

# Exploring the Technological Impacts: The Case of Museums in Brunei Darussalam

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## ABSTRACT

Aside from educating the public, museums are adapting to the changing world as they have become one of the popular sites for cultural heritage tourism. Thus, from tourists and educational activities, they generate an increase in the number of visitors every year. With the emergence of interactive technology, it enables museums to produce better visiting experience especially when technology able to facilitate the visitor-exhibition interactivity in diverse ways. This paper investigates visitors' satisfaction and findings demonstrate a detailed insight on how the interactive technology in museum approach shapes the visiting experience. Basically, this study will show the process of creating repeat visitation from the effects of technology use in the museums. Interactive exhibitions with technology use are required in enhancing visitor satisfaction. A conceptual framework is developed to provide guideline and knowledge in understanding the role of interactive technology to secure visitor satisfaction and repeat visitation particularly in the context of Brunei Darussalam.

## KEYWORDS

Impacts of Technology, Museums in Brunei, Visitor Satisfaction

## 1. INTRODUCTION

Technology has become an integral part of the everyday life. With its immense presence in this world, it is not possible to neglect the trend of technology integration especially when it offers plentiful of benefits to others. Technology is now popularly being adapted in most organizations, particularly in education-tourism sector where it matches with the main function of technology that is to encourage interaction. Assimilating technology produces diverse learning experience which in turn made the learning process to be enjoyable and accepted by most of its users (Budhwar, 2017). Infusing technology is significantly applicable to museums. Nowadays, having interactive exhibitions is an important aspect to museum professionals whereby it aligns with their missions in trying to convey the museum contents as effective as possible. Despite most researchers' emphasis on the use of multimedia to be only applicable in science museums, history museums are no exception to this trend (Adam, Zheng and Woodcock, 2005). Modern museums are now adopting digital technologies such as virtual reality and touch screen as so people can comprehend better and obtain more knowledge about the objects presented (Ahlam, 2013). As reported by O' Mahony (2013) many people suggested

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museums to start employing technology use in order to grow and gain more visitors. Thus, this new concept of museum is increasingly favored particularly among the younger generation.

Apparently, technology helps museum to sustain in the long run. With technology being the main character that drives the evolution of this world, it enables museums to keep up across the generations. By implementing technology, it may positively affect museum experience, for instance, the artifacts presentation would become more attractive and expressive (Pop and Borza, 2016). However, depending on the artifacts alone would not be sufficient to satisfy visitors as the objects are only exhibited as evidence (Thomas, 1999). To have interactive multimedia will certainly enhance visiting experience. Exhibitions would be more enjoyable and engaging and learning the museum contents would become efficient. When museum professionals understand their visitors' individual desires, museums would score much better as it guides them to devise a proper technology before applying it. At the same time, technology use will contribute to the creation of immersive environment where it fosters emotions and meaningful interaction of visitors by letting them to deeply experience the museum collections (Vaz, Fernandes and Veiga, 2018). As a result, visitors become more satisfied with their visiting experience and thus, lead to future revisit. Museums in Brunei are still practicing traditional approach in exhibiting artifacts and connecting with the visitors. Local tourists, in particular have been complaining on the outdated museum contents making them to lose interest to even revisit again. On the other hand, international tourists claimed the museums to be satisfactory but not entirely rewarding. Thus, there is a need to explore the visitors' opinions on the effectiveness of fusing technology into the museum approach on visitors' satisfaction and their revisit intention. This is especially important as museums in Brunei have becoming the main attraction among the tourists' activities. As there are no study in Brunei context have yet been done in assessing feedbacks on the current museum approach, this paper emerges to serve this purpose to explore how the technological impact on the museums. By understanding both perspectives of museum curators and visitors, this paper will provide an overview of how the current museum initiatives shaped the visiting experience and thus generate to visitors' satisfaction and repeat visitation.

