THE ATMOSPHERIC ELEMENTS OF THE EGYPTIAN MUSEUMS AND THEIR EFFECT ON THE EGYPTIANS' INTENTIONS TO REVISIT

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Abstract: This study aims to fill the salient gap in the area of museums' atmospheric elements by examining their effect on the Egyptian visitors' behavioral outcomes and the resulting effect on their intention to revisit the museum. An online questionnaire was distributed to a convenient sample of the Egyptian museums' visitors (346 respondents) to gather and analyze primary data along with analyzing the secondary data (literature). The results confirmed that museum's atmospheric elements have a positive and significant effect on the visitors' experiences. This resulted in positive behavioral outcomes that consequently affected the Egyptian visitors' intention to revisit the museum. This study investigates the importance of taking the physical design and atmospheric elements into consideration by the museum curators and managers, especially during the current phase in Egypt where various museum renewals and constructions are being held.

Key words: Atmospherics, museum visitors, visitor experience, Egyptian museums, exhibition design, intention to revisit

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INTRODUCTION

The "atmospherics" concept in marketing was first mentioned by the marketing author Philip Kotler in 1974, who stated that customers' decision-making is greatly influenced by the setting and environment of the place (Kotler, 1974; Forrest, 2015). The main principle of atmosphere elements is that the environment has the ability to influence people's behavior; this influence can be manipulated in noticeable and predictable ways through the area's ambience design choices (Biswas et al., 2014; Forrest, 2015; Elvekrok and Gulbrandsy, 2021), Today, the museum is both an aesthetic emotion producer and an intercultural mediator. The overlapping of the physical, social, and personal context results in the overall museum visitors' experience (Harada et al., 2018), since they establish a multi-sensory impressions of exhibition design that creates an aesthetic and emotive experience for museum visitors (Gobbato, 2022). Atmospheric elements can have significant importance in conveying the intended message to visitors and establishing sensory perception and satisfaction (Ozkul et al., 2019; Elkadi et al., 2021), because it has the ability to enrich cultural institutions, impact visitors' satisfaction, which leads to repeat visits (Piancatelli et al., 2021). Despite its importance, in the context of museums, atmosphere seems rarely considered. Accordingly, the current study contributes to the existing literature by examining the effects of the atmospheric element on the visitors' experiences and the resulting effect on their intention to revisit. Finally, the study provides implications for museum scurators and managers to enhance visitors' experiences.

LITERATURE REVIEW

Ambience elements in the museum and their effect on visitor impression

Lighting, sound, temperature, color, and scent are some of the components that make up an environment's ambience. Since the majority of the objects in museums are connected to the visual arts, lighting is crucial in fostering visitors' interaction with the exhibits (Hyun et al., 2018). Therefore, museums and exhibits aim to construct an interior space that enriches human perception and visual qualities (Kaya and Afacan, 2018), while simultaneously affecting visitors' impressions. Interior lighting given evidence that it has an impact on people's mood, comfort, and behavior (Faerber et al., 2021). Regarding ambient sounds, music can shape visitors' emotions and their resulting behavior from these emotions (Rodgers et al., 2021). Numerous studies have demonstrated that music affects consumer mood, the amount of time spent in

