

Perceptions and Experiences of Marine Education Culture in the Marine Museum : A Comparative Study of Korea and Japan

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Abstract

This study compared the cases of Korea and Japan to examine the effect of the maritime education culture of maritime museums on the participation intention according to experiential factors. This study conducted an online survey on 280 people who visited the Korea National Maritime Museum in Busan, Korea, and the Kobe Maritime Museum in Japan. The survey showed that three of the five experiential factors proposed in this study (emotional, sensory, and relational) had a positive relationship with the respondents' intention to participate in both Korea and Japan. Moreover, the emotional factor had the most significant influence among the experiential factors affecting the intention to participate. The findings implied that maritime museums should improve not only their operational method of focusing on hosting information-oriented exhibitions but their emotional relationship with the viewers. This study provided theoretical and practical implications by conducting an empirical analysis of the effect of experiential factors on the intent to participate in maritime education culture through maritime museums. The findings of this study could also be applied to improve the quality of visitor experience and provide policy feedback.

Keyword : Maritime Museum, Marine Education Culture, Perceptions, Experiences, Comparative Study

1. Introduction

The ocean and the seacoast are important competitive assets of the Korean economy. Marine resources have contributed to the long-time economic growth as the industrial foundation of the national economy. However, now that changes in the internal and external conditions of the world's oceans are evident, balanced development in the maritime sector, as well as significant improvements, are necessary. In turn, it is necessary to examine the value of maritime education culture as a driving force for innovation. In response to such needs, a survey was recently conducted on maritime awareness and education using the education index of the PKNU (Pukyong National University) Maritime Index. The survey showed that while Korean citizens were deeply interested in the "oceans" of Korea in general,

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their educational knowledge of maritime culture was somewhat lacking. This study further showed that many people agreed on the necessity of a maritime education culture. The consensus was that it is important not to forget and to protect the oceans of Korea [1]. Nevertheless, detailed research on such maritime education culture and the experience in maritime museums are difficult to find.

The National Maritime Museum of Korea has recently announced that it would provide various non-face-to-face maritime education cultural content under the theme of the oceans and culture in response to the prolonged effects of the COVID-19 (corona virus disease-19). Along with the Ministry of Oceans and Fisheries, the museum has also announced its first basic plan to vitalize maritime education and culture to establish basic policies on maritime education culture to realize “more enjoyable oceans and happier citizens” [2]. They aim to continuously expand the industry in relevant sectors to create an ecosystem of the maritime education culture industry and to create and strengthen ties between maritime art and culture and the support to vitalize regional industries. Even in the marine and coastal areas, local marine and fisheries assets, such as the shipping industry, marine tourism, marine environment, and the fishing industry, have transitioned from the subject of “management” to the subject of “utilization and innovation”, enabling the creation of a new culture and the discovery and reexamination of innovative regional maritime culture projects. It is now the time for sustainability by accepting that the environment and resources are limited and making an effort to maintain sustainable use through reproduction.

Moreover, the social environment encourages the maritime industry to transition into the fourth industrial revolution, represented by artificial intelligence and big data. In response to the rapid changes in the digital environment, the government and individuals have recently acknowledged the importance of maritime education culture. Maritime education culture, of course, is primarily affected by the stability of the general social system and the level of perception toward individual challenges and confidence for success. Studies have also reported a huge gap between countries [3]. In other words, there is a need to analyze which cultural materials among the cultural factors of each country are most related to the maritime education culture. Many other studies do not sufficiently deal with maritime education, which should be considered in designing and implementing maritime policies.

This study thus aimed to analyze how the maritime education culture experience visitors have at maritime museums as experience providers affect their intent to participate. In addition, this study aimed to examine the difference in the perception and experience of the visitors who visited maritime museums in Korea and Japan, a country also located in the East Asian region. Furthermore, by comparing the causes of these differences, this study aimed to contribute to future research by exploring the strategic

significance of the experiential factor as a critical factor to maintain the long-term relationship between the maritime museum and its visitors and improve their participation intention.