## **2. LITERATURE REVIEW**

### **2.1. Technology Use in Museum**

Certainly, museums serve the public as cultural and educational institution of the nation, however, when it comes to value or knowledge transmission, it becomes rather ineffective. As mentioned by Hellgren (2015), the notion of museum in preserving and presenting artifacts is no longer interest the visitors especially in today's world. As people nowadays crave to attain stimulating experiences and attempt to gain meaningful connections, museums are encouraged to alter their traditional method of engagement and traditional approach in designing the exhibitions by implementing interactive technologies. With the aid of technology, it enables museums to enhance the process of visitor-exhibit interactivity that subsequently, increase the visitors' experiences and their degree of satisfaction (Stogner, 2011). Lehn and Heath (2005) agreed to the statement to which technology is surely essential in converting the museum environment for the sake of improving the museum experience and at the same time, turning visitors from passive to active. As declared by Stogner (2009), interactive technologies act as enabler that transforms the museums from performing "expert-centric" to "visitor-centric" services. Among many of the past literatures, technology has become the main focus in trying to accommodate and improve the services in museums. After reviewing thoroughly, several findings have shown that media technology is indeed useful in escalating the learning experience of visitors and some have failed to prove so.

## **2.2. Technology Use in Museum Experience**

Reviewing from the past literatures, there were comparatively great number of technologies used in museums as an enabler to engage with the visitors such as through websites, immersive-narrative driven storytelling, audiovisual tours, interactive kiosks, multi-touch tables and social media networks. However, using technology as to enhance the process of engagement does not assure its good impression on visitor's satisfaction. This statement is demonstrated when Lehn and Heath (2005) reported that cellphone-audio tours, in their case the Personal Digital Assistant (PDA), was not in complement with the audience's visit. Designed with features of audio-comment which was available only in a single stream discourage visitors to interact and have discussions in groups. Instead of making PDA as public sharing audio narrative type of tour, it only allows one user per PDA for one trip in the exhibition and thus, blocking the accessibility of the artwork which were meant to be explored and shared with visitors but ended up having the tour alone. Moreover, they conclude that interactive display, video, distracts the attention of visitors from actually viewing the artwork. Therefore, the study confirmed the interactive technology reduce the exposure of the masterpiece in the museums and causes visitors to be more passive than supposedly active. Clearly, there was lack of interaction between the objects and visitors due to the use of technology. This finding is supported by Sparacino (2004) as visitors also complained about interactive kiosks which were located at non-strategic places and websites that were highly time consuming.

From good points of view, having technology actually help visitors to better engage with the artifacts and artwork and therefore, ensuring museums to achieve successful value transmission. As proposed by Stogner (2011) the immersive narrative will positively affect the visitors as it encourages them to participate into the exhibitions more willingly. In complement to the multi-sensory environment, museums are able to provide visitors with rich learning experience and at the same time, transforming visitors from passive to active and finally, to interactive. When creating immersive environments, Knise (2017) implied museums should employ augmented reality (AR) and virtual reality (VR) because both help facilitate social learning within the museum spaces. Cleveland Museum of Art is no stranger to augmented reality as the museum is the creator of a famous AR apps called ArtLens 2.0. Its features allow visitors to customize their visit duration and preferences by scanning only the selected artwork which intrigue their interest. Through this initiative, engagement within the museum has become more enchanting (Ding, 2017). On the other hand, website is another method in approaching potential visitors by creating a virtual presence of the museum as discussed by Stogner (2009), it motivates visitors to engage and participate not only in the physical world but also virtually. By establishing online museum exhibition tour and uploading its collections and contents, it enables knowledge transmission to occur within the online visitors in the online space.

## **2.3. Technology Use in Exhibit Design**

Every environment of museums is designed according to their mission and objectives. According to Pekarik (2002) the planning of exhibition-making has to match with the museums' offerings and what they require in order to make the museums to operate smoothly. It was reported that there are four models in exhibition-making and each of them represents different function for museums of different concepts and settings. These models include exhibition-making as artifact display, communicator of ideas, visitor activity and exhibition as environment. It was further explained that many museums are implementing more than one of these approaches and they are known as the hybrid exhibitions. By adopting multiple types of exhibitions, it allows visitors to explore their space from many other different perspectives. However, not considering the visitor's preferences may result in a negative response from the visitors especially when hybrid exhibitions do not complement each other or when the visitors' expectations are not match with the selected exhibition approach. This concern was stated by Reino, Mitsche and Frew (2007) in their study claiming that visitors argued the multisensory provision should have not been implemented in an already immersive museum but rather more appreciated in traditional art museums. In this case the art museums have should have

fused the design of exhibition-making as artifact display and visitor activity to enhance visitor-exhibit interactivity and foster their learning outcomes.