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a site, awareness of the amount of time spent, and spending in the facility (Juslin, 2019; Jin and Zhang, 2022), it is used to create a pleasant ambience and a positive mood, encouraging visitor satisfaction (Walsh et al., 2011; Rodgers et al., 2021), in addition to ambient background noise, modern museums usually offer guests audio guides (Salmouka and Gazi, 2022). Despite being important in contributing to the visitor's experience, music is rare in museums, because museums are known for their quiet atmosphere (Shao et al., 2019). Moreover, to further enhance visitor satisfaction, museum designers need to pay greater attention to creating a comfortable environment by managing the museum temperature (Dragija and Jelinčić, 2022). Mishra et al.'s (2016) study revealed that thermal comfort is an acknowledged parameter that influences people to appreciate the museum experience. Ambient color can have a significant impact on consumers' emotional and mental impressions if used wisely and accurately in physical environment design (Ozkul et al., 2019). Moreover, one of the most crucial component of every design is color. It is well known that colors have a significant effect on people's feelings and thoughts as color elicits an instant, subconscious reaction from the viewer by stimulating the eye and brain (Kim and Lee, 2022). Forrest (2015) revealed that wall color vibrancy is the strongest predictor of both cognitive and affective engagement, nonetheless, this disagrees with Gorton (2017), who stated that when visitors don't notice the wall color of the exhibit, it is usually a good sign. Since wall colors in a museum are not meant to be a distraction, this would increase visitor engagement with the artifacts instead of being preoccupied by the bold colors. This is a reason behind museums painting their walls with neutral colors. Furthermore, because the brain's emotional and memory-related regions are closely linked to the sense of smell (Berčík et al., 2021), smell has been shown to have a longer-lasting impact on people than other senses (Verbeek et al., 2022). Elvekrok and Gulbrandsy's study from 2021 states that smell is the most sensitive sense; it can be induced without direct contact with the source and can be remembered with 65% accuracy after a year. But it is important in the case of museums to avoid incorporating intense smells, even if it were meant to be pleasant, as revealed by Spence (2020) while it has been demonstrated that the use of ambient scent increases visitors' motivation to return to a museum, there is a risk that it could distract from the pieces on display. Accordingly, the following hypothesis is suggested:

H1: The visitors' impression of the museum's ambience positively affects their intention to revisit.

Design elements in the museum and their effect on visitor impression

The cultural significance of museums is being found in classifying the museum's spaces and designing it according to the artifacts stored within (Lindsay, 2020), exhibition design is also about creating a link between the audience and the exhibit (Kamaruddin, 2020). It is worth mentioning that the main objective of following a human-centered museum design is to fulfil visitors' psychological and physical needs and induce a positive atmosphere (Guo et al., 2022). Labels and textual information are a significant part of a museum's design, as they play a crucial role in communicating information to visitors in addition to stimulating conversations between them (Kamaruddin, 2020). It has been also demonstrated that object placements, particularly labels, influences visitor movement patterns (McMurtrie, 2022). Museum seating is also a vital element in museum design since museum visits require lots of walking and standing to observe artifacts. Usually, museums don't want visitors to stay in the same place for too long, that's why comfortable furniture is rarely offered (Linderheim, 2020). Temple and Gan's (2020) study revealed that the need for more and appropriate museum seating was expressed by all visitors in the museum, stating that availability of seats is considered one of the main elements impacting the visitors' experience, emotions and satisfaction levels. Modern technology is similarly important in improving the experience of the visitor while positively affecting their impression since it has the ability to increase engagement without compromising the authenticity of the artifacts (Hammady et al., 2020; Zaher, 2021). Successful museum design cannot be complete without clear and easy-to-follow maps, they serve as a heritage intermediary between viewers and cultural artifacts (Nikolakopoulou et al., 2022), categorize and organize the museum space (Madsen and Madsen, 2016), keep people engaged and entertained along the busy queues in order to make their wait more enjoyable and informative (Su and Teng, 2018), and has the ability to organize the artifacts as a journey using smart maps (Wang et al., 2022). Therefore, the following hypothesis is suggested:

H2: The visitors' impression of museum design positively affects their intention to revisit.

Layout elements in the museum and their effect on visitor impression

Museum layout heavily affects visitors' way-finding in space, understanding of the exhibition, whether they visit various segments in the museum, as well as leading visitor direction (Filová et al., 2022). And since informal learning is one of the main duties of museums (Li, 2022), the content layout of the exhibition, the space scene presented, and the exhibit display style must all be taken into consideration for the museum learning experience based on the visual evaluation of visitors (Zhang and Hu, 2022). It also influences how long visitors spend looking at the artworks, how long they spend reading the labels, and how engaged they are with the exhibits, which affects their overall experience (Reitstätter et al., 2022). For example, if glass display cases are extremely lowered or raised to a height that is inaccessible to visitors using wheelchairs, it could create a barrier for museums in giving visitors a satisfying museum experience (Rieger et al., 2019). That being said, museums recently experienced a shift from being "collection-centered" to becoming "audience-centered," meaning that creating a welcoming and accessible museum layout for elders and people with disabilities is a must (Zakaria, 2020), because they run the danger of being denied access to travel and tourist attractions (Giammanco et al., 2022). Museums have the ability to play a significant role in assisting elders with their needs as they age. Although their interests and obstacles may differ from those of younger generations, some elderly are able to use museums for leisure, informal learning, social connection and participation (Hernández and Toney, 2021). There are suggestions to pay more attention

to the atmospheric elements of museum retail environments since the gift shop within the museum is increasingly seen as a part of the total visitor experience (Forrest, 2015). Therefore, the following hypothesis is suggested:

H3: The visitors' impression of museum layout positively affects their intention to revisit.

