How Digital Capabilities Can Influence the Co-Creation of the Yacht-Tourism Experience: A Case Study of Indonesia’s Marine Tourism Destinations

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Abstract. This paper intends to examine the effects of digital capabilities on the co-creation of the experience of Indonesia’s marine tourism destinations from the perspective of international visitors sailing into Indonesia on yachts. Data were collected from questionnaires administered to tourists as they were berthing. A total of 109 questionnaires were collected from 67 yachts. The results of the analysis show that digital capabilities to value co-creation exert significant effects. The ability of destinations to utilize varied end users applications pertaining to marine tourism destinations was found to be the most important factor influencing the co-creation of the tourist experience of marine destinations in Indonesia.

Keywords: digital capabilities, co-creation of experience, yacht tourism, marine tourism destinations

1 Introduction

1.1 Research Background

The 2016 Organisation for Economic Co-operation and Development (OECD) report states that the wealth of the future world is in the oceans because they make up most of the Earth’s surface. The exploitation and exploration of the open seas have just achieved 1% of its total potential. The rapid development of science and technology is expected to be more capable of managing marine resources. The OECD (2016) report also predicts that by 2030, marine tourism will be the third largest contributor to the marine economy after oil and gas, and fisheries.

As the largest archipelagic country in the world, Indonesia is endowed with a favorable climate, a rich and unique marine biodiversity, a diverse cultural heritage, as well as beautiful and rich landscapes and seascapes. These attributes make the country a paradise for marine tourists, who can find different experiences from one destination to another. However, the unique resources have not yet been developed or supported by efforts to make Indonesia as the most preferred tourism destination for the international community of marine tourists. There are several reasons for this deficiency, including the previous government’s focus on land tourism in its development policy, the lack of facilities and competencies to service marine tourists, and the remoteness of the islands and destinations. Hence, the growth of Indonesia’s marine tourism development is very slow. It was just in 2015 that the government expressed its commitment to the development of the maritime sector including marine tourism as a means of improving the welfare of local communities, especially in the most remote corners of the archipelago. The government issued the Presidential Decree No. 105 of 2015 to ease the rules of entrance to Indonesian waters and to eliminate the Clearance Approval for Indonesian Territory (CAIT) requirements. In addition, the Government of Indonesia developed an online system for both agents and private individuals who want to sail to Indonesian waters. The online application or Vessel Declaration (VD) may be processed within 24 hours. In the interim the foreign visiting vessel can stay in Indonesian waters for three years if it reports to a nearby port every six months. The government of Indonesia (GOI) has also determined twenty-one (21) entry and exit points where foreign visiting yachts may clear their customs, immigration, quarantine, and port clearance (CIQP) formalities at a single, full-service window.

Tourism is a highly information intensive sector as tourists seek information to help them plan their travel, determine destination options, and to satisfy their needs while on a trip (Farkhondehzadeh, Robat Karim, Roshanfekr, Azizi, & Legha Hatami, 2013). Most tourism products are services that cannot be stored: they are perishable and are consumed as they are produced (Berry & Parasuraman, 2000). At the same time, they are purchased before the time of use, experienced after arriving at the travel site, and best evaluated after they are consumed. The purchase of tourism products is thus associated with a higher level of perception of risks. Visitors are therefore likely to look for a greater amount of information via the Internet to reduce their risks, according to Buhalis and Jun (2011). The Internet helps individuals to plan their travels: they can obtain information about destinations and their resources, be more independent, connect directly with tourism destinations (Buhalis & Jun, 2011), book their own travel reservations (Minghetti & Buhalis, 2010), and create their own travel itineraries through applications (Burgess, Parish, & Alcock, 2011). The rapid development of the Internet and the
advancement of information and communication technology (ICT) have revolutionized travel planning and marketing (Rutty, Gössling, Scott, & Hall, 2015) and have transformed the way tourism-related information is produced and distributed (Berne, Garcia-Gonzalez, & Mugica, 2012). These new means have been rapidly diffused throughout tourism sectors (Buhalis & Law, 2008).

According to Buhalis and Law (2008), the Internet enables travelers to access reliable and accurate information, undertake reservations real time and lower their costs and inconveniences in comparison to conventional methods. The Internet has helped to enhance service quality and has contributed to higher tourist satisfaction. The Internet also provides access to transparent and easy-to-compare information on destinations, holiday packages, travel, lodging, and leisure services, and travelers can ascertain their real-time prices and availability through myriad Internet applications. More consumers now utilize commercial and non-commercial Internet sites to plan, search, reserve, purchase, and amend their tourism products. Users can also get immediate confirmations and speedy travel documents. Prospective travelers can thus look at the last minute. Experienced travelers are empowered by ICT and are able to use information and booking systems to improve their personal efficiencies and competencies. According to Turban et al. (2008) and Buhalas and Jun (2011), there are several benefits of ICT, of which two are paramount: the facilitation of the tourism experience before, during, and after a visit, and the coordination of all partners and businesses involved in the production and delivery of tourism, especially since the tourism industry comprises an amalgam of products and services such as accommodation, transportation, food and beverages, attractions and activities, events and conferences, tourism retail, and other services (Buhalas, 2003).