2. Relevant Work

This chapter presents a review of literature relevant to maritime museum, Kobe maritime museum, PKNU maritime index, marine education culture, and the relationship between them. First, the main issues under debate regarding maritime museum are explored. Second, different approaches to marine education culture are compared. Finally, the relationship between experiential factors and its effect on participation intention is investigated.

2.1 Maritime Museum

Maritime museums focus on maritime themes, including maritime history, science, culture, and historical figures. While there are many “maritime museums” globally, many exhibit various materials on maritime wars, folklore, and natural history, so few museums can be genuinely classified as maritime museums [4]. However, modern museums are not merely facilities that exhibit historical artifacts and materials for viewers but have evolved to become open spaces for a cultural experience that enhances the visitors' understanding of marine culture and offers various experiences. Museums nowadays are not solely focused on their role as exhibitors but strive to approach their viewers by taking a new perspective and balancing maritime-oriented exhibitions and experiences. In this context, the Korean National Maritime Museum is evolving into a maritime park that provides various interesting factors and unusual experiences on maritime history, maritime culture, maritime industry, marine life, historical figures, and exhibitions under the grand theme of the ocean.

The Korea National Maritime Museum opened in July 2012 as a museum specializing in maritime subjects to enhance the national awareness toward maritime culture and establish a comprehensive maritime museum that could serve as a landmark of a country with maritime power. The Korea National Maritime Museum has four floors and serves as a cultural space with exhibition halls for various fields, including maritime history, historical figures, ships, and cultural industry. The auditorium and the Maritime Library are situated on the first floor and the second floor, under the theme “Learning the Ocean”, is home to the children's museum and special exhibition halls where children can view various performances related to the ocean and the environment and engage in experience-based activities. There is an exhibition hall for ships on the third floor and exhibition halls with experience-based

activities where visitors can learn and feel the maritime history and culture through artifacts. Through its aquarium, permanent exhibition halls (8 in total), and special exhibition hall, the museum provides comprehensive information and educational service on maritime themes, including maritime history and figures, marine science, marine life, and marine industry. The fourth floor, themed “Sailing to the Ocean”, features the Marine Industry room, which focuses on the future of the ocean in regards to its economic value and productive capacity, and the marine science and maritime territory rooms which present the sea's new possibilities and future. An exhibition on the expansion of maritime culture-related infrastructure as well as artifacts, including traditional fish passes and artifacts for worshipping ocean deities, can also be found [5].

Most of the previous studies on maritime museums have focused on floor planning that reflects the characteristics of the space, exhibition design, and the enhancement and development of educational programs, such as experience-based activities [6]. For instance, one study analyzed the public perception of institutions that protect marine habitats by becoming artificial habitats for endangered and general marine life [7]. Another research has conducted an overall review of the establishment, exhibitions, and operation of the Korea National Maritime Museum [Fig. 1] [8].



[Fig. 1] Korea National Maritime Museum (Source: Korea National Maritime Museum Website)

2.2 Kobe Maritime Museum (神戸海洋博物館)

The Kobe Maritime Museum was opened in 1987 under the theme of the ocean, ships, and port to commemorate the 120th anniversary of the opening of the port of Kobe. The museum was initially an exhibition hall with a variety of exhibitions on the past and future of the port of Kobe, the maritime history of Japan, and exhibitions on ships, ports, and trade. However, after it reopened in 2005, visitors can view and experience navigational instruments and ship tools, and by strengthening the museum's

