

The Effect of Patterns of Space Circulation on the Understanding and Satisfaction of Visitors to the Museum of Makassar

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Submitted : 07 May 2025
Revised : 24 June 2025
Accepted : 27 June 2025

Abstract

The Museum of Makassar, in its capacity as a representative space of urban history and culture, plays a pivotal role in fostering collective public awareness of city's heritage. However, the undirected circulation structure of the exhibition space engenders a fragmented and unsystematic visitor experience. The objective of this research is to examine visitor circulation patterns in Museum of Makassar and formulate a spatial movement model that is able to integrate curatorial narratives more effectively. This research utilizes a qualitative approach, employing direct observation, spatial mapping and spatial configuration analysis to evaluate the relationship between the movement of visitors and their comprehension of exhibition content. The findings of this research are anticipated to contribute to the development of spatial planning strategies for museums that are more communicative, directed and inclusive, thereby supporting museum in their role as inclusive and immersive public learning spaces.

Keywords

The museum, circulation patterns, the visitors

INTRODUCTION

The Museum of Makassar, in its capacity as a repository of the city's history and culture, plays a pivotal role in the preservation of cultural heritage and serves as a conduit between the past, present, and future. The rich history of Makassar City, influenced by various cultures and civilizations, is reflected in the diverse collections of the Museum of Makassar. Nevertheless, the predominant challenge confronting contemporary visitors is the act of navigating the spatial environment, with the objective of averting feelings of ennui and disorientation.

A substantial corpus of research has been dedicated to the study of circulation patterns within museums; however, a comprehensive discussion of the optimal circulation patterns within the context of urban museums remains absent from the extant literature. The importance of optimal spatial circulation patterns in creating a positive visitor experience has been well-documented [1]–[3]. A well-structured circulation system is essential for guiding visitors through the exhibition space logically, thereby facilitating their understanding of the narrative the museum endeavours to convey.

The primary objective of this research is to formulate an optimal visitor circulation pattern model for the Museum of Makassar, taking into account the unique characteristics of the city and the needs of visitors. The objective of this research is to examine the circulation patterns of visitors within each exhibition space in the

museum, with a focus on identifying factors that contribute to the effectiveness of the visitor experience. The findings of this study are anticipated to furnish exhaustive recommendations concerning the presentation and organization of collections in alignment with the attributes of the Museum of Makassar. The objective is to transform this museum into a captivating and instructive destination for the community.

A. MUSEUM DEFINITION

The word "museum" comes from the ancient Greek "*Museion*," which refers to a place dedicated to the nine Greek Goddesses (Muses), who were considered the rulers of the arts and sciences. According to the definition given by ICOM (International Council of Museums) in articles three and four, a museum is defined as an institution that is permanent, provides services for the benefit of society, and is open to the public, with non-commercial purposes.

An ideal museum is one that is able to function effectively as a means of communication in conveying the cultural information it carries. The presentation of collections in a museum not only gives the institution its identity and character, but also plays an important role in determining its purpose and existence. Thus, the right presentation method becomes a key element in achieving the educational and cultural functions of the museum [2], [4].

B. MUSEUM FUNCTIONS

As a public space, a museum is not only a repository for artifacts and collections, but also has the responsibility of providing an interesting and informative experience for visitors. In the context of showroom design, museums must be able to create dynamic interactions between collections, spaces, and visitors so that their educational goals can be achieved optimally. A well-designed museum will provide a more in-depth and memorable experience, so that visitors can understand the contents of the exhibition more effectively. In addition, museums must also be able to adapt to technological developments and the needs of modern society in order to increase their accessibility and appeal to various age groups and social backgrounds. Therefore, in the process of museum design, aspects of spatial layout, circulation patterns, and visitor interaction with exhibits are very important elements to consider [5].

As a space that has educational and recreational functions, museums must pay attention to various aspects in their design, including space layout and collection arrangement in order to attract and increase visitor engagement. Effective museum interior design allows visitors to comfortably explore the space and gain a holistic experience of the collections on display. This can be achieved through clear circulation arrangements, the use of appropriate lighting, and the selection of materials and colors that support the atmosphere of the exhibition. Thus, the museum not only acts as a place to store history, but also as an interactive space that connects visitors with cultural heritage and science in a deeper way [1], [6].

