



## An Analysis of Interface Design Types and Categories in Two Automobile Museum Exhibitions

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### ABSTRACT

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The purpose of this study was to compare the interface design categories and types between two automobile museum tours in promoting learning about automotive by visitors. Both touring methods were equally effective in helping subjects acquire information about automotive, but, on the whole, neither encouraged the retention of presented information. This descriptive research employed a textual analysis and on-site observation at National Automobile Museum, Malaysia and Glion Automobile Museum, Japan. The study's findings discovered both of the auto museum providing a sense of good interface design for the museum exhibition with different categories and types. The results also showed the approaches were really enjoyable and successful in promoting interest in automotive. This research also addresses factors that work towards creating an identity within museums.

### KEYWORDS:

Automobile Museum;  
Interface Design;  
Museum Exhibition;  
Visitors Experience

### 1. INTRODUCTION

In a modern-day museum, interactive ICT systems are placed as a new way to offer positive experience to the museum visitors and encourage them to return back to museum. Towards this, the museum cannot rely just on the usage of digital media inside the show, as determined by the prior literature research. To put it simply, Robertson and Simonsen (2012) have highlighted that, due to the tight linkages between object work and technology, successful user interface design should entail a co-evolution of artefacts with practice in order to educate the visitors on authentic knowledge and competence. Accordingly, the relevance of digital techniques for official and informal educational institutions was recently emphasized in Malaysia as part of the Industrial Revolution 4.0 agenda (Robandi, Kurniati, & Puspita Sari, 2019). Recognizing the value of interactive technology for museums, Malaysia's Minister of Culture, Arts, and Heritage issued a challenge to its museums, asking them to keep up with international standards (Saidin, Alwi, & Shaari, 2018). In light of these difficulties, Malaysian museums have adopted the concept of interactive kiosks,

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which provide a variety of applications such as games, multimedia presentations, and interactive books (Michelle & James, 2018). With the intention of improving visitors' learning experiences, those interactive kiosks have been installed in Malaysian museums as an engaging and helpful teaching tool.

Within this point of view, the purpose of this research is to comparatively analysis an interface design of auto museum exhibition and branding within 2 museums in two culturally diverse locations. The research findings will provide a sense of understanding pertaining to the variables of interface design for the museum exhibition and branding within the selected case studies. Besides discussing features within interface design for the museum exhibition and branding, this research also addresses factors that work towards creating an identity within museums

### II. LITERATURE REVIEW

Scholars in the broad literature have extensively discussed the interaction between museum visitors and exhibition panel interfaces (Hyowon Hyun, Jungkun Park, Tianbao Ren, Hyunjin Kim, 2018; Castellani & Rossato, 2014; Heilig, Feierhahn & Sikkenga, 2014; Abdul Aziz, et al., 2021). In the same spirit, numerous studies also have indicated that well-executed exhibitions can influence viewers' perceptions of the exhibits' significance. Consequently, going to an exhibition is a worthwhile use of free time. Nevertheless,

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many museum exhibits have virtually no attendees, while others are completely packed. From this discussion, it explains clearly that effective interface design of the exhibition affects the visitors understanding and experiences towards their visit to museum.

### Interface Design

Based on extensive research, three types of interface design have been established for museum exhibits namely Standard, Virtual, and Augmented (Table 1). Particularly, the usage of Standard interfaces such as keyboards and computer monitors are covered. On the other hand, Virtual interfaces occur when an interface creates a reality by excluding the outside world. Last but not least, an Augmented interface falls into this category when it generates reality rather than obstructing it (Kamaruddin, 2019). Wherein, interface design at the museum as a means of communication tool that changed from the object-based presentation (the display of art works in the museums) to the information-based presentation (images or texts in museums halls, information kiosks, etc).

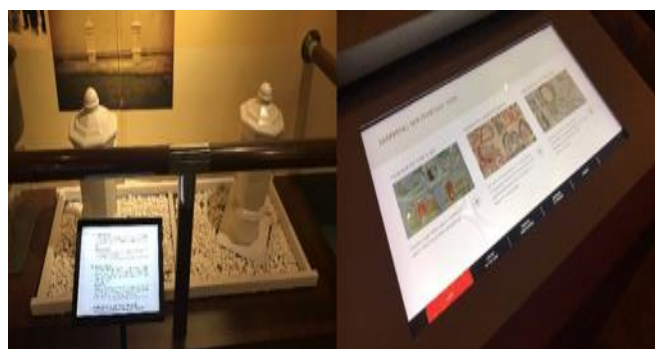
**Table I. Interface Design Categories for Museum Exhibition**

<i>STANDAD</i>	The use of keyboards and computer monitors
<i>VIRTUAL</i>	It when the interfaces block out the real world to create a reality
<i>AUGMENT ED</i>	The interfaces do not block out the real world and creates reality