character to reflect maritime culture, it has encouraged visitors to visit the museum daily. The exterior of the museum resembles a sail [Fig. 2]. The first floor has a corner that introduces a ship's mechanism, along with exhibition halls for ships and navigations that exhibit materials on ship equipment and navigational instruments. Facilities at the port of Kobe, the structure of a ship, dioramas, and video graphics are also exhibited. Other exhibitions include Japan's first Italian gondola and the model of the British battleship HMS Rodney, which fired a salute to celebrate the opening of the port of Kobe in 1868. Video materials related to the history of the port of Kobe and the sea are shown on the second floor. The museum also introduces various cultures that were introduced to Kobe after the opening of the port. The outer exhibition room consists of the crewless submarine, which can observe the sea and acquire data, and a memorial park that visualized the disastrous situation after the wake of the Kobe Earthquake and the city's restoration process. The museum is also home to “Kawasaki Good Times World”, a museum established by Kawasaki Heavy Industries. Unlike other maritime museums, this museum is a company museum built within the Kobe Maritime Museum grounds by Kawasaki Heavy Industries. The museum, situated right next to the Kobe Maritime Museum, introduces the history, technology, and products of Kawasaki Heavy Industries, which shares the history with the port of Kobe. The museum displays the Kawasaki Group's land, sea, and air projects by exhibiting actual Shinkansen trains, helicopters, and motorcycles [9].

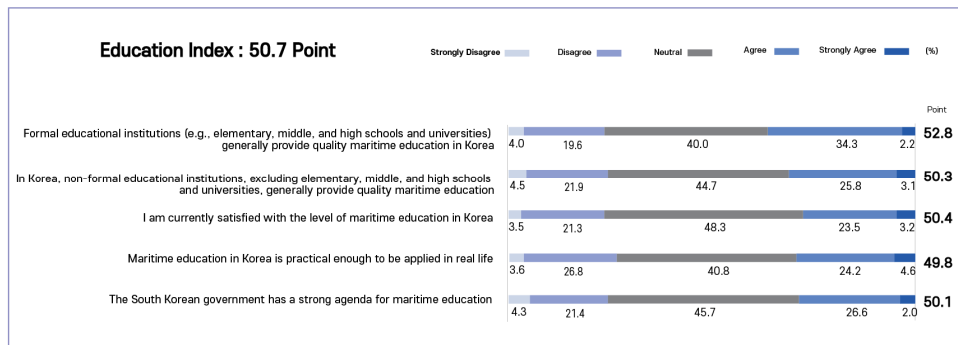


[Fig. 2] Exterior of the Kobe Maritime Museum (Source: Kobe Maritime Museum Website)

2.3 PKNU Maritime Index (Education Index)

In Korea, there is an index called the PKNU Maritime Index, which comprehensively shows the perception of the sea in Korea. This index, which was created by asking 1,200 adults “What is the sea

to Koreans?” has laid the foundation for maritime humanities and has been used as basic data for the research on maritime education, the maritime cultural industry, and marine experience [10]. The 2019 survey showed that Koreans had a positive and friendly image of the sea but were lacking in maritime education and displayed a low level of safety consciousness [Fig. 3]. More specifically, the education index, which is the overall level of maritime education, was 50.7, and the general satisfaction rate of the education programs, as well as the satisfaction rate by educational institutions, and educational content, were somewhat low.



[Fig. 3] PKNU Maritime Index (Education Index)

2.4 Marine Education Culture

There are many studies that report the educational effectiveness of maritime culture activities [11]. In particular, marine-related educators in the United States presented the basic concepts for “ocean literacy” as a basic knowledge as a citizen in 2005, after acknowledging the importance of maritime education [12]. An educational method that could garner learners' interest and provide attractions is needed to enhance the effectiveness of maritime education. Various plans have been prepared to promote maritime education, such as the establishment of maritime culture spaces and the harmonization between the conservation of maritime cultural resources and its modern use, with ocean literacy at the basis. The Ministry of Oceans and Fisheries and the Korea National Maritime Museum also run online education programs to allow citizens to enjoy maritime education culture-related content using the non-face-to-face method safely.

The ministry and museum are also promoting maritime education culture in schools and the perception of the value of maritime cultural resources and supporting research and digitization. Moreover, through an investigation for a general overview of maritime cultural resources, they are embarking on

the excavation, protection, and space regeneration of maritime cultural resources to enhance their values. On the other hand, they are using maritime culture experience-based programs, which use and apply experience-based education, to enhance the maritime perception of the general public. As it has become more difficult to conduct face-to-face educational activities due to the outbreak of COVID-19, the government also created mobile-centered online educational programs using the marine education portal website (www.ilovesea.or.kr) so that users of varying age groups can easily access maritime culture educational content. The government has also established the “K-Ocean Massive Open Online Course; MOOC) Platform”, a customized education service based on big data, to expand opportunities for maritime education through online and mobile channels [13].

