KUPAS SENI
Jurnal Seni dan Pendidikan Seni
Universiti Pendidikan Sultan Idris
Sultan Idris Education University
ISSN 2289-4640 • eISSN 0127-9688

Mapping Museum Visitor Experience from Entry to Exit Using Visitor Journey Map and Service Design

Pemetaan Pengalaman Pelawat Muzium dari Pintu Masuk ke Pintu Keluar Menggunakan Peta Perjalanan Pelawat dan Reka Bentuk Perkhidmatan

Ana Baidza Abu Bakar, Muhammad Zaffwan Idris*, Ekram Al Hafis Hashim

Department of Multimedia Creative, Faculty of Art, Sustainability and Industry, Universiti Pendidikan Sultan Idris, 35900, Tanjong Malim, Perak, Malaysia

***Corresponding author email:** zaffwan@fskik.upsi.edu.my

ARTICLE HISTORY
Received: 02nd July 2024
Revised: 25th November 2025
Accepted: 02nd March 2026
Published: 16th March 2026

KEYWORDS
Visitor journey map
Service design
Visitor experience
Museum
Qualitative analysis

ABSTRACT - Enhancing museum visitor experience requires museums to shift their services from product-centric to visitor-centric by understanding the pre-, during-, and post-visit experiences. Most previous studies use surveys as post-visit feedback, which often miss the actual occurrences experienced by visitors during the visit. Therefore, museum studies should explore a more holistic way to understand visitor experience in designing better services, which can support their sustainability and elevate their popularity in cultural tourism. This study aims to explore the best way to capture and understand the during-visit experiences using the Visitor Journey Map (VJM), adapted from one of the service design tools, the user journey map. Five visitor personas were identified using the Personas Identification Instrument (PIIN), which was developed in earlier pre-studies based on Falk's identity-related motivations for museum visitors. Shadowing, service safaris and post-visit interviews were conducted at Malaysia National Museum (Muzium Negara) on these five personas during their museum journey to understand their during-visit experiences. Data were collected in the form of Museum Route Maps, videos, photos, and post-visit interviews. All data were later coded in ATLAS.ti and visualised using the VJM to recognise their emotions, touchpoints, and goals during their museum visit. The analysis has revealed both shared and persona-specific patterns, including navigation difficulties, inconsistent engagement with digital and augmented reality (AR) features, and varying emotional responses across different museum phases. This approach offers a new way to understand museum visitors and improve their overall experience. The findings also provide practical insights for museum management to identify service gaps, prioritise improvements, and work towards designing a more sustainable and visitor-centred services.

INTRODUCTION

Museums around the world are moving towards visitor-focused services, shifting away from product-focused services (Packer & Ballantyne, 2016). Consequently, it is deemed necessary for Muzium Negara to shift its focus to stay significant in the museology field while attracting more visitors and sustaining its relevancy in the cultural tourism market (Ser, 2020). Museums also function as cultural and educational platforms that foster community participation and youth engagement, in which it contributes to national identity building and cultural sustainability within the local context (Mohd Nor et al., 2022).

https://doi.org/10.37134/kupasseni.vol14.1.3.2026

On the other hand, visitor experience has become one of the important intangible values to be measured, as it can confirm the quality of a museum and reflect how well the museum delivers its services (Ober-Heilig et al., 2014). These experiences can be transformed into a tangible form by visualising their journey in a Visitor Journey Map (VJM) (Kalbach, 2021). Commonly, most past studies have relied on post-visit surveys and feedback forms, which are often rigid and numerical-based, whereas emotions and experiences are subjective in nature (Bitgood, 2016). Until today, there is limited research that explores the during-visit experiences in museums, especially within the Malaysian context (Kamaruddin, 2019; Tham et al., 2020). Hence, it is crucial for museums to have an efficient strategy or method to capture and visualise the visitors' experience by knowing what the visitors actually see, do, and feel during their museum visit (Reason et al., 2016).