On the other hand, considering problems such as the limited museum space and poor presentation of artifacts encouraged museum to utilize the sophisticated technologies like virtual reality and augmented reality. This statement was agreed by Knise (2017) and Lepouras et. al (2001) that transforming museum space into virtual environment has positively enhanced the value transmission between visitors and the objects compared to the traditional approach of offline face-to-face interaction. Moreover, to protect the vulnerable objects from unwanted actions, Liarokapis and White (2005) recommended the exhibition spaces to be themed as Augmented Reality (AR) exhibitions supplying digital information into the real physical environment. Nevertheless, the challenge in this case is mainly focused on maintaining the infrastructure as the cost of maintenance is relatively expensive. In order to create bond between the exhibitions and the visitors, Phillips (2011) suggested making visitors as one of the characters of the stories instead of only as reader or viewer. It was recommended to design the exhibitions as immersive and if possible, created into certain themes as a way to allow knowledge transmission and at the same time, for learning experience to be joyful. From this, Hellgren (2015) highlighted exhibition with emphatically-designed approach establish a deeper connection with the visitors, thus producing satisfied visitors and increase the chance for revisit intention. Therefore, designing museum space is another important aspect that must be looked through as it enables museum management to be creative and innovative in providing better customer services.

### **3. RESEARCH METHODOLOGY**

In relation to this paper, an exploratory research case study design was adopted for investigating the technology use in Brunei museums. This provides opportunities for this research study to work effectively especially with the aid of theories and theoretical models from the previous literatures. With exploratory design being unstructured in nature, in this context of investigating visitors' satisfaction, assessing people's opinions would matter to the government (museums) because it helps in making future developmental plans. Given that research aim to examine the viewpoints from the museum curators and visitors, it is appropriate to conduct qualitative interviews with them in order to gain the legitimate results based on the area that researcher is investigating. Through interviews, it widens the opportunity for the researcher to obtain interviewees' beliefs and perspectives which are known to be valid in answering the research questions. Not only does it clarify the research questions, new themes are also expected to emerge from the interviews thus, revealing more different insights of the study. In addition, instead of having unstructured, semi-structured allows more flexibility in attaining alternative answers whenever interviewees fail to give the desired results. The study was conducted in reference to three local museums of Brunei Darussalam located in Brunei-Muara district particularly in reference to Royal Regalia Museum, Malay Technology Museum and Brunei Maritime Museum. These museums were selected because of they are homogenous in nature (Patton, 2014) where technological implementation is certainly not new approach, however, the use of 'interactive technology' is. These museums are known to be most popularly visited ones among others revealing themselves to be closely part of the tourist's destination and go-to place for locals especially for educational visits. As the data is highly qualitative, thematic analysis is utilized for data analysis. Similarly, like any other qualitative analysis, after transcribing the interviews process and codes were identified and themes emerged based on sense understanding of the transcription (Salkind, 2012).

Table 1. Themes and sub-themes from museum curators

| Themes                                   | Sub-themes   |
|--|--|
| <b>Museum experience with technology</b> | <b>Museum concepts</b><br><i>Technology does not necessarily improve visitors' experience</i>                  |
|  | <b>Issues in implementing technology</b><br><i>Technology breakdown, no technology matched as per required</i> |
|  | <b>Virtual presence</b><br><i>Poor marketing strategy</i>  |
|  | <b>Object-centric</b><br><i>Lack in visitor-centered approach</i>  |
| <b>Museum approach</b>                   | <b>Types of museum collections</b><br><i>Depending on their characteristics – tangible or intangible</i>       |
|  | <b>Types of visitors</b><br><i>Only specific audience is targeted</i>  |
|  | <b>Future improvement</b><br><i>Tackling other aspects in optimizing the overall museum experience</i>         |
|  | <b>Revisit Intention</b><br><i>Temporary exhibition, invitation and collaboration.</i>                         |