Across three categories, the four types of interface design that have been developed by international literature are Presentation, Conversation, Navigation, and Explanation. Each of these distinct interface design types has its own unique features; for example, the interface design type presentation covered a static display unit with a static text label in accordance with the conventional exhibition method. Similar to that, the interface design type description provided the same characteristic. Conversely, more engaging content was provided by interface design elements like discussion and navigation, which frequently forced viewers to interact more with the exhibition's main feature. Specifically, Table 2 below summarizes the data collected based on exhibition categories and interface design styles. Fig. 1 also provides an example of exhibition categories in a genuine exhibition

**Table 2. Exhibition Categories towards Types of Interface Design**

CATEGORIES		INTERFACE TYPES		
<b>Object Oriented Exhibition</b>		Standard	Virtual	Augmented
	<i>Presentation</i>	Static Replica Model	Sequential	Self-Movement
	<i>Conversation</i>	Static Text	Sequential	Active Movement
	<i>Navigation</i>	Static Display	Working Screen Button	Active Movement
	<i>Explanation</i>	Static Text	Interactive Text	Interactive Text
<b>Information Based Exhibition</b>	<i>Presentation</i>	Static Text	Interactive Text	Film projector
	<i>Conversation</i>	Static Text	Interactive Text	Multi-Screen
	<i>Navigation</i>	QR Code	Push Button	Multi-Screen
	<i>Explanation</i>	Static Text	Interactive Text	Interactive Text



**Fig. 1 Sample of Museum Exhibition Categories based on Object Oriented Exhibition (left image) and Information Based Exhibition (right image).**

Interface design elements have a significant role in each exhibition performance's success in terms of visitor satisfaction. While the use of design elements in the form of computer or physical interactives and multimedia applications (such as sound, video, and projection) aids in the visitors' achievement of educational and amusing goals, it also offers a predetermined narrative for the exhibition's success. As a result, every piece of the interface design needs to be thoroughly thought out in order to convey the intended meaning to the museum visitor. In particular, interface design can affect the veracity of data and/or the way meaning is communicated, which in turn affects how the audience interprets the data. Consequently, to understand the impact on museum visitors, understanding of designers on which characteristics of interface design have the strongest impact

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on museum visitors, and the qualitative nature of this impact is highly required.

### III. RESEARCH METHODOLOGY

This descriptive research employed two qualitative methods named textual analysis and on-site observation. Textual analysis is used to examine and interpret texts by examining the structure, content, and meaning of a text, and how it relates to the historical and cultural context in which it was produced. In this study, a number of archivable documents have been collected, reviewed and analyzed thoroughly. Supporting that, on-site observations were conducted at two different places: The National Automobile Museum in Malaysia and Glion Automobile Museum in Osaka, Japan. During on-site observations, an observation sheet was used in analyzing the types and categories of interface design within two different exhibitions of automobile museums.

### IV. FIELDWORK AT THE MUSEUM

#### *Overview of National Automobile Museum, Malaysia*

The National Automobile Museum was inspired by the idea of former Malaysian Prime Minister, Tun Dr. Mahathir Mohamad, who brought up the idea of building a museum featuring official government vehicles and cars driven by dignitaries during a meeting of the Cabinet of Ministers on June 21, 2000. The primary aim of the museum is to disseminate information regarding the advancements and accomplishments in Malaysia's automotive sector. The museum features a collection of historic and classic cars, each with a unique tale to tell, as well as cars and motorbikes built locally and foreign vehicles that have been used in the nation. Located at the Welcome Centre of the International Sepang Circuit, the exhibition floor plan is approximately 7,949 square feet for the ground level and 10,577 square feet for the first floor (Figure 3). The ground floor exhibition area exhibits the introductory segment of the National Automobile Museum with the history of Malaysia's transportation development and the early cars of Malaysia. Various collections of cars that have been used in Malaysia, such as the Brush mobile made in 1904, Ford Speedster in 1923, and Alvis Tourer in 1935. The next segment is the International Sepang Circuit with their yearly event in sports motoring activity such as F1 racing, The Super GT International Series race, and MotoGP race. The first-floor exhibition area exhibits the Malaysian automotive industry in general. The visitors may know the Malaysia-based company in contributing and developing the Malaysian automotive industry, consisting of DRB-Hicom, PROTON, BUKAR, MODENAS, and PERODUA. Various collections of cars and motorcycles from the company exhibit here.



**Fig. 3 Welcome Area of National Automobile Museum in Malaysia**

There are 22 collections on display at the National Automobile Museum, including 15 cars, 6 motorcycles, and a lorry. The acquisition of the collection is through purchases from individuals, suppliers, and donations from local automotive companies.

#### *Overview Glion Automobile Museum, Japan*

Glion Museum is a classic car museum located in Osaka, Japan (Figure 4). The Glion Museum exhibits rare vintage cars from all over the world in a former warehouse, which was built in 1923. This is Japan's first attempt at a classic car museum in a red brick warehouse, and this museum also has dealers on site. The building was built by Sumitomo Zaibutsu, one of many private construction companies contracted by a financially unstable Osaka City in return for port usage privileges. Japan was recovering from the Sino-Japanese war at the time, and then booming after the First World War, and these private companies played an integral part in boosting the country's economic strength.