Purpose of the Study

This paper aims to present a way to capture museum visitors' during-visit experiences and transfer the knowledge into visual form, so that the visitors' needs can be understood and studied more easily, therefore allowing museums to make improvements in their services for visitor experience enhancement. The developed VJM is persona-centric, where it displays each of the five personas' journeys from entry to exit within the museum compound. Having a new practical and applicable method will help museums better understand visitor experience, especially inside the museum areas where the services are actually delivered and experienced (Packer & Ballantyne, 2016). This study applies a combination of Museum Route Maps, shadowing, service safaris, and interviews, with data collected as photos, videos, and transcripts to be analysed using ATLAS.ti software so that themes and codes can be identified.

LITERATURE REVIEW

Service Design in Museums

Service design (SD) is the process of improving services by understanding the user experience (Polaine et al., 2013; Stickdorn, 2018; Stickdorn & Schneider, 2012; Tomej & Xiang, 2020). In the museum context, SD supports improvements in museum services through proper planning of visitor paths, facilities, signage, and engagement by identifying key touchpoints (Villaespesa & Álvarez, 2020). Moreover, SD is capable of providing a holistic overview of the whole service system rather than focusing on individual areas or sections. This spatial perspective is particularly important in cultural and heritage environments, where the physical setting itself contributes to visitor engagement by strengthening place identity, attracting visitors and enriching experiential value (Abdul Razak et al., 2023).

In general, tools from SD, such as user journey maps, personas, shadowing, service safaris, and service blueprints, have been widely used in many service fields to make the invisible parts of services visible to the service providers (Kalbach, 2021; Marsh, 2022; Reason et al., 2016; Stickdorn & Schneider, 2012). These tools help reveal gaps, highlight strengths and weaknesses in delivering services, and facilitate decision-making when designing or improving services.

In addition, the integration of digital technologies in museums has expanded further opportunities such as art appreciation and learning, where digital platforms and virtual museums have enabled broader access, interactive exploration and continuous engagement beyond conventional physical visits (Jos & Mat Salleh, 2023).

Personas and Falk's Identity-Related Motivations

In order to establishing a user-centered effort, design practitioners use personas to understand and empathise with their target audience (Stickdorn, 2018; Stickdorn & Schneider, 2012). In general, personas are fictional characters created from actual user research to embody of users' or consumers' common or diverse behaviours, goals, needs and characteristics (Almeshari et al., 2019). When applied in the museums service design (SD), identifying museum personas helps analyse different types of visitors and enables more targeted improvements to be made to the service provided.

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This study uses personas based on Falk's Identity-Related Motivations (IRM), which define five types of museum visitors (Falk, 2012; Falk et al., 2008). Based on Falk, museum visitors can be categorised into one or more of the following types: (1) Explorer, curiosity-driven with a general interest in museum content; (2) Facilitator, motivated by social obligation; (3) Experience seeker, who perceives museum as must-visit destinations; (4) Professional/hobbyist, who feels a deep connection between museum content and their profession or hobby; and (5) Recharger, who seeks a spiritual and/or healing experience (Falk, 2016; Falk et al., 2008; Falk & Dierking, 2013).

Service Design Tools and Approaches

In service design (SD), many tools and approaches have been used to understand user experience (Stickdorn & Schneider, 2012). Most of these are exploratory and design-led, including creative research methods such as shadowing (Kara et al., 2015). These approaches in SD are capable of revealing the invisible aspects of occurrences, focusing on real-time experiences such as behaviours, interactions, and emotions at key touchpoints.

Shadowing, service safaris and roleplay are among recognised SD tools that can be used to capture real-time occurrences during museum visits. In shadowing, the researcher follows the participants closely to capture real-time behaviours, actions, emotional reactions, and interactions as they experience the services (Kara et al., 2015; Stickdorn & Schneider, 2012). As for service safaris, the researcher acts as the user and experiences the service first-hand, which helps in identifying gaps, barriers, and opportunities from the user's perspective (Polaine et al., 2013).

Throughout these procedures, the participants involved were chosen based on personas to represent the actual users in the servicescape. In the meantime, another SD tool, roleplay, was also employed to ensure that the chosen personas in the shadowing and service safaris remained in the characters they had been assigned during the earlier process. Interviews are one of the tools commonly used alongside shadowing and service safaris. They collect deeper insights into the users' thoughts and feelings (Falk & Dierking, 2013; Kara et al., 2015; Stickdorn & Schneider, 2012), thus complementing the observations from shadowing and service safaris by adding meaningful reflections and explanations to the behaviours seen earlier during the service experience.