3. Research Design and Methods

This chapter describes the research methods that were used in this study. The target population and sample, instrumentation, and the methods for data collection and research hypotheses are presented.

3.1 Participants

Before conducting the survey, visits to each marine museums in Korea and Japan were confirmed, and those without experience were not included in the sample. Convenience sampling was used to collect and analyze online responses from 280 visitors (150 Koreans and 130 Japanese) who visited maritime museums from August 5, 2020, to September 1, 2020. The personal information of the 280 respondents showed that 84 among the 150 Korean respondents were men and 66 were women, each accounting for 56% and 44%. In terms of age, the number of people in their 20s (36.7%) was the highest, followed by people in their 30s (25.3%) and 40s (23.3%). In terms of profession, students accounted for 66.7% of the respondents, followed by office workers (21.3%). For the item on annual visits to museums on average, 56% of the respondents replied that they visit museums once or less every year, while 42% replied that they visit them two to four times a year, and 1.3% five to seven times a year. In Japan, 72 out of 130 respondents were men (55.4%), and 58 were women (44.6%). In terms of age, the number of people in their 20s (55.4%) was the highest, followed by people in their 30s (43.8%) and 40s (.8%). In terms of profession, students account for 45% or higher, followed by office workers (28.3%). For the item on annual visits to museums on average, 36.9% replied that they visited museums two to four times every year, and 26.2% replied that they visited once or less, and 21.5% five to seven times a year.

3.2 Measures

The measurement items of each variable in this study consisted of items that have already proven to be reliable and valid in previous studies and were measured on a Likert 5-point scale. This study used the five factors (sense, feel, think, act, and relate) and reorganized the measurement items [14]. The intention to participate, that is, the intention to participate in maritime education culture, was measured by using the three scale items [15].

3.3 Research Hypotheses

It was argued that experiences are responses triggered by specific stimuli, and are private events that occur to individuals [14]. It was named the various responses that consumers can display through experiences as Strategic Experiential Modules (SEMs) and classified them into five different types of experiences: sensory experiences (Sense), affective experiences (Feel), cognitive experiences (Think), physical experiences (Act), and relational experiences (Relate) [14]. The SEMs would make maritime museums more approachable to visitors, and in the long run, would have a positive effect on the image of maritime museums. Moreover, the museums would not only provide an ideal environment as a space that provides visitors with an experience of maritime education culture but also differentiate and enhance the visitors' intention to participate by allowing them to experience maritime education culture in various ways.

Consumers respond to direct and indirect experiences. Therefore, it has become more important to appeal to consumers by using all five senses. Consumer experience can be classified into five categories. Sensory experiences (Sense) stimulate all five senses - seeing, hearing, smelling, tasting, and touching - to transmit excitement and satisfaction. For example, department stores and distributors use sounds and scents as strategies. Affective experiences (Feel) affect the positive joy and pride of people to create affective experiences, varying from a light mood to a strong emotion. Cognitive experiences (Think) induce consumers to think creatively. Cognition allows consumers to have a convergent or divergent way of thinking through curiosity, surprise, and interest. Physical experience (Act) indicates the actions that affect the lifestyle and interaction regarding the consumers' experience with products and services. Relational experiences (Relate) connect individuals with their ideal self or others and other cultures, thereby stimulating the consumers' desire for self-development. Relational experiences refer to links with other people or other social groups, societies, and cultures that go beyond the individual level, through which individuals attempt to maintain relationships [14].

This study aimed to compare and analyze the effect of overall experience on the intent to participate in Korea and Japan. Therefore, this study posited the following hypotheses based on the findings of previous works.

[H 1-1] Affective experiences will positively affect the participation intention of Korean visitors.

[H 1-2] Sensory experiences will positively affect the participation intention of Korean visitors.

