of Peruvian Gastronomy

It was achieved with a rubric that identified two blocks of digital technologies. The first block that corresponds to the technologies that are developed *in situ*, that is, within museum facilities, such as: *Wi-Fi* connection, self-guides, QR codes, virtual reality and holograms. In the second block are remote digital technologies, which are those that allow access to the museum through the internet, from anywhere in the world. These technologies are: the *website*, *streaming* or live video transmission, social networks and virtual tours (Table 1).

Furthermore, it can be seen that in the central part of the table there is a column where the maximum scores that the museum could obtain for each of the technologies are shown. In the next column, you can see the actual score obtained by each of the technologies identified in the museum.

RESULTS AND DISCUSSION

In the objective analysis of the use of digital technologies in the Museum of Gastronomy, the results were presented in two parts, the first part corresponding to the *in situ* Technologies dimension and the second part, corresponding to Remote Technologies.

Regarding *in situ* technologies, which are the technologies found within

Table 1.
Score obtained by the Museum of Peruvian Gastronomy

Digital technologies	Maximum score	Score obtained Museum of Peruvian Gastronomy
On - site technologies		
Wi-Fi connection	1	0
Audio guides	1	0
QR codes	1	0
Multimedia	1	1
Holograms	1	0
Sub Total	5	1
Remote technologies		
Website	1	1
Chatbot	0.5	0
Online ticket	0.5	0
Online catalog	0.5	0.5
Blogs	0.5	0
Streaming	0.5	0.5
Social networks	0.5	0.5
Virtual tours	1	1
Sub Total	5	3.5
TOTAL SCORE	10	4.5

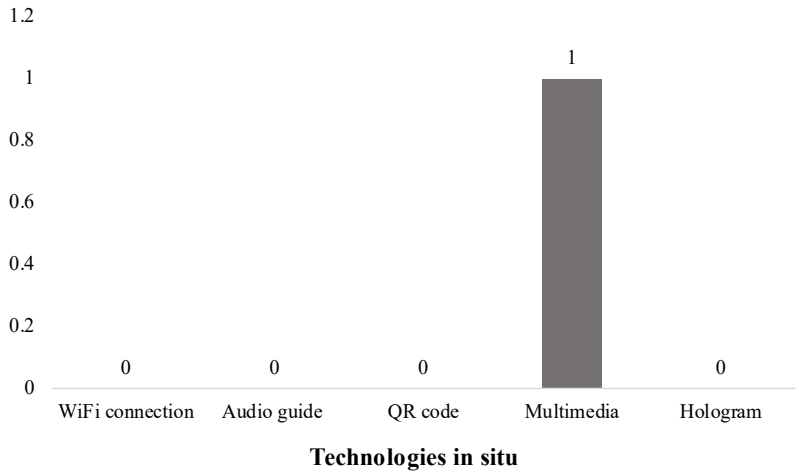

Figure 1. Results of technologies *in situ*

the museum facilities, the result was unfavorable, obtaining only one point out of five, as can be seen in Figure 1.

In situ technologies such as Wi-Fi, audio guides, QR codes, except for holograms, are commonly used in museums. It is striking that these technological resources are not observed within the museum. Regarding the remote technologies of the Museum of Gastronomy, it was observed that the use of technological resources is moderate. It was observed that the museum has some remote technological resources available

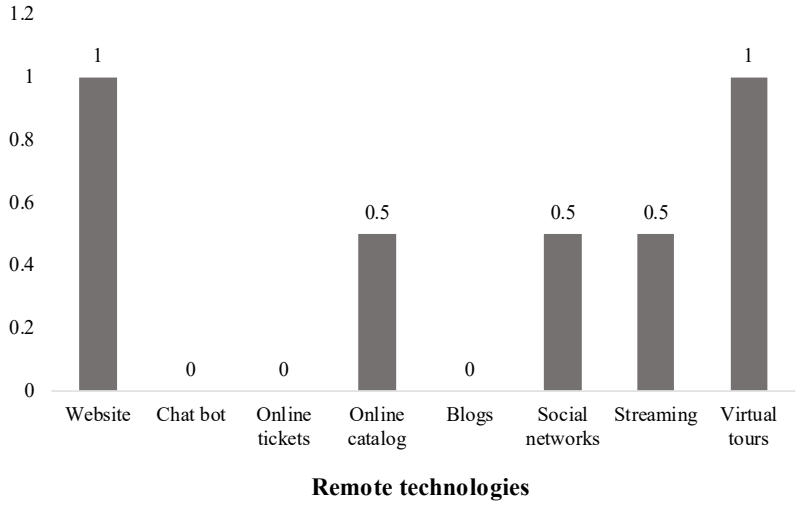

Figure 2. Results of remote technologies

to its users, as can be seen in Figure 2.

In this long-distance interface technological scenario, the museum obtained 3.5 points.

Adding the subtotal of *in situ* technologies, ta, gives us a total of 4.5, which is equivalent to slightly more than the subtotal of technologies via remote use of digital technologies (Table 2).

Table 2.

Equivalence of the score obtained and the level of use of digital techonologies

Score	Usage level
0 points	No use
0.5-2.5 points	Very little use
2.6-4.5 points	Little use
4.6-6.5 points	Moderate use
6.6-8.5 points	Good use
8.6-10 points	Excellent use

For discussion, the findings of this research were compared with the results of Hernández *et al.* (2021), which aimed to compare the use of web 2.0 ICTs in the main museums in the world. In this research, a rubric was used as a checklist. The results of the research indicate that of the 20 museums that made up the sample, all had a presence in cyberspace through the website, in the case of the Museum of Gastronomy, a website was also evident. But not all the museums analyzed by Hernández *et al.* had the use of the blog, only 55 % denoted the use of this powerful communication tool, in the case of the Museum of Gastronomy, no use of the blog was evident, if we compare it with the results of other investigations, such as those of the research titled Digital museums as an alternative means of communication for the democratization of culture by Pino and Cervetto, which was published in the book Social networks and citizenship, where researchers analyzed the level of use of technologies in 15 museums in the historic center of Lima (Aguaded *et al.*, 2022), it is also observed that the blog is not a favorite, with only one museum among 15 that used it as part of its digital strategy.

Returning to the research by Hernández *et al.,* it was observed that social networks such as Facebook and Twitter were present in 19 museums around the world. In the case of the Museum of Gastronomy, the use of social networks was also evident, especially Facebook. Another important fact was that 17 museums had a presence on

YouTube, the Museum of Gastronomy also denoted presence on YouTube. Regarding the use of *Apps*, only 15 museums in the world reported their use, the Museum of Gastronomy did not report the use of Apps.

Results of the hypothesis test with Student's T

The findings were obtained by comparing the statistical means with the Student's T, the P-Value. The value obtained was 0.000 less than the Alpha value, which was considered 0.05.

Therefore, the null hypothesis was rejected and the alternative hypothesis was accepted, which indicated the existence of significant differences between the statistical means from both groups. No discussion was carried out on this point, because, in the review of the preceding literature, no research was found with results similar to those of this research. Therefore, there is no discussion in this part of the results.

CONCLUSIONS

There are significant differences between the experience of visiting the Museum of Gastronomy in person and virtually.

The virtual visitors to the Museum of Gastronomy had a higher level of satisfaction compared to the group of in-person visitors. By 2023, the Museum of Gastronomy will have very few digital technological resources, especially those found inside the physical space of the museum. The Gastronomy Museum concentrated greater efforts on remote technologies, which are favored by new generations of visitors.

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