## 4. FINDINGS AND DISCUSSIONS

### 4.1. Interview Findings – Museum Curators

To attain the validity, three professionals were chosen and interviewed based on the three museums whereby Curator of Ethnography was selected to be interviewed on behalf of Malay Technology Museum (MTM), Acting Curator of Archaeology as a representative of Brunei Maritime Museum (BMM) and Curator of Exhibition for Royal Regalia Museum (RMM). A detailed thematic analysis was performed in order to extract relevant information that are seen as redundant as mentioned by the three curators. These sayings are then formed into codes and are categorized into themes according to their similarity in terms of concepts or patterns. The main themes are “Museum experience with technology” and “Museum approach” as shown in the table shown below;

#### 4.1.1. Museum Experience With Technology

The theme specifically discovered the effects of technology on museum concepts and their issues in bringing technology at museums. It also discusses the museum experience through online presence and the use of interactive technology which were known to be more object-centric.

##### 4.1.1.1. Museum Concepts

When designing an exhibition based on their concepts, the museum curators apply hybrid exhibition design which emphasize on artifact display and environment. This eliminates the notion of having

visitor activity and ideas communicator in creating the atmosphere of the exhibitions. As the technology provided in the museum serves only to provide explanations and present intangible collections thus, they do not enhance visitor-exhibition interactivity except through learning experience. With artifacts and the environment, it was stated to be already sufficient to facilitate value transmission between the museum collections and visitors. Therefore, advanced technology use in museum is not necessarily required to heighten the visitor's experience. The importance of artifacts is highlighted by the curators:

*When audio-visuals and animations are abundantly used in the museums, the artifacts will subsequently be disregarded...with technology, it makes the exhibition becomes boring and eventually disappoint the visitors because the purpose of them coming to museums is to see actual artifacts instead of technology display like touch screen. (Curator of Exhibition)*

#### 4.1.1.2. Issues in Implementing Technology

Obviously, having technology would not be easier especially when it comes to maintenance. When a museum is having a technology breakdown, it affects the museum experience for instance, having flickering lighting would definitely distracts visitors' attention. This leads to a degradation of the visiting quality as it takes away the chances of visitors to view the museum collections in a more engaging way as mentioned by Acting curator of Archaeology, one of the visitors' regular comments is the complaint on the frequent breakdown of the mini theater which in this case requires constant maintenance to make sure the visitors are satisfied with their visit. Same goes to the touch screens at MTM whereby the Curator of Ethnography asserted:

*Technology requires much effort like the touchscreen must be connected to internet in order to operate. If there was an internet problem, the touchscreen would be left untouched... when in fact every information of the museum collections was there. (Curator of Ethnography)*

Apart from technology failure, another concern is budgeting and the availability of the required technology. Indeed, it is expensive to purchase any technology that is on the current market especially when it has more features and more advanced in carrying out specific errands required by a user. This again is emphasised by the two curators of Ethnography and Archaeology that every decision made incorporating technology to exhibition requires a check on the item price and the need to search for proper technology for a certain project execution.

#### 4.1.1.3. Virtual Presence

Virtual engagement has become an important factor if one decides to stay relevant and be among the discussed topics in today's world. It is essential to be constantly interactive with the customers as it is part of branding and at the same time, building customer loyalty. However, it is unfortunate for museums to have weak virtual presence despite the fact that they have established website and social media network that are both capable at attracting potential visitors. When the curators were questioned on the availability of interactive platform, they mentioned the two but according to Curator of Ethnography, both are said to be, *"very outdated and are only used to share announcements on the opening of new exhibitions instead of actually showing the inside."* In addition, the Acting curator of Archaeology and Curator of Ethnography expressed their opinions that the absence of personal website and social media network for each museum further lowers the opportunity for them to publicly market their museum offerings. Hence, the weak virtual presence contributes to poor marketing strategy.