In SD, interviews are also useful for collecting perspectives from service providers (staff or management) so that the developments or improvements suggested are aligned with organisational goals, expectations and possible constraints. The process of designing better and improved services is completed by triangulating the data gained using all of these SD approaches to ensure reliability and richness in qualitative data analysis, creating a strong foundation for user-centred services and giving a holistic view of the user's journey (Creswell & Poth, 2018; Polaine et al., 2013; Stickdorn & Schneider, 2012).

Visitor Journey Map

Visitor Journey Map (VJM) is adapted from a service design (SD) tool called the customer journey map. A customer journey map is a design tool that visualises the user experience when interacting at key touchpoints within a product, service, or system (Stickdorn & Schneider, 2012), and it is commonly used in user-centred design approaches. It is capable of representing the process from the user's perspective, not the organisation's, by showing how users move through different stages or phases before, during, and after the experience (Kalbach, 2021; Mucz & Gareau-Brennan, 2019).

VJM was introduced in this study, where it involves the museum as the service delivery environment (servicescape). The museum visitors' journey during the visit is visualised by presenting triangulated data on touchpoints, emotions, and goals from shadowing, service safaris, and interviews, in phases from museum entry to exit (Abu Bakar & Idris, 2024). The user-centred design-based approach assists museums in converting the data collected through qualitative research methods into visuals, thus supporting better designs or improvements that align with the values and commitments of museums as cultural institutions. The realisation of the VJM later acts as a foundation for designing service improvements through the development of another design-based guideline, such as a service blueprint, or in this scenario, a museum blueprint (Kalbach, 2021).

https://doi.org/10.37134/kupasseni.vol14.1.3.2026

METHODOLOGY

Research Design

This study applies qualitative research methods using service design (SD) framework as it well suited in exploring complex and intangible visitor experience (Liu & Idris, 2018, 2020). Qualitative approach allows deeper understanding of each museum visitor's behaviours, interactions and emotions in details within the real context of museum services, which are essential for the museum to improve visitor experience.

SD tools such as personas, shadowing, service safaris, roleplay, and the Visitor Journey Map (VJM) were used to capture and understand the during-visit experiences of museum visitors and triangulation of these data was also carried out to increase the reliability of the data collected (Creswell & Poth, 2018). Later, triangulation with post-visit interviews was done to ensure the observations captured during shadowing and service safaris were aligned with the actual experiences of the visitors. This study was conducted at the National Museum of Malaysia (Muzium Negara), as it represents one of the iconic cultural heritage institutions in Malaysia.

Personas Identification Instrument (PIIN)

Five participants were selected using Personas Identification Instrument (PIIN) to represent museum visitors' personas. These personas were identified using Personas Identification Instrument (PIIN), which was developed prior to this study to categorise visitors based on their visit motivations (Figure 1) and perceived success factors (Figure 2). The PIIN identifies visitor clusters, explorer, facilitator, experience seeker, professional/hobbyist and recharger, that correspond to Falk's museum visitor categories and assists in recognising personas solely based on available information without needing other data or prior knowledge about the visitors (Abu Bakar et al., 2025).

The procedures involves prompting the selected participants via two shorts sets of questions and supported by visuals to represent all five types of museum visitors' types to help in decision-making (Almeshari et al., 2019, 2021). Once identified, the participants received a persona card presenting their category then engaged in roleplay for shadowing and service safaris (Abu Bakar et al., 2025). This step was important as it ensures all the participants could represent a distinct persona authentically during the study.