[H 1-3] Cognitive experiences will positively affect the participation intention of Korean visitors.

[H 1-4] Relational experiences will positively affect the participation intention of Korean visitors.

[H 1-5] Physical experiences will positively affect the participation intention of Korean visitors.

[H 2-1] Affective experiences will positively affect the participation intention of Japanese visitors.

[H 2-2] Sensory experiences will positively affect the participation intention of Japanese visitors.

[H 2-3] Cognitive experiences will positively affect the participation intention of Japanese visitors.

[H 2-4] Relational experiences will positively affect the participation intention of Japanese visitors.

[H 2-5] Physical experiences will positively affect the participation intention of Japanese visitors.

4. Results

This chapter presents the results of the data analysis in this study. First, descriptive statistics and correlations are presented. Second, results of the regressions that tested hypotheses effects are presented. Additionally, The variance inflation factor (VIF) values of the predictor variables in the data did not indicate occurrence of multicollinearity.

4.1 Descriptive Statistics and Correlations

Before the hypotheses testing, this study used SPSS 26.0 to present the descriptive statistics (mean and standard deviation) and correlation analysis and presented the analysis results between the variables in [Table 1] and [Table 2]. The Cronbach's α coefficient for feeling was .792 in Korea and .805 in Japan, and the coefficient for sense was .725 in Korea and .734 in Japan. The Cronbach's α for cognition (.708 in Korea and .757 in Japan), action (.732 in Korea and .876 in Japan), relation (.705 in Korea and .773 in Japan), and finally participation intention (.915 in Korea and .823 in Japan) were all higher than .70, thereby ensuring internal consistency.

Analysis of the correlation showed that in Korea, sense and feeling showed the highest correlation ($r=.629$), and the correlation between and action was the lowest ($r=.323$). Sense and feeling showed the

highest correlation ($r=.644$) in Japan, and the correlation between feeling and relation was the lowest ($r=.342$). The correlation coefficient between each variable showed a significantly positive correlation at the level of $\alpha=.001$.

[Table 1] Descriptive Statistics and Correlations (Korea)

Variables	Mean	SD	1	2	3	4	5	6
1. Feel	2.9378	.61322	.792					
2. Sens	2.9693	.61991	<i>.629**</i>	.725				
3. Think	3.2150	.69302	<i>.453**</i>	<i>.495**</i>	.708			
4. Relate	3.0622	.61474	<i>.361**</i>	<i>.402**</i>	<i>.298**</i>	.705		
5. Act	3.2533	.75916	<i>.342**</i>	<i>.400**</i>	<i>.353**</i>	<i>.323**</i>	.732	
6. Intention to participate	2.8830	.54984	<i>.559**</i>	<i>.502**</i>	<i>.361**</i>	<i>.392**</i>	<i>.336**</i>	.915

Note. ** $p<.001$. Cronbach's alpha coefficients are presented in bold on the diagonal, and italicized values represent Pearson's correlation coefficients between pairs of categories.

[Table 2] Descriptive Statistics and Correlations (Japan)

Variables	Mean	SD	1	2	3	4	5	6
1. Feel	2.9449	.61993	.805					
2. Sens	2.9523	.64450	<i>.644**</i>	.734				
3. Think	3.1615	.71519	<i>.460**</i>	<i>.531**</i>	.757			
4. Relate	3.1154	.62494	<i>.342**</i>	<i>.413**</i>	<i>.374**</i>	.773		
5. Act	3.2500	.75290	<i>.374**</i>	<i>.456**</i>	<i>.362**</i>	<i>.389**</i>	.876	
6. Intention to participate	2.9056	.55781	<i>.552**</i>	<i>.543**</i>	<i>.408**</i>	<i>.400**</i>	<i>.397**</i>	.823

Note. ** $p<.001$. Cronbach's alpha coefficients are presented in bold on the diagonal, and italicized values represent Pearson's correlation coefficients between pairs of categories.