#### 4.1.1.4. Object-Centric

Align with their mission in presenting the value of museum collections at its best through artifacts and environment, it was clear that their museum approach through technology is not entirely visitor-

centered but more towards objects-centric. The professionals were demanded to answer which among the interactive technology that the museum own and the discussions were:

*We do not have a mobile application or museum portable device or multi-sensory technology, but we do have interactive kiosks that is the touch screen. (Curator of Ethnography)*

This understandably showed that the technology provided in the museums are mostly used to describe the objects and cannot be customized following the visitors' preferences. For instance, the use of touch screen is only there for captions and descriptions of museum collections but not for interactive activities such as engaging exhibition games or quiz.

#### 4.1.2. Museum Approach

The following theme explores their initiatives in increasing revisit intention and improving the quality of museum experience. This section will also elaborate on the findings on the use of certain technology for certain purposes which were discovered to be based on the different types of visitors and the types of museum collections.

##### 4.1.2.1. Types of Museum Collections

It was observed that technology use is only applicable to display intangible museum collections whereas tangible collections are often expressed through the exhibition of artifacts. Since the museums prioritize artifacts display more than visitor activity, it seems museums to have less implementation of interactive technology as artifacts is known to be the best method of presenting their values in an understandable manner:

*Museums in Brunei rarely utilize audio-visual guide because we have already exhibited the actual collections for visitors to see. But if we do, we use videos in RMM to showcase the actual surrounding of events such as during the Coronation Ceremony of His Majesty. (Curator of Exhibition)*

##### 4.1.2.2. Types of Visitors

Aiming to educate the public through museum collections, Brunei museums have successfully increased visitors' learning experience. With the current condition of what the museums offer, not much of a variety type of visitors are attracted but rather managed to get specific audience's attentions such as the researchers. Thus, explained the use of certain technology for certain types of visitors only:

*We have tablet application and in them are education pack made for the students but it is not engaging. Overall, I hope what the current displays have for them is to learn but in the aspect of engagement for now has not yet been touched. Since there are two types of visitors, one who wants to learn and willing to read and another is the one who come for experience and be interactive with mobile phones, so we are thinking to look at the second type of visitors where we would like to engage with them instead. (Acting curator of Archaeology)*

In making visitors to be active, temporary exhibition is one of the ways to have them experience actual situation as stated by the Curator of Ethnography:

*Sometimes we receive comments saying visitors wanting to see more traditional culture-related artifacts so recently we held a temporary exhibition on traditional games where we exhibit the artifacts and materials and at the same time, we provide something for them to play around. Surprisingly we get a lot of participants, the kids enjoy playing the games and the attendants really like event so we*

*managed to be interactive but that is only through temporary exhibition and not the permanent ones. (Curator of Ethnography)*

#### 4.1.2.3. Future Improvement

As the museums serve their purpose mainly towards learning experience and less on engagement and emotional connection therefore, the museum curators claimed to improve the visiting experience by trying to be engaged with those visitors who want to learn through interactive technology. When asked which aspects of museum experience they wanted to explore, engagement emerged as the most answered followed by learning experience and emotional connection:

*First, update the technology... and then souvenir shop because it reminds people of the memories when visiting the museum or the country and then workshop especially for student where we gather them around and explain about the Kampong Ayer. (Curator of Ethnography)*

#### 4.1.2.4. Revisit Intention

As declared by the curators, to get visitors coming back to museums again is through temporary exhibition where different theme exhibitions are frequently held to attract the public's attention. Another is through invitations to which embassy, students and government officers are offered to visit the museums. Collaborating with other companies is also among the methods:

*We need to have temporary exhibition within every six months. Invitation is one of the ways for us to get people such as students or government employees to revisit the museums...So, temporary exhibition, in particular, able to get us 100-200 visitors...for every of the event, we would call embassy to the launching event so people of a certain embassy would come and come again for the next exhibition. Another method is to collaborate with people who have their own artifacts and invite them so that they can showcase through a much better exposure with us. (Curator of Ethnography)*

*We actually had temporary exhibitions and painting last time. Currently, we are planning on opening up a new exhibition, we plan to have a few agencies involved, so hopefully these agencies will bring back visitors...for example, we have BSM and hopefully BSM will contribute in making our visitors to come to them which is here... Another way to attract people is to have activities with the students where they ask questions and know more about the archaeology and the maritime history. Last time, we had a visit from Seri Mulia Sarjana School where the activity was done here. The kids really enjoyed their time and we hope that they will bring their family along when they wanted to come to this museum again. (Acting curator of Archaeology)*