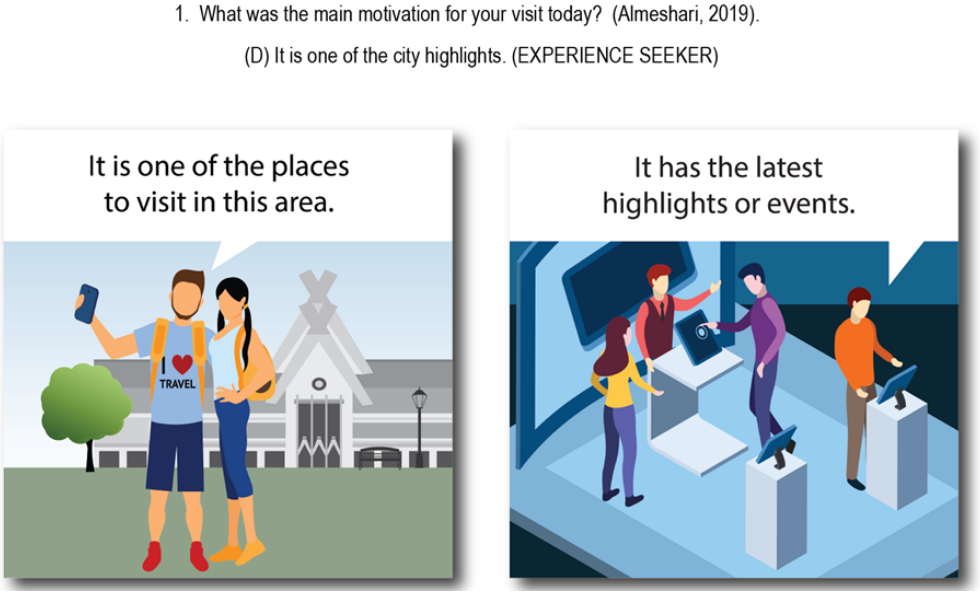

Figure 1. Sample of PIIN for visit motivation's question and answers

https://doi.org/10.37134/kupasseni.vol14.1.3.2026

2. Which of the following can be perceived as a result of your visit today? (Almeshari, 2019).

(C) I am relaxed and revived. (RECHARGER)

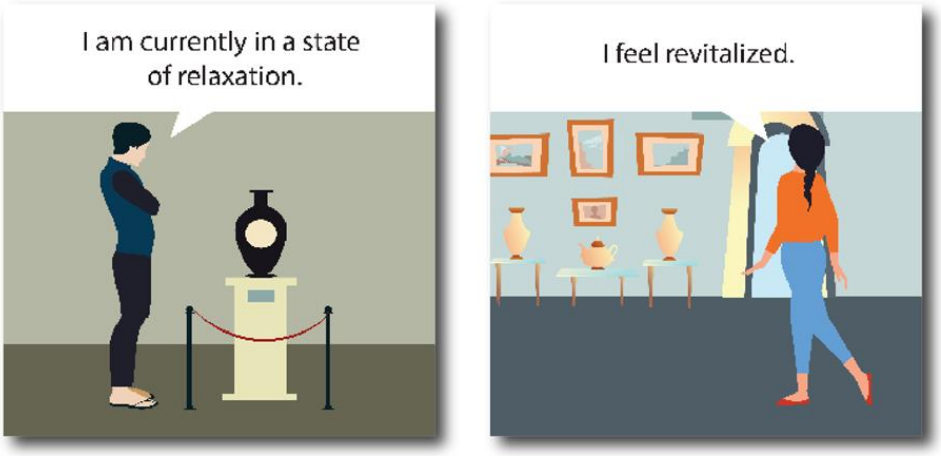

Figure 2. Sample of PIIN for perceived success's question and answers

Data Collection

Data were collected from five museum personas using shadowing, service safaris, and post-visit interviews. During shadowing, the researcher followed each persona throughout their museum visit to capture real-time behaviours, movements, interactions, and emotional reactions. Field notes and memos were recorded on a Museum Route Map for each persona to document the journey in detail. These were later merged into one combined Museum Route Map to provide a general overview and better understanding of the visitors' during-visit experiences (Figure 3).

Figure 3. Combined Museum Route Map for Five Personas

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In the service safaris, the same persona-based participants explored and recorded their first-hand experiences within the museum servicescape. Videos were captured using mobile phone cameras mounted on the participants' necks as they discovered the museum's offerings, while photographs were also taken of exhibits that interested them. Finally, post-visit interviews were conducted, either physically or virtually, with all the personas after their visit. Each session was recorded, transcribed, and summarised so it could be triangulated with the earlier procedure, shadowing and service safari, providing a holistic view of all persona-based visitor experiences. Collectively, these service design (SD) approaches captured and extracted intangible experiences, which were later transformed into tangible outputs such as the Visitor Journey Map (VJM). These procedures took place in Muzium Negara, allowing the study to capture interactions between personas with the museum's galleries and its facilities, thus reflecting their authentic visitor experience (Kalbach, 2021; Stickdorn & Schneider, 2012).