Social dimensions in the museum and their effect on visitor impression

Social dimensions in museums include interaction with other visitors, interaction with museum staff, and congestion. The main objective in contemporary museums should be creating high levels of communication between the audiences, which can be achieved by implementing visitor orientation techniques and responding to the development demands of society (Chen et al., 2022), this is because interacting with other visitors co-creates and enhances experience and learning, it also fosters a welcoming environment, which enhances the overall experience. And time spent may pass more quickly or more pleasantly (Antón et al., 2018). Moreover, according to Trabskaya et al. (2022), among the affective dimensions, museum staff responsiveness and empathy are the highest forecasters of visitor's intention to revisit a museum. Thus, staff service needs to be enhanced. It is worth mentioning that all heritage management activities was majorly affected by the outbreak of the COVID-19 pandemic (Ambaw et al., 2022), and museums are revising their safety and health protocols to reduce COVID-19 virus contamination by using protective measures, and ensuring that staff are equipped with masks, gloves and transparent anti-virus helmets (Deb and Ahmed, 2022). Lastly, congestion in museums is one of the major difficulties and challenges that has a direct impact on visitor impressions (Thanou et al., 2019), according to McMurtrie (2022), it was confirmed that visitor movement convenience has a high influence on pleasure, Conti et al. (2020) demonstrated that exhibition spatiality is the first most important factor having a significant positive effect on visitor satisfaction and accounting for the highest likelihood of visitor positive word of mouth, identifying it as the most crucial museum space attribute influencing museum visitors' intention to recommend. Consequently, the following hypothesis is suggested:

H4: "The visitors' impression of museum social dimensions positively affects their intention to revisit."

The effect of atmospheric elements on the intention to revisit a museum

Bonn et al. (2007) proved a direct effect between the cultural and heritage attractions' atmosphere, layout, design, and social elements on the intention to revisit, it is worth mentioning that the social elements had the least effect compared with the other elements. Color and lighting, can influence the satisfaction of customers and lead to revisiting intentions in a museum (Ozkul et al., 2019). Beseda (2013) revealed that in cases where museums implement music programs, some visitors attend primarily for the music playing more than once, which proves that music encourages repeat visits. Vega-Gómez et al. (2020) revealed a direct influence of scent on the intention to revisit a museum. Furthermore, the effect of demographics on repeated visits to the museum was demonstrated by Aksöz and Çay (2022), stating that each visitor's age, gender, marital status, income levels, and level of education, has different effects on revisit intentions.

MATERIALS AND METHODS

This study aims to explore the effect of the atmospheric elements applied in Egyptian museums on visitors' intention to revisit. In order to do so, research aims and questions were first identified, followed by the literature review; a questionnaire was then distributed in order to collect primary data from the sample; both primary and secondary data were analyzed and results were discussed, and finally, a conclusion was made (Figure 1).



Figure 1. Research flowchart (Source: Authors)

The current study uses quantitative methodology, involving systematic inquiries into quantitative data that enable analyzing, interpreting, and presenting results in numerical form. The population is the visitors of Egyptian museums. Convenient sampling technique was used, Stratton (2021) simply describes convenient sampling as people choosing if they want to participate in a study after the researcher makes the research announcement. It was used in the study for its various benefits: samples are affordable to make, simple to execute, useful for developing hypotheses and pilot investigations, and they allow gathering information in a remarkably brief period of time (Bhardwaj, 2019).

During the months of August and September of 2022, an online questionnaire was distributed on various social media platforms using Google Form, such as Facebook and WhatsApp groups relating to tourism and museums in Egypt, named "Ancient Egypt (Ancient Egyptian Arts, Culture, and History)," "Arts and Culture in Egypt," "Egyptian Pharaohs, History, and Religion," "Egyptomenia: Ancient Egypt in Modern Cultures," and "Egypt Tourism". From 381 questionnaires, 346

questionnaires were valid. 16 questionnaires were excluded from the analysis because they did not complete most sections, and 19 questionnaires were classified as outliers. All these respondents were excluded from the study.