## 4.2. Interviews Findings - Visitors

Five types of visitors were selected to participate in the interview and every one of them was chosen based on the characteristics the researcher needs where in-depth understanding and analysis of the opinions were the main aim. They consist of a researcher, a museum lover, a local tourist, a tourist guide and a museum attendant. Four themes were formed to which all of them gives responses towards objectives of studying visitors' feedback on the current museum settings, identifying the factors to revisit intention and discovering which of the interactive technology satisfy the visitors. The themes are "Visiting experience", "Technology use in museum" and "Visitors' recommendations" explained as follows:



Table 2. Themes and sub-themes from visitors

| Themes                    | Sub-themes  |
|---------------------------|---|
| Visiting experience       | <b>Types of visitors</b><br><i>Ineffective presentation of museum collections for tourists and future generations</i>           |
|                           | <b>Museum experience</b><br><i>Dealing with emotional connection, meaningful experience and learning outcomes</i>               |
|                           | <b>Exhibition design</b><br><i>Lack of visitor activity</i>   |
| Technology use in museum  | <b>Benefits of implementing technology</b><br><i>Convenient, useful for tech-savvy people, make visitors active</i>             |
|                           | <b>Misemployment of technology</b><br><i>Repetitive information, unsuitable for older generation, no personalized usability</i> |
| Visitors' recommendations | <b>Revisit intention</b><br><i>New exhibitions and museum collections, educational activities</i>                               |
|                           | <b>Preferred technology</b><br><i>Personalized usability, immersive, enjoyment and creativity</i>                               |
|                           | <b>Marketing</b><br><i>Strategic location, virtual presence</i>   |

#### 4.2.1. Visiting Experiences

When examining the quality of visiting experiences, it is best to look at how engaging the museum collections are to the different types of visitors, the overall museum experiences and the satisfaction towards the exhibition design.

##### 4.2.1.1. Types of Visitors

According to respondents, there is a lack of care for tourists and future generations especially children whereby the museum collections are less likely engaging to them. Through the presentation of museum collections, it serves only to passive visitors and those who are interested in learning about them. Despite how informative the collections would be, the value transmission towards tourists and children are ineffective due to reasons such as language barrier and the lack of profound storytelling. As complained by three respondents that:

*Although the museums have adequate learning resources but for kids, it may not be effective. When they go to museums, they are most likely to just look at the artifacts and stroll around the exhibitions without having to read or understand the meaning of the collections. (Respondent 1)*

In contrast to this, respondent 5 who is a researcher himself professed the information provided is already adequate for him despite what the other respondents have said. He explained that, *“the museum collections are presented well, it successfully made me enjoy my visit... It’s easy for me to understand all of the collections without being explained thoroughly.”* This may suggest that he has already known for whatever collections are displayed at the museums because of his pre-understanding.

#### 4.2.1.2. Museum Experience

In terms of emotional connection and meaningful experience, they are usually developed when visitors established their attachment and sense of belonging to that collections. Upon analyzing the responses, most of them claimed to have such experience only when they can relate to the museum collections for instance, the recent Golden Jubilee event, they view 'Usungan Di Raja' with emotions and of importance. It was also pointed out by respondent 1 that it depends on the museum offerings to which RRM and MTM provide much relevant collections compare to BMM where the artifacts dated at least a century old. This was further confirmed by other respondents stating that:

*There are certain collections that made me reminiscence to my past like the video on Brunei Independence Day at the RMM, it made me feel as I was there witnessing the event and the process of Sago-making at MTM also brings me back to memories where we used to make Sago using our feet...so certainly I will share these stories to others about this. (Respondent 2)*

However, when it comes to discussing on the learning experience, they expressed it as inadequate particularly for children and the tourists. This is due to the lack of visitor-exhibition interactivity. In another response, respondent 4 showed a disappointment through this aspect because the information provided is mostly something that the public already know. Furthermore, with the long captions and limited contents, it only degrades the visitors' satisfaction even more.