C. CIRCULATION PATTERN OF THE MUSEUM

The circulation pattern in a museum is a crucial element that determines how visitors move and interact with exhibits. The strategic design of circulation systems plays a pivotal role in facilitating visitor navigation and enhancing the overall experience. In a museum with an effective circulation layout, visitors can enjoy the collection without experiencing confusion and gain a more systematic understanding of the exhibits displayed. Consequently, the selection of circulation patterns must take into account the characteristics of the space and the type of collection on display to ensure optimal accommodation of visitors' diverse needs [7].

There are four fundamental circulation patterns that are frequently employed:

1. Direct Plan

The Direct Plan is a directive that instructs visitors to traverse a predetermined linear path, typically based on chronological or thematic sequence. This approach is effective in conveying a narrative in a sequential and structured manner, facilitating visitors' understanding of the exhibition's overarching story. Nevertheless, the Plan imposes constraints on visitors' ability to select their preferred route.

2. Radial Plan

The radial plan is a spatial organization of an exhibition in which the exhibition space is arranged around a central point. This arrangement enables visitors to explore different sections of the exhibition while also returning to the initial point for orientation. This Plan facilitates intuitive navigation; however, if not meticulously designed, it may lead to confusion or redundancy in travel routes.

3. Open Plan

The Open Plan paradigm offers visitors complete freedom to determine their exploration route without specific route restrictions. This approach offers a high degree of flexibility and opportunities for visitors to pursue their individual interests. Nevertheless, in the absence of an adequate signage system, this Plan has the potential to cause disorientation and reduce the coherence of the exhibition narrative.

4. Random Plan

The Random Plan is characterized by its provision of multiple alternative pathways that are not constrained by a specific sequence, thereby promoting non-linear exploration. This configuration enhances the visitor experience by allocating space for personal interaction with exhibition objects. Nevertheless, there is a concern that visitors may overlook crucial components of the exhibition or become disoriented while navigating the space.

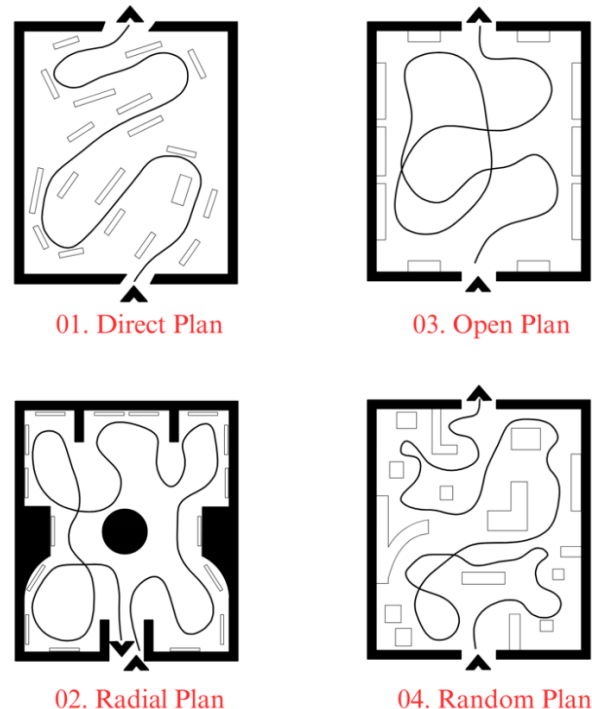


Figure 1 The circulation patterns

A comprehensive evaluation of the advantages and disadvantages of each pattern is essential for selecting an appropriate circulation method. This selection should be tailored to the specific characteristics of the exhibition, the object's features, and the anticipated visitor demographic.

A well-designed spatial circulation has been demonstrated to increase satisfaction and attract visitors to return, for both the general public and art lovers. Furthermore, it has been shown to improve the quality of their experience in enjoying works of art [8], [9].

The selection of circulation patterns in museums is influenced by various factors, including the dimensions and configuration of the exhibition space, the objectives of the curation, and the demographic of the intended visitors. A well-designed circulation system has been shown to facilitate visitor navigation, increase engagement with the collection, and create a more immersive and memorable experience in understanding exhibition content [1], [10].

RESEARCH SIGNIFICANCE

This research is significant in that it aims to identify the relationship between circulation patterns and visitor experiences at the Museum of Makassar. By examining this relationship, the research will provide a foundation for the development of improvements in exhibition space design. The present study contributes to the optimization of the curatorial narrative through more focused and communicative spatial arrangements by understanding how visitors move and interact with the collection. The results of this study are expected to support the development of the museum as a more informative, structured public space that encourages deeper visitor engagement.