Data Analysis

Using thematic analysis, the data gained from shadowing, service safaris and interviews were analysed so that common themes and differences could be identified across the five museum personas (Creswell, 2015; Creswell & Poth, 2018). Field notes and memos from the combined Museum Route Map were studied in detail to identify touchpoints, which were later classified into visited touchpoints, high-interest areas and expanded touchpoints. This was followed by triangulating all the data collected, which came in the form of videos, photos, transcripts and memos, and importing them into ATLAS.ti (qualitative analysis software). ATLAS.ti was capable of cross-referencing all these tangible but subjective data into group codes such as touchpoints, emotions and goals (Friese, 2019).

The coded data from Muzium Negara were then visualised and synthesised into a Visitor Journey Map (VJM) for each of the personas. The VJM acted as a visual framework that displayed the coded themes across different phases of the museum journey in a neat and organised way. The following section presents the findings derived from this process, highlighting the experiences such as touchpoints, emotions and goals, for each of the personas.

RESULTS AND DISCUSSION

The Visitor Journey Map (VJM) developed in this study at Muzium Negara highlights commonalities and differences on how each persona experienced the museum services. The experiences reflected in the VJM are empathy-based,showing the emotions throughout the phases on key touchpoints along the journey. These patterns were analysed using ATLAS.ti, where the qualitative data from shadowing, service safaris and interviews were coded under three main group codes (Touchpoints, Emotions and Goals). The codes under each group code are shown in Table 1.

Table 1. Group codes and codes classification for the qualitative data in ATLAS.ti

No.	Group Code	Codes	Icons	Description
1.	Touchpoints	Visited Touchpoints		Specific locations engaged by more than three personas.
		High-Interest Areas		Areas where at least three personas engaged within a larger zone.
		Expanded Touchpoints		Exhibits featuring technology such as AR or digital screens that influenced engagement.
2.	Emotions	Engaged		Engagement that is longer than one minute.
		Satisfied		Limited engagement but showing satisfaction or positive emotion.
		Neutral		Engaged but not showing any positive or negative emotion.
		Disengaged		Engagement, which is ended shortly after it begins.

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3.	Goals	Frustrated		Engagement, which resulted in frustration or negative emotion.
		Strategies		Approaches taken to explore the museum.
		Training		Issues related to museum staff.
		Experience		Encounter experience during museum visit.
		Navigation		Issues related to signage and wayfinding.
		Accessibility		General issues regarding museum facilities and amenities.
		Technology		Encounter experience related to digital interaction and AR.

The touchpoints recognised by triangulating shadowing and service safaris were broken down into phases, which were then reflected in the VJM (Entry, Prepare, Launch, Exploration, Recharge and Exit). The exploration phase was further divided into four parts based on the galleries in Muzium Negara. Alongside this, there were also memos created in the VJM detailing the successes and pain points experienced by the personas and the captions in which described their visitation goals. VJM for each of the five personas illustrate how it captures the visitor experience as discussed below. Fig. 5 present the overall view of VJM developed for explorer using service design approach while Fig. 6 shows partial zoomed details of VJM for facilitator.