#### 4.2.1.3. Exhibition Design

Clearly, museums in Brunei are focusing more towards artifacts display and their environment but as opposed to this, respondents argued the exhibitions should be interactive where visitor activities are practical. Two of the respondents claimed that artifacts and environment are considered as enough in an exhibition design but still mentioned the need to have visitor activities. This indicates that even though artifacts and the environment have influenced the visitors, but they lack in engagement. Moreover, both agreed that technology use does affect the visiting experience but only for a certain purpose. Respondent 2, on the other hand, complained on the misleading title of MTM as it was thought there were visitor activities similar to the OGDC due to the name of "Technology" in it. Nevertheless, according to the respondent, there should be visitor activities in the museums such as having games for children, like finding artifacts in a pile of sand. Same goes to respondent 5 where he said:

*Need activity like in South Korea, the tourist are given the opportunity to wear traditional clothes and walk around the traditional houses while wearing that clothes, so maybe in MTM we can do something similar like this, they can take selfies or even let them enter the houses...so those activities would help to let the visitors really experience the life of the exhibition. (Respondent 5)*

### 4.2.2. Technology Use in Museum

Relevant themes discussed as follows:

#### 4.2.2.1. Benefits of Implementing Technology

All of the participants approved that technology presents museum collections in a much understandable manner. Through audio-visual, it makes the collections to be seen as information-rich and more expressive in the sense that it gives real-life experiences. In addition, respondent 5 said, *"The technology provided makes it all easier for me to understand all of the collections better and it is very helpful to make us visitors to experience all of those history."* This idea of convenience and ease of use could attract them to have interests with the exhibition especially for tech-savvy people, as stated by respondent 3. Respondent 1 and 4 also asserted that technology produces active visitors instead of making them to stroll at the exhibition quietly.

#### 4.2.2.2. Misemployment of Technology

In spite all of the decency technology creates for the visitors, it was unfortunate that technology use in the museums are misemployed. One of the major problems is that it frequently requires maintenance as they are often out of service:

*We used to have sound effects of birds chirping and waves swashing. But sadly, the sound effects are currently not working so we always need regular maintenance. (Respondent 1)*

Two respondents also expressed their disappointment about the status of technology whereby at times they may not be working or left switched off at the exhibition. Moreover, respondent 4 criticized the information at the touch screen is similar to the ones being displayed. This makes visitors less interested in using the touch screen. In another response, respondent 5 averred “*It might be difficult for some of the older generation, so a guide person might be helpful.*” It means using the touch screen may not be easy for elderly especially when instruction was not given. No personalized usability is another concern whereby tourists from abroad may not understand what the collections represent. Although English language is announced to be a universal language but not all practice English or let alone to even understand it. Hence, the value transmission to tourists is weak. When asked what lacks in the museums, respondent 3 answered:

*A lot especially detailed information for the exhibits, and if possible, at least in different languages too because tourists in Brunei is increasing and mainly from Korea and China but because of language barrier and less information shared on the information board (or tablet), tourist guides are the ones who explains in detail about the museum collections. (Respondent 3)*

#### 4.2.3. Visitors' Recommendations

This theme discusses the suggestions from visitors on what factors that drive them to revisit the museums and which interactive technology is preferred to improve their visit experience as well as their recommendations on how marketing of museums should have been implemented.

##### 4.2.3.1. Revisit Intention

Most respondents mentioned new exhibitions and museum collections to be the main contributor to revisit intention in which three of them agreed on having temporary exhibition to make them come again. Meanwhile, respondent 2 and 5 announced their intention to revisit museum only for educational purpose only.

##### 4.2.3.2. Preferable Technology

The respondents claimed wanting to have technology with personalized usability where there are options for them to customized their museum visit. This statement was highlighted by respondent 1 and 3 where both wanted to ensure effective learning transmission. On another note, the remaining respondents demanded immersive technology where it increases visitors' experiences by providing them an immersive and a real-life experience event that are adequate enough to create emotional connection and meaningful experience. Simultaneously, respondent 2 stated the need of integrating technology with enjoyment and creativity of visitors to enhance their experience even more:

*It would be great for museums to implement 4D technology...to show how the actual events look like, for example, we could present Brunei's Perang Saudara through this where we could have the sound of bombing and shaking chairs or surroundings as if we were there during the war. Surely, the museums will receive much greater attention and makes the visit more fun... it encourages the visitors to revisit museums again. (Respondent 2)*