METHODOLOGY

This research employs a descriptive qualitative method, which aims to describe and analyse the interaction and circulation patterns of visitor spaces in Museum of Makassar. The qualitative approach was selected because it enables researchers to thoroughly examine visitors' experiences within the exhibition space and to comprehend how interior design elements and spatial layout influence their movement and interaction. The present research is oriented towards the direct observation and descriptive analysis of phenomena in the field.

A. RESEARCH OBJECT

The research object under discussion in this study is situated at Jl. Balaikota No.11, Ujung Pandang District, Makassar City, South Sulawesi 90171. This institution is a prominent museum in the South Sulawesi region of Indonesia. The museum was selected as the site for this study due to its comprehensive collection, which encompasses local history and culture, thereby offering a comprehensive perspective on visitor interactions with the exhibits.

The museum building was originally constructed in 1918 by the Dutch colonial government as a city hall and was subsequently converted into a museum in 2000. The Museum of Makassar functions as a nexus for historical and cultural information, while also serving as a paradigm of the integration of colonial architectural concepts with

tropical climate adaptation strategies and open green space planning.



Figure 2 Front Side of The Museum of Makassar

B. CASE STUDY

The museum of Makassar is comprised of two floors, with the first floor serving as the primary exhibition space. The institution comprises eight exhibition rooms, each meticulously curated to showcase a distinct facet of Makassar City's historical and cultural heritage. Upon entering the museum's primary entrance, visitors are greeted by a receptionist situated centrally within the exhibition space. Following the completion of the registration process, visitors are permitted to commence their exploration of the exhibition rooms.

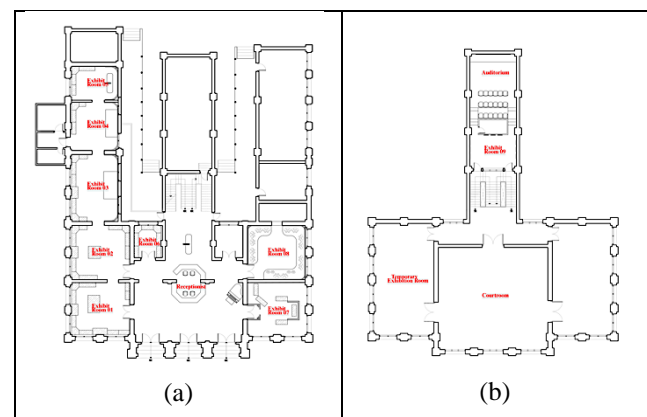


Figure 3 First Floor Plan - The eight exhibition rooms (a) and Second Floor Plan - The other exhibition rooms (b)

On the first floor's northern side, six exhibition rooms are dedicated to presenting significant information regarding Makassar's history and cultural heritage. The all rooms are nascent history of Fort Somba Opu, early history of Makassar City, overview of Makassar City's historical development and its notable figures, various historical sites in Makassar City. Subsequently, visitors will proceed to the fifth exhibition room, which contains information regarding the Makassar Football Association (PSM), and the sixth exhibition room, about collection of traditional musical instruments from Makassar.

On the south side of the first floor, there are two further exhibition rooms that present distinctive cultural collections. Prior to entering the sixth exhibition room, visitors are greeted by an object located in close proximity to the reception area. This object is a piano that possesses historical and cultural value. The initial exhibition room, showcases a selection of badik, a traditional weapon that is characteristic of South Sulawesi. Following this, visitors will proceed to the final exhibition room, which displays a collection of traditional South Sulawesi clothing, showcasing the region's cultural diversity and aesthetic qualities.

Table 1 Details of exhibition rooms on the first floor











No	Floorplan (cm)	Theme of Exhibition	Photo
FIRST FLOOR			
1	1110x605cm	Receptionist	
2	605 x 547cm	History of Fort Somba Opu	
3	605 x 555cm	Early history of Makassar City	
4	685 x 605cm	The history and famous figures of Makassar City	
5	605 x 495cm	Historical sites in Makassar City	
6	605 x 346 cm	The Makassar Football Association (PSM)	
7	330 x 287 cm	Traditional musical instruments of Makassar	

Table 1 Details of exhibition rooms on the first floor (cont.)