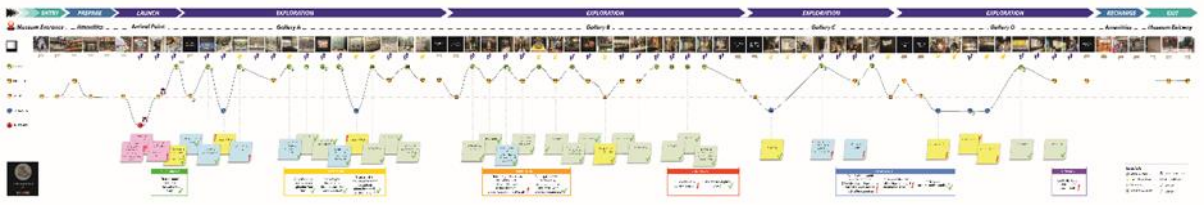

Figure 5. Full view of VJM for Explorer for structural reference

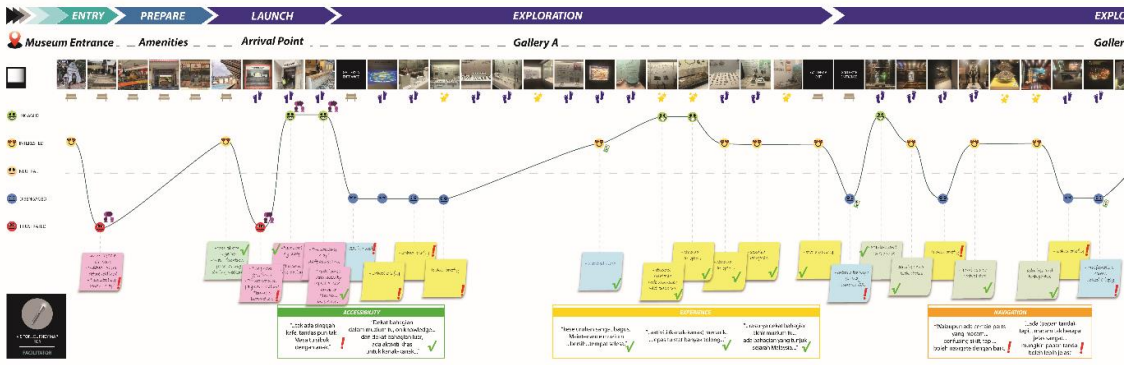

Figure 6. Zoomed-in view of the VJM for Facilitator

Using VJM, comparison has to be made for all personas in order to highlight the focus of the engagement and also its main challenges for each persona to makes it easier for the service designer and museum management to identify both shared issues and unique ones. Therefore, Table 2 shows comparative summary which can acts as a bridge to understand between individual personas findings and cross-personas similarities.

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Table 2. Engagement Focus and Main Challenges of Visitor Journey by Personas.

Persona	Engagement Focus	Main Challenges
Explorer	Highly focused and engaged with AR features, physical exhibits and digital screens;	Cash-only payment method, unclear exit way, AR usability issues such as limited movement and poor content.
Facilitator	Focused on children activities, experiences staff interactions, and excited with the Gallery D exhibits.	Confusing with ticket counter location, unable to notice any AR features, disengaged in some galleries, saw malfunctioning digital screens, struggled with exit.
Experience Seeker	Highly valued and joined the guided tour and guided explanations; enjoyed the replicas exhibits and positive overall experiences.	Weak air-conditioning, cash-only payment, confusing navigation, fragmented journey, ignored AR (except one failed attempt).
Professional/Hobbyist	Strong interest in digital tools and AR; took many photos; engaged at first.	Confusing signage, restroom detours, wrongly charged ticket, disengaged at times, unclear souvenir shop exit.
Recharger	Excited at entry, enjoyed photos and architecture; low sustained engagement.	Navigation confusion, dirty restrooms, ignored AR, frustrated with malfunctioning monitors, missed souvenir shop.

The findings (Table 2) show that visitor experience is not the same for all personas. It is shaped by their motivation and behaviour (Falk, 2016; Falk et al., 2008). The pattern of engagement is different. Explorer and Professional/hobbyist were highly engaged with the exhibits and Augmented Reality (AR). Others like Facilitator, Recharger and Experience seeker disengaged quickly, either with the exhibits or ignored the technology. In short, the VJM helped to capture both the common challenges and the persona-specific needs. It shows a fuller picture of the during-visit experience, something that post-visit surveys alone is insufficient.

The Visitor Journey Map (VJM) plays a vital role in capturing visitor experience where it can provide a structured visuals on museum during-visit journey by highlighting lived experiences, touchpoints and real-time pain points that goes beyond post-visit surveys capabilities. It capable to confirm that each personas has shown different engagement levels (engaged, satisfied, neutral, disengaged and frustrated) based on touchpoints they encountered within the museum servicescape. This aligns with recent Malaysian museum and art studies which emphasise that experiential and context-based approaches are necessary to strengthen visitor understanding and appreciation of cultural content (Jos & Mat Salleh, 2023).