**Fig. 4 Entrance Area of Glion Automobile Museum in Osaka, Japan.**

#### *The Exhibition's Interface Design at The National Automobile Museum in Malaysia*

For the museum's exhibition design, a design language and an idea were the most important things to give intention. According to Paul Capriotti (2010), the design of an exhibition at a museum needs to have a distinct language that distinguishes it from a regular museum. In light of this understanding, the curator should plan the overall idea to mirror the tone of the exhibition content. As a result, the graphic designer who frequently doubles as the idea designer should choose the general design's background.

In any design work, moreover, the design elements are a must. For museum exhibition, therefore, the design elements involved are text, color, space, and light. Furthermore, museums have two main purposes: to conserve precious objects and to provide a perfect visual perception of displayed



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objects. Thus, the perfect visual perception is requiring an accurate illumination to imply the form, the atmosphere and the space. Similarly, according to Daragh and Snyder (1993) that stated a good museum lighting is a partnership of art as it integrates the aesthetic and preservation needs of the collection, the form and character of the building and the technical systems of the building. Within this, analysis on interface design of the exhibition at National Automobile Museum discovered that most of all the exhibitions were had a good lighting which bring the focuses of the audience to the collection being exhibit (Fig.5).



**Fig. 5 Light Walls Around Exhibition Space in National Automobile Museum**

The on-site observation highly determine that many posters and information pasted on the walls of the National Automobile Museum. Upon closer inspection, it was also found that the National Automobile Museum's show falls more within the category of Information Based Exhibitions and uses standard types of interface design (Table 3 and Fig. 6).



**Fig. 6 Information Panel with Standard Interface Design in National Automobile**

**Table 3. Analysis of Exhibition Categories towards Types of Interface Design on National Automobile Museum**

CATEGORIES		INTERFACE TYPES		
<b>Object Oriented Exhibition</b>		Standard	Virtual	Augmented
	<i>Presentation</i>	Static Replica Model		
	<i>Conversation</i>			
	<i>Navigation</i>			
	<i>Explanation</i>	Static Text		
<b>Information Based Exhibition</b>	<i>Presentation</i>	Static Text		
	<i>Conversation</i>	Static Text		
	<i>Navigation</i>	Static Display		
	<i>Explanation</i>	Static Text		

### *The Interface Design of The Exhibition at Glion Automobile Museum, Japan*

Most of the existing museum exhibition designs are based on the stylistic features of the museum for interactivity. The on-site observation at Glion Automobile Museum was highly determine the similarity of light wall used in this museum compared to National Automobile Museum. However, there is limited panel in this museum (Fig. 7).



**Fig. 7 Light Walls All Around Exhibition Space in Glion Automobile Museum**

more into the Object-Oriented Exhibition category and also uses mostly standard interface designs rather than Augmented and Virtual type (Table 4).

**Table 4. Analysis of Exhibition Categories towards Types of Interface Design on Glion Automobile Museum**

CATEGORIES		INTERFACE TYPES		
<b>Object Oriented Exhibition</b>		Standard	Virtual	Augmented
	<i>Presentation</i>	Static Replica Model		
	<i>Conversation</i>	Static Text		
	<i>Navigation</i>	Static Display		
	<i>Explanation</i>	Static Text		

After a thorough analysis and on-site observation at Glion Automobile Museum, it was discovered the exhibition is falls

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<b>Informati on Based Exhibition</b>	<i>Presentation</i>			Film project or
	<i>Conversation</i>			
	<i>Navigation</i>	QR Code		
	<i>Explanation</i>			

To understand in detail on the standard interface design used within exhibition at Glion Automobile Museum, there are numbers of static display panel equipped with explanatory text or caption. Visitors can easily read the information on panel as static text postulated on all display panel located closely to the static replica model (Fig. 8).



**Fig. 8** The information panel with static text around exhibition space in Glion Automobile Museum

### V. CONCLUSION

The visitors are every museum's target audience, and the purpose of each exhibition is to communicate with and satisfy the public. The exhibition design and the interface design elements are the first instruments for an efficient communication in this direction. As a result, the main goal of exhibition design is to create a connection between the audience and the presentation of any collection-related content.

Along with visitor happiness, which is the most crucial criterion, there is a great deal of experience for team production when planning an exhibition. Visitors' enjoyment of the exhibition performance was also influenced by the various roles that team members played inside it. It will also be possible to contribute more special collections when the museum's reputation and public confidence grow. Therefore, the roles play by the interface design within museum exhibition is crucial to take into account. The appropriate types and categories chosen by the curator in exhibit the material is a must. Thus, the curators of the museum must constantly plan the kinds of exhibitions and interface design structure in order to successfully convey the exhibition's message and have a positive impact on visitors, in order for the museum to meet its goals and become one of the greatest. This study findings moreover would help any other museums, policy maker, exhibition organizer, government, or any other parties that related to exhibition on the exhibition element which can help them to convey their intended message to the

visitors successfully. In addition, this study can help the other local museums to come up with attractive presentations of artefacts to draw more visitors in order to convince the visitors to appreciate what they should appreciate

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### VII. DISCLOSURE

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