No	Floorplan (cm)	Theme of Exhibition	Photo
FIRST FLOOR			
8	605 x 547cm	Traditional Badik weapons	
9	605 x 555cm	Traditional clothing of South Sulawesi	

Prior to ascending to the second floor, visitors traverse a capacious corridor that functions as an exhibition area. This area displays four paintings that depict historical figures and provide insight into the arduous struggles and significant figures in Indonesian history. Additionally, the mezzanine area an exhibition room showcasing a collection of historical photographs, offering a nostalgic glimpse into the ambiance of traditional movie theatres in Makassar City. This feature provides visitors with a poignant historical experience. Visitors who have viewed the photographs will be presented with an auditorium room that houses video screenings regarding the history and evolution of Makassar City. These screenings are designed to facilitate a more profound comprehension of the city's identity.

Table 2 Details of exhibition rooms on the mezzanine

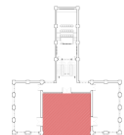

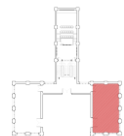

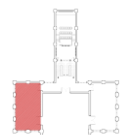

MEZZANINE			
1	475x409cm	National Heroes	
2	475x350cm	Photos Of Old Movie Theaters In Makassar City	
3	810x350cm	Auditorium	

On the second floor of the Museum of Makassar, there are two exhibition rooms that also present important that served as a pivotal meeting point during the government era. This room possesses substantial historical value, as it was the site where various decisions and policies were formulated during that period. In the contemporary era, the courtroom's function has expanded beyond its traditional role as a judicial venue. It now serves

as a venue for various events, including seminars, discussions, and meetings organized by the museum and other institutions.

In the southern portion of the second floor, On the south side of the second storey, there are two final exhibition rooms. The initial chamber functions as an archive of the history of the mayors who have served in Makassar City, incorporating accolades and trophies, as well as photographic documentation of historical events. The final room is dedicated to the mayor of Makassar, who has made significant contributions to the city.

Table 3 Details of exhibition rooms on the second floor

SECOND FLOOR			
1	1110x1050cm 	Courtroom	
2	1130x605cm 	History of the mayors of Makassar - Patempo	
3	1130x605cm 	History of the mayors of Makassar	

RESULTS AND DISCUSSIONS

A study of the Museum of Makassar reveals that the museum employs a variety of circulation patterns in its exhibition spaces. These patterns have a significant impact on visitor comfort and the interactive experience with the collections on display. The circulation patterns implemented offer a certain degree of flexibility; however, they can also lead to confusion if directional signs are not clearly delineated. As emphasizes, effective circulation patterns must take into account the manner in which visitors interact with exhibits, ensuring that they move in a structured manner. [1] also posits that visitor experience is significantly influenced by existing circulation patterns, wherein effective design fosters narrative comprehension and visitor engagement.

Upon completion of the registration process at the reception desk, visitors are granted autonomy in selecting their route, with the option to commence their journey from either the northern or southern periphery of the museum. While this autonomy fosters adaptability, the absence of explicit directional indicators engenders perplexity among visitors. This predicament is further exacerbated by the fact that the exhibition's narrative arc commences on the north side, with the initial exhibition room addressing the early historical context of Benteng Somba Opu. In the absence of clear directional signs, visitors are unable to follow the intended sequence, which can impede their comprehension of the storyline that the museum curators endeavor to convey.