#### 4.2.3.3. Marketing

Respondent 4 pointed out the importance in strategic location as part of the museum's marketing, it was mentioned that, "(we) need temporary exhibition at Bandar, not at MTM. Because people do not know there is usually temporary exhibition at MTM... it's too far and lack in marketing." Strong virtual presence is another suggestion to fasten the process of branding and to establish customer loyalty. As respondent 2 said:

*The museums should have been updating their websites and social media especially when today's interaction is mostly in the online world. The use of hashtag would have been very useful because through this hashtag, it directs people to view whatever that is exposed about the museums. (Respondent 2)*

## 5. CONCLUSION AND RECOMMENDATION

The previous section has shown the discussion on how museum approach in terms of technology use, museum experience and exhibition design affect visitors' satisfaction-revisit intention. Quality interaction was proved to be moderately satisfying as opposed to its general usability. When it comes to museum experience, meaningful experience and learning outcomes were reported to complement with the visitors. It was also learned that visitors' emotional connection was mainly triggered by introspective experience instead of object experience while meaningful interaction stated otherwise. As for exhibition design, most visitors agreed towards the hybrid exhibition design which compose of artifacts display and emphasis on environment. However, visitors suggested on adopting visitor activity when designing museum concepts as to eliminate the traditional museum approach and to encourage visitor-exhibition interactivity. The study also revealed overall visitors' satisfaction to be average to which visitors were clearly unimpressed with the current museum collections. Clearly, the more satisfied they are, the more likely they will repeat visitation. In this case, exhibition design, artifacts presentation and visiting experience were discovered to have significant factors for visitor satisfaction and revisit intention.

Based on the consolidation of findings and emergence of themes with the synthesis of literature, a conceptual framework of IT – V's (see Figure 1) is developed (I – Interactive; T – Technology; V's

Figure 1. Conceptual framework of IT – V's



– Visitor Satisfaction) that will serve as recommendation and guideline to the museums management to improve their facilities and service hence to increase visitor satisfaction and revisit intention.

By implementing interactive technology in museums, value transmission between visitors and museum collections becomes more effective and engaging. This, in turn, satisfies visitors and eventually generates to repeat visitation. Based on this framework above, it provides an overview and sense of understanding on how each of the museum experience and approach affects the visiting experience. The findings have proven that integrating technology into museum initiatives that based on visitors' need than museum curators is significantly effective to enhance visitor satisfaction. For instance, the emphasis on artifacts display and environment in designing exhibition have significantly influenced the aspects of visiting experience in terms of learning outcomes and meaningful experience. However, this strategy also weakens the presentation of museum collections as visitors confessed the engagement of collectibles as inefficient and therefore, suggesting the museums to consider interactive exhibitions to increase the visitor-exhibit interactivity.

The framework translates a compilation of visitors' perception on good museum settings that encourage visitors' satisfaction and revisit intention. Evidently, employing multimedia in museums has also shown to be productive in accommodating visitors' needs. In this case, personalization was seen to be an important feature to an extent that the visitors announced mobile application as one of their most preferred technology. Virtual reality and multisensory technology were also required by visitors as they demanded to experience technology that offers immersive environment and both enjoyment and creativity. This reflects to visitors' recommendations that prefer to be exposed in interactive exhibitions. Artifacts and their presentation, on the other hand, have to be intriguing and worthy enough to stimulate visitors' motivation in revisit intention. Another contributor towards repeat visitation is through creative educational activities. Museums are often seen as educational institution when it comes to providing factual and contextual information regarding the museum collectibles. Thus, their satisfaction towards the informative collections triggers visitors to conduct future visit.

In conclusion, it has showed the perspectives from both museum management and visitors to be dissimilar and different of view. While museum initiatives are managed to satisfy the visitors' expectations, they perceived the museum performance as lacking and insufficient. Given to this gap, by recommending the framework above (Figure 1), museums should be able to adjust their traditional approach in presenting and preserving collections to being a visitor-centered institution where learning museum contents should be accessible to all types of visitors.

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