The questionnaire used included three parts: the first part was regarding the demographic information, which included gender, age, nationality, and the number of times they visited an Egyptian museum.

The second part of the questionnaire measured the visitors' impression. This part had four different constructs; the first, titled "ambience impression," included six statements that investigated the visitors' impressions regarding the atmospheric elements such as museum lighting, scent, and wall color. The second construct, titled "design impression," included five statements about museum design aspects such as museum spatiality, availability of maps, and object placement.

The third construct, titled "layout impression," included four statements about the effects of museum layout elements on visitor impressions at the Egyptian Museum, such as ease of artefact observation and the availability of restrooms and gift shops. The fourth construct, titled "social dimensions impression," included three statements about museum staff, museum visitors, and the crowding effect on the Egyptian Museum's visitor impression. The third and final part of the questionnaire measured the effect of visitors' experiences on the intention to revisit the Egyptian museums, and it included three statements focusing on visitors' intentions to revisit. These statements were adapted from Piancatelli et al., (2021), Vega-Gómez et al., (2020), Ozkul et al., (2019), Forrest, (2015), and Bonn et al., (2007). A five-point Likert scale of agreement was used in the questionnaire, and the data was processed with the Statistical Package for the Social Sciences (SPSS) for Windows version 20.0. The data was checked and verified for recording error and accuracy of data entry before further analyses were performed (with a 5% margin of error and a 95% confidence interval). Outliers were discarded from the database before the analysis was made using Mahalanobis Distance. Outliers are described as observations with a unique combination of characteristics that are identifiable as distinctly different from other observations (Yan et al., 2018). The criterion for identification of multivariate outliers is Mahalanobi's distance at p > 0.001. In this current study, Mahalanobi's distance is evaluated with a degree of freedom of 21 items.

Any case with a Mahalanobis Distance greater than 46.797 is considered a multivariate outlier and therefore is deleted from the database. Mahalanobis Distance identified nineteen cases with a distance greater than 46.797, which were discarded from the database before the analysis was made. Furthermore, to ensure that the collected data was free of response bias, a comparison of mean values was used. Response data were divided into two parts (173 respondents). The results indicated no significant differences existed between the two groups.

RESULTS AND DISCUSSION

As shown in Figure 2, out of 346 respondents, 81.2% were female and 18.8% were male. Regarding the age of respondents, the age segments from 17 to 29 years had the greatest number of respondents by 60.1%, followed by the age segments from 30 to 49 years by 36.1%, and finally the age segments from 50 to 69 years by 3.8%. Additionally, the majority of respondents are Egyptian (98%), followed by one response from each of the following nationalities: Sudanese, Iraqi, Moroccan, German, Palestinian, Libyan, and finally, Bahraini. Each response counts for 0.3%. The majority of respondents visit museums infrequently, accounting for 54% of total responses. followed by visiting Egyptian museums more than three times a year, accounting for 25.7%; respondents who visit Egyptian museums at least two or three times a year, accounting for 10.1% of respondents stating that they visit Egyptian museums about every year or so.



Figure 2. The profile sample (Source: Authors)

The Cronbach alpha correlation coefficient was calculated to determine the internal consistency of the scale. The computation of Cronbach's alpha is based on the number of items in the survey and the ratio of the average inter-item covariance to the average item variance. A reliability coefficient of 0.70 or higher is considered acceptable in most social science research situations (Taber, 2018). The Cronbach alpha reliability was computed, and the tests indicated that the reliability coefficient for all the instruments was above 0.70. Thus, it can be stated that all constructs employed in this study have sufficient reliability. Cronbach's alpha for all variables is presented in Table 1. The results indicated

that, regarding the ambient impression construct, the applied temperature in a museum's environment had the highest influence on visitors' impression (m = 4.38), This finding agrees with Sihvonen and Turunen (2022), who stated that if the organizer can guarantee a comfortable environment temperature, guests are likely to be more satisfied by the experience. On the other hand, music applied in the Egyptian museums had the lowest influence on the visitors' impression (m = 3.95). Despite being the lowest mean, the respondents' attitude was still settled at "agree."