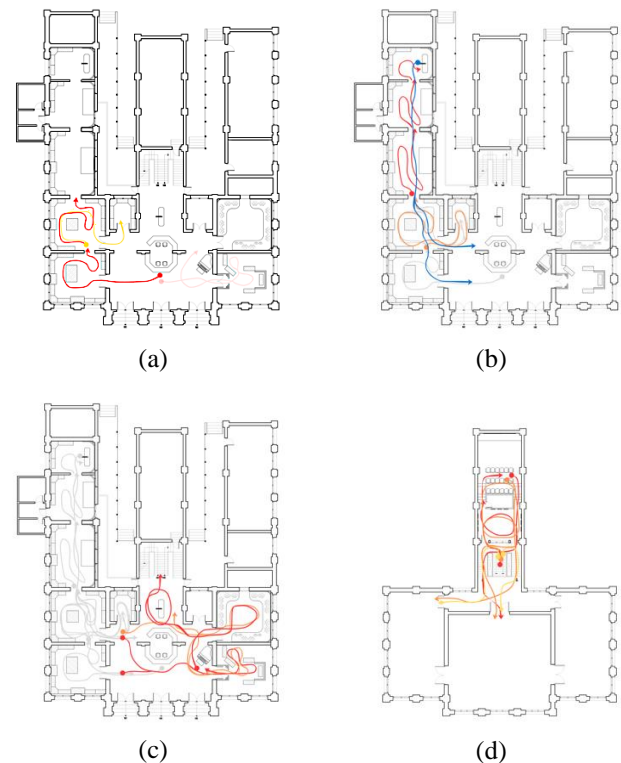


Figure 4 The Illustration drawing of circulation pattern

The museum's northern side is comprised of six exhibition rooms, some of which feature distinct circulation patterns. The configuration of the first and second exhibition rooms utilizes a circular circulation pattern, also known as a radial plan, which directs visitors to move around a central point before proceeding to the subsequent room. However, the south wall of the second exhibition room contains a door that connects directly to the sixth exhibition room, which has the potential to disrupt the exhibition's narrative flow. The presence of this door enables visitors to navigate between rooms without adhering to the sequence devised by the curator, thereby potentially disrupting their comprehension of the narrative. (figure 4a) As McLean elucidates, radial circulation patterns, which are effective in guiding visitors to follow the sequence of an exhibition [5], can be disrupted by design elements that allow visitors to deviate from the prescribed sequence. Furthermore, Dean underscores the necessity of exhibition space design to take into account visitor movement patterns to facilitate a systematic and cohesive experience [1]. In the absence of explicit arrangements, this ambiguity can impede visitors' comprehension of the exhibition's overarching narrative.

The third to sixth exhibition spaces on the north side of the Museum of Makassar adopt an open plan, which provides greater flexibility for visitors to move freely between exhibition spaces. Despite the layout's provision of spatial autonomy, visitors seeking to transition from exhibition space five to another area must return to exhibition space two or the primary entrance. This limitation stems from the availability of only a single exit, with the remaining doors intended for egress being rendered inoperable. This phenomenon engenders a state of perplexity, compelling visitors to retrace their steps and

recommence their journey from the initial point. As McLean emphasizes, the principle of freedom of movement between spaces must be accompanied by design elements that guide visitors to follow the exhibition sequence without feeling trapped [5]. (figure 4b)

Upon completing their exploration of the exhibition rooms located on the north side of the Museum of Makassar, visitors find themselves confronted with a challenging decision regarding the subsequent route they will take. Visitors have the option of proceeding directly to the exhibition room on the second floor or continuing their exploration of the premises by traversing to the south side, where two additional exhibition rooms are located. In a similar manner, visitors who commence their journey from the south side have the option of proceeding to the second floor upon completion or continuing on to the north side. The absence of adequate directional signs has been identified as a contributing factor to visitors' confusion. This is due to the fact that visitors are unable to discern which route aligns with the curator's intended order. (figure 4c) This observation pertains to the exhibition rooms situated on the mezzanine and second floors, which exhibit a paucity of signage to guide visitors through the institution's layout. This deficiency contributes to a heightened level of confusion among visitors navigating the museum. As McLean [5] emphasizes, effective exhibition space planning must provide clear and consistent directions so that visitors can navigate the exhibition space seamlessly and follow the sequence designed by the curator. This is crucial for maintaining the smooth flow of the exhibition narrative. (figure 4d)

CONCLUSIONS

The application of the current circulation pattern in the Museum of Makassar has been analysed, and the results indicate that it provides visitors with greater autonomy in determining their own routes. However, the analysis suggests that this pattern does not entirely facilitate a structured and systematic experience. This approach, however, carries the potential risk of disrupting visitors' understanding of the exhibition sequence. Despite the adoption of flexible circulation patterns by the Museum of Makassar, a re-examination of the continuity of spatial flow and visitors' interaction with exhibition objects is imperative. The absence of adequate signage can cause confusion and affect visitors' understanding of the exhibition content. Consequently, the management of circulation patterns should be given greater attention to facilitate an easily navigable flow, which is in line with the concept of effective museum design.

In an effort to enhance the visitor experience, it is recommended that the Museum of Makassar re-evaluate its circulation patterns. The circulation patterns in question should be directed and in accordance with the characteristics of the exhibition space. One potential solution involves the implementation of a circulation pattern that guides visitors along a more linear or rotary trajectory. This approach ensures that visitors can systematically follow the sequence of exhibitions and maintain a comprehensive understanding of the intended narrative.

Furthermore, it is imperative for the museum to install clearer and more informative signage along the exhibition pathways. The installation of signage that is integrated with the museum's interior design will facilitate visitor navigation of the space and ensure they follow the curator's exhibition sequence. The implementation of adequate signage has been demonstrated to mitigate the risk of disorientation and enhance the experience for visitors, irrespective of their familiarity with the location.

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