The pain points recorded in the VJMs were almost the same for everyone. Confusing navigation, dirty or hard-to-find restrooms, malfunctioning digital features, and no staff presence were common across the personas are among the constraints. Other than pain points, VJM also records some successes during the visit, including guided tours, children's activities, souvenir shop, iconic murals and the building itself. At the same time, each persona shows unique differences. The explorer enjoyed the exhibits and AR features but later lost interest because of usability issues. The professional/hobbyist also used AR and digital games but faced problems with signage and ticketing errors. On the contrary, the facilitator focused more on children's activities and had little awareness of AR features. The experience seeker enjoyed guided tours but when left alone the journey became fragmented due to navigation issues. Lastly, the recharger started the visit with excitement but disengaged quickly, was frustrated by malfunctioning digital screen and mostly avoid trying out the AR.

https://doi.org/10.37134/kupasseni.vol14.1.3.2026

Through VJM, it is critical to acknowledge some pivotal areas for improvement which are to prepare reliable navigation aids to ease their museum journey and to ensure well-maintained digital features such as the Augmented Reality (AR) embedded with the exhibits and digital screen available inside the galleries, to provide restroom and facilities which are clean, accessible, well-maintained and equipped with proper hygiene supplies and to practise staff visibility in the four main galleries.

In the future, it is important for Muzium Negara to realise that there is no single solution that works for all. Service designers and museum managements must deliberated that some areas of the museum must consider varied visitors' needs, in which the Visitor Journey Map (VJM) directly demonstrates that different personas require different engagement strategies. The VJM is also valuable in museum service design, its functions as diagnostic tools assist in identifying shared pain points and unique persona experiences. Moving forward, the VJM can be combined with post-visit surveys and feedback, along with management perspectives, to develop a holistic service blueprint in future studies. Future studies should involves the testing of VJM adaptability and reliability across different museum setting and similar cultural institutions to confirm its capability as visitor experience enhancement tool.

CONCLUSIONS

The Visitor Journey Map (VJM) captured both common challenges and persona-specific needs in Muzium Negara. The VJM also revealed the museum's strengths such as guided tours, children's programs, and the museum's physical and architectural appeal. This research also highlights the academic and practical relevance of using VJM in service design. Practically, it also positions Muzium Negara as a case where a modernisation of a traditional cultural institution to be conducted through visitor experience using systematic mapping of journeys, touchpoints, and lived experiences. The use of VJM in this research shows the importance of designing museum services that respond to different visitor needs rather than relying on one-size-fits-all solutions.

ACKNOWLEDGEMENT

The authors would like to express their heartfelt gratitude to Universiti Pendidikan Sultan Idris (UPSI) for providing a platform and resources to conduct this research. We also sincerely appreciate Muzium Negara granting permission to conduct this study on their premises. Special thanks also to all who participated in this study, whose feedback has been invaluable in shaping the research outcomes.

CONFLICT OF INTEREST

The authors declare no conflicts of interest.

AUTHORS CONTRIBUTION

Ana Baidza binti Abu Bakar.: Conceptualization, Methodology, Investigation, Data curation, Formal analysis, Visualization, Writing – Original draft preparation. **Muhammad Zaffwan Idris.**: Supervision, Methodology, Validation, Writing – Review & Editing, Project administration. **Ekram Al Hafis Hashim.**: Supervision, Validation, Resources, Writing – Review & Editing.

AVAILABILITY OF DATA AND MATERIALS

Data available on request from the authors.

DECLARATION OF GENERATIVE AI

During the preparation of this work, the author(s) used Quillbot and ChatGPT to enhance the clarity of the writing. After using the Quillbot and ChatGPT, the author(s) reviewed and edited the content as needed and take(s) full responsibility for the content of the publication.

https://doi.org/10.37134/kupasseni.vol14.1.3.2026

ETHIC STATEMENTS

This study involved human participants. Ethical approval was obtained from the Research Ethics Committee of Universiti Pendidikan Sultan Idris (UPSI) prior to data collection. The study was conducted in accordance with institutional research ethics guidelines and regulations. The ethical approval reference number is 2023-152-01. Informed consent was obtained from all participants before their participation.

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