Items	Mean	SD	attitude	(α)
Ambience impression	4.22	0.540	Strongly agree	.731
My impression of applied light influenced my positive behavioral outcomes in the Egyptian museums.	4.25	0.766	Strongly agree	
My impression of the applied wall and display colors influenced my positive behavioral outcomes in the Egyptian museums.	4.13	0.843	agree	
My impression of applied music influenced my positive behavioral outcomes in Egyptian museums.	3.95	0.954	agree	
My impression of applied air quality influenced my positive behavioral outcomes in the Egyptian museums.	4.30	0.773	Strongly agree	-
My impression of applied temperature influenced my positive behavioral outcomes in the Egyptian museums.	4.38	0.760	Strongly agree	-
My impression of applied smell and scent influenced my positive behavioral outcomes in the Egyptian museums.	4.35	0.759	Strongly agree	-
Design impression	4.29	0.509	Strongly agree	.700
My impression of applied design and spatiality influenced my positive behavioral outcomes in Egyptian museums.	4.40	0.662	Strongly agree	
My impression of the clarity of the textual information and labels on the artifacts in the Egyptian museums influenced my positive behavioral outcomes in the Egyptian museums.	4.39	0.739	Strongly agree	
My impression of seating areas in various places influenced my positive behavioral outcomes in the Egyptian museums.	4.38	0.787	Strongly agree	
My impression about the availability/unavailability of modern technology facilities influenced my positive behavioral outcomes in the Egyptian museums.	3.93	0.994	agree	1
My impression of the existence of detailed and easy-to-follow maps influenced my positive behavioral outcomes in Egyptian museums.	4.35	0.739	Strongly agree	
Layout impression	4.07	0.554	agree	.713
My impression of the ease of observing the artifacts influenced my positive behavioral outcomes in the Egyptian museums.	4.45	0.646	Strongly agree	
My impression of availability of facilities for elders and people with disabilities in various places influenced my positive behavioral outcomes in the Egyptian museums.	4.20	0.854	agree	
My impression of the existence of restrooms in various places influenced my positive behavioral outcomes in the Egyptian museums.	4.25	0.906	Strongly agree	-
My impression of the existence of gift shops in various places influenced my positive behavioral outcomes in the Egyptian museums.	3.40	1.029	Neither agree	-
Social impression	4.08	0.605	agree	.705
My impression of social interaction with other visitors influenced my positive behavioral outcomes in the Egyptian museums.	3.83	0.936	agree	
My impression of the attitude, knowledge, and interactions with the staff influenced my positive behavioral outcomes the Egyptian museums.	4.14	0.920	agree	•
My impression of the crowding influenced my positive behavioral outcomes in the Egyptian museums.	4.27	0.827	Strongly agree	
Intention to revisit	4.28	0.525	agree	.742
I have the intention to consider revisiting the Egyptian museums once I have positive behavioral outcomes towards it.	4.31	0.766	Strongly agree	
When I have positive behavioral outcomes towards Egyptian museums, I intend to revisit them with my family and friends.	4.20	0.862	agree	1
My positive behavioral outcomes is my indicator to revisit Egyptian museums.	4.36	0.649	Strongly agree	1

Table 1.	Construct measurements	and reliability $(n=346)$
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a: Cronbach alpha - SD: standard deviation

Rodgers et al. (2021) confirmed that music is a significant environmental stimulus in influencing behavior across different cultures. Concerning the design impression construct, the highest element influencing the visitor's impression is the museum's design and spatiality (m = 4.40). Spatial configurations in a museum play a vital role in the creation of diverse walking sequences for visitors, avoiding congestion, and creating a viewing order of artifacts and museum themes (Lee and Kim, 2022). The element concerning the availability or non-availability of modern technology facilities in museums had the lowest mean in said construct (m = 3.93). Surprisingly, the middle age range, "30-49," had the highest level of disagreement regarding the statement, compared to the highest age range, "50-69," which had the highest rate of agreement in all age ranges. This finding stands out since older people are less likely to use technology as much as younger generations (Köttl et al., 2021). Regarding the layout impression construct, the ease of observing museum artifacts is the most important physical atmospheric factor affecting the museum visitors' impression (m =

4.45) and has the highest rate of agreement in the whole study. This agrees with Xu et al., (2019) who stated that the way museum objects are displayed can elicit a range of feelings (such as admiration or boredom), which can affect visitors' desire to revisit. Then again, the existence of a variety of gift shops in the museum as a physical atmosphere received the lowest agreement rate from participants, with the lowest mean (m = 3.40). This may be a result of the fact that a low number of people visit the gift shops in the museum, as Woude and Gómez's (2013) study revealed. Regarding the social impression construct, the crowding in museums' space has the highest influence on visitors' impressions (m = 4.27). According to (McMurtrie, 2022), it was confirmed that visitor movement convenience has a high influence on pleasure. On the other hand, the interaction with other visitors, received the lowest agreement rate in this construct (m = 3.83).