4.2 The results of hypotheses testing

As shown in [Table 3], multiple regression analysis was performed to examine the relationship between the experience factor, the independent variable, and the participation intention, the outcome variable. The regression analysis on the participation intention of Korean visitors showed that among the five predictors, three items - affective experience, sensory experience, and relational experience - had a statistically significant relationship with participation intention. The standardized regression coefficient (β) of the three items showed that the standardized regression coefficient of affective experience ($\beta=.350$, $p<.001$) was the highest, which showed that it is the strongest predictor for participation intention.

Feeling ($\beta=.297$, $p<.001$) had the most significant influence on participation intention in Japan as well, which was followed by sense ($\beta=.206$, $p<.01$) and relate ($\beta=.145$, $p<.05$).

[Table 3] Results of Regression Analysis

Model	Hypotheses	B	β	SE	t	VIF	
Korea (n=150)	H 1-1	.314	.350	.078	4.021***	1.770	dependent variable: Intention to participate F=17.923***, R ² =.384, Adjusted R ² =.362
	H 1-2	.143	.161	.081	1.760*	1.953	
	H 1-3	.036	.046	.062	.583	1.435	
	H 1-4	.143	.160	.066	2.169**	1.266	
	H 1-5	.061	.084	.054	1.138	1.282	
Japan (n=130)	H 2-1	.267	.297	.083	3.206***	1.789	dependent variable: Intention to participate F=16.904***, R ² =.405, Adjusted R ² =.381
	H 2-2	.178	.206	.087	2.046**	2.106	
	H 2-3	.053	.067	.066	.792	1.507	
	H 2-4	.129	.145	.071	1.819*	1.326	
	H 2-5	.083	.112	.060	1.377	1.371	

Note. * $p<.05$, ** $p<.01$, *** $p<.001$

5. Findings and Discussion

Many countries and local governments worldwide are actively promoting new growth engine industries based on the maritime economy. Rather than stopping at developing maritime resources and using them in other industries, such as the manufacturing industry, governments are linking them with the maritime economy and the industrial system to pioneer new fields of industries and new paths for regional development, including marine biotechnology, maritime tourism, and maritime culture. After reviewing previous studies, unlike other theories, does not consider experience as one of many existing types but incorporates the overall experiences to analyze the experience [16].

The findings of this study were as follows. In the case of Korea, three factors (feel, sense, and relate) out of the five SEMs had a positive relationship with the respondents' participation intention [16]. The sense was also the strongest experiential factor that affected the respondents' intention to participate. Due to the characteristics of maritime museums, relating played an essential role in inducing the visitors to participate in the activities. Such findings implied that maritime museums should not only consider their previous operation method of providing information-loaded exhibitions but should improve how their visitors feel about the museum. This indicates that maritime museums should maximize visitor satisfaction by providing the best service through affective experiences.

Consequently, this study showed that maritime museums should gain a practical perspective and

knowledge on the overall process of creating maritime education culture, starting from planning maritime education culture, program development and production, and content creation. Now, as experiential consumers have become the major player in the market, the planning, and designing of experiences has become more sophisticated. This study conducted multi-source feedback on the visitors' experience in maritime museums and suggested developmental plans for maritime museums. Museums should prepare more effective experiences so that visitors can have a continuous experience that could satisfy their values. In addition, this study compared the difference in maritime education culture in Korea and Japan based on the perceptions and experiences of visitors of maritime museums. This study also used the five SEMs models as an alternative to the existing approaches used in maritime education culture research to understand the relationship between the maritime museums and positively change perceptions [16]. Through such efforts, the goals of maritime education culture, of cultivating and expanding the base of ocean awareness, could be fulfilled. Such awareness would become the foundation for revitalizing the maritime education culture.

However, there have been some shortcomings and limitations to this study. First, the collected data was limited to university students in Korea and Japan, so the research findings may not apply to all visitors. Therefore, visitor groups with other characteristics should be included in the sample to improve the external validity of this research. Second, there is a lack of discussion on the causes, such as cultural characteristics and values, as to why the Korean and Japanese visitors perceived slight differences [17]. The target audience should not only be limited to Korean and Japanese visitors but should also be expanded to other cultures.

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