Hypotheses Test

Simple linear regression was used to determine the effect of independent variables (atmospheric elements) on the dependent variable (intention to revisit). Table 2 revealed the outputs of the simple linear regression test of the effect of the visitor's impression on the intention to revisit.

Variables	Coefficients (B)	t	Sig.	\mathbf{R}^2	F	Sig	result
Ambiance impression→ intention to revisit	.558	12.482	.000	.312	155.795	.000*	Supported
design impression \rightarrow intention to revisit	.516	11.161	.000	.266	124.578	.000*	Supported
layout impression \rightarrow intention to revisit	.357	7.550	.000	.142	57.008	.000*	Supported
social impression \rightarrow intention to revisit	.405	8.206	.000	.164	67.338	.000*	Supported
* P-value < 0.05.							

Table 2. Hypotheses testing results

Regarding the effect of ambiance impression on the intention to revisit, R^2 was 0.312, which means that ambiance impression affects the level of intention to revisit by 31.2%. Accordingly, H1: "The visitor's impression of the museum's ambience positively affects their intention to revisit" is verified. Regarding the effect of design impression on the intention to revisit, R^2 was 0.266, which means that design impression affects the level of intention to revisit by 26.6%. Accordingly, H2: "The visitor's impression of museum design positively affects their intention to revisit." is verified. Regarding the effect of layout impression on the intention to revisit, R^2 was 0.142, which means that layout impression affects the level of intention to revisit by 14.2%. Accordingly, H3: "The visitor's impression of the museum layout positively affects their intention to revisit." Is verified. Regarding the effect of social dimension impression on the intention to revisit, R^2 was 0.164, which means that social dimension impression affects the level of intention to revisit." is verified.

CONCLUSION

This article discusses the effect of museum atmospheric elements on visitors' impression and the resulting behavioral outcome leading to repeat visit intention, applying it to the Egyptian museums. It also reviews the related literature on the subject from previous studies. The findings of this study stated that there is a positive and significant effect on the intention to revisit resulting from the Egyptian museums' ambiance, design, layout, and social dimensions, while breaking down each construct into various elements and measuring their effect on visitor behavior. The findings shed light on the importance of taking the physical design and atmospheric elements into consideration by the museum curators and managers in Egypt, especially during this time where various museum renewals are being held and one of the most important museums in the world, the Grand Egyptian Museum (GEM), is being constructed.

This study was limited to museum visitors in Egypt, so it is geographically and culturally accurate. To provide more extensive results, future research should be conducted by collecting data from museums and exhibits in other countries as well. Future research could also include a comparison of the atmospheres applied in traditional and modern museums and the resulting visitor behavior while using other means of data collection, such as in-depth interviews. This study investigates the effect of atmospheric design in Egyptian museums on the visitors' revisit intentions. Despite the atmospheric elements' importance in practice, there has been no previous research on the subject in Egypt. The findings of this paper have important managerial implications since they prove that visitor experience and intention to revisit are significantly and positively affected by the physical and ambient atmosphere of the museum. This implies that if museums aim to gain loyalty from visitors, which later results in repeat visits, museum managers and curators should provide pleasant environments in order to affect visitors' impressions, behavioral outcomes, and perceptions.

Museum managers could employ experiential ambiance, design, and layout methods to enhance the museum's atmosphere in a way that involves visitors' senses and enhances interaction among the museum artifacts and the visitors. It was also discovered that visitor satisfaction is influenced by the entire visit experience, not just the exhibition. Additionally, managers can attract new and different categories of visitors that are usually difficult to attract in traditional museums, which still retain the old atmosphere and design; the physical and ambient atmosphere of the museum could be emphasized in order to begin addressing the demands of many different generations and cultures.

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