It is now imperative for businesses engaged in tourism to participate in online tourist communities and to take part in online markets (Madasu, 2013). They cannot avoid the current tourism digital trends (Litvin, Goldsmith, & Pan, 2008), and ICT can improve business collaboration. More, it has also led to the development of interactive online services, the personalization of the tourism experience, and the social sharing of information about visits to particular destinations (McCabe, Sharples, & Foster, 2012). Digitalization and digitized information in tourism have become the global norm (Yeoman, 2012) and are used as marketing strategies to increase trust and customer value (Burgess et al., 2011). ICT has thus become a very significant driver of tourism innovation (Ali & Frew, 2014) and it is critical for tourism (Buhalas, 2003). It is also crucial to the long-term prosperity of the industry (Liburd, 2005).

The main issues pertaining to the development of Indonesia’s marine tourism are the remoteness of the destinations and the high variations and deficiencies in the facilities and services that are offered. The government of Indonesia (GOI) has allowed online vessel registrations; hence, ICT enablers are definitely required, as are Internet connections in every marine tourism destination, especially at the entry and exit points. The destinations should therefore possess digital capabilities in order to be able to conduct and control the entry and exit procedures, to get close to the customers, and to collaborate with other stakeholders within the destination. The digital capabilities will enable destinations to achieve competitive advantage; thus, the marine destinations and their allied tourism industries should possess digital capabilities to win the competition.

In addition, the world is now entering the era of the sharing economy. To achieve optimum efficiency and effectiveness and to create superior value, people must be able to share resources and to co-produce. Hence, they must be included within an ecosystem or community. This premise has resulted in a new value co-creation paradigm that incorporates the customer from the initial design process to the post-consumption point. Previously, the production of value was handled only by marketers and manufacturers. The new model means that businesses engaged in all industries, including tourism, must embrace the value co-creation approach and collaborate with stakeholders across the business value networks: the company, suppliers, partners, customers, and end-users. To make this collaboration effective, a company must support the ability for the end-users to recreate value or to effect real changes in their products, services, and business processes (Allen, 2009). Value co-creation is an emerging type of business practice in which customers work with enterprises to co-create value through close collaboration with other members of value chain. Thus, consumers have a say in the specification, design, manufacturing, distribution, and support of products and services. Value co-creation is associated with the opportunity to gain competitive advantage by developing unique competencies along with the appropriate organizational resources and technological capabilities that aim to better satisfy customer demands for personalized products, services, and experiences (Prahalad & Ramaswamy, 2004). Value co-creation is a phenomenon that emerges within a socio-technical value network and includes an ICT architecture orchestrated by a nodal organization and aimed at extending opportunities for customer participation by integrating their knowledge and contributions into specific personal preferences, needs, and contexts (Allen, 2009).

According to Azevedo (2010), today’s travelers look for unique experiences in the tourism context. They are in constant pursuit of new destinations and new activities to quench their thirst for novel experiences. Therefore, the hospitality and tourism industries constantly search for creative ideas and innovative products or services that can satisfy their customers’ desires for novel enjoyable experiences. The demand for unique and imaginative products or services is thus rising as hospitality and tourism operators search for ways to differentiate themselves and gain a competitive advantage over rivals who offer more conventional products and services.
Sailing is a special interest tourism sector. There are three principal aspects that make the experience: the sailing and navigation, the berthing, and the destination. For the tourist, the ultimate value of the experience vests at the destination, where the travelers can participate in the production and enjoyment of varied experiences during their visit (Mikulić, Krešić, & Kožić, 2015). The planning, discussing, and selection of vacation trips may be viewed as positive activities in themselves, enhancing the overall experience value of tourist trips (Hoch & Deighton, 1989). Traveling involves encounters with unfamiliar scenes and people. It encompasses the rendering, coping, and co-creating of valuable situational experiences that are dependent on the skills, interests, and knowledge of the tourist: socializing, discussing, receiving information, rescheduling planned activities, etc. (Prebensen & Foss, 2011). The more a customer puts into the tourist experience, the more that person experiences positive and memorable experience value (Kim, Ritchie, & McCormick, 2012).

Therefore, this study aims to verify whether digital capabilities influence the co-creation of value and attempts to identify the factors that should be of concern for marine tourism destinations to help them develop their digital capabilities and aid in the co-creation of the travel experience of yachting tourists.

2. Theoretical Framework

2.1 Digital Capabilities

Pechlaner, Bachinger, Volgger and Anzengruber-Fischer (2014) clarify that the concept of capabilities was originally derived from the resource-based view (RBV), according to which competitive advantage is primarily vested in a set of resources and skills. Day (1994) posits that capabilities became increasingly important as the turbulence of the business environment made it difficult for enterprises to adapt to changes. In such a scenario, successful businesses tended to be those who possessed valuable, rare, inimitable, and non-substitutable core competencies. In 1957, Selzник was the first scholar to recognize that skill and knowledge management as distinctive competencies, while Penrose determined in 1959 that companies could be considered a set of resources. Andrews pioneered RBV in 1971 to describe the corporate strategy: a company will compete and will focus its resources to transfer distinctive competencies into its competitive advantage over its rivals.

Capabilities may be defined as an enterprise’s competencies in successfully undertaking actions that affect its long term growth and development through complex bundles of skills and accumulated knowledge exercised through organizational processes (Lenz, 1980). Capabilities enable companies to generate superior products (Toften & Hammersvoll, 2009), to envision a core strategy to develop competitiveness through inimitable systemic skills and to differentiate the company from other companies (Cho, 2014). According to Parnell (2011), capabilities look to internal strengths as the basis for the development of sustainable competitive advantage: the company’s resources of assets and skills. Camison et al. (2015) argue that capabilities denote a firm’s skills in exploiting physical and non-physical resources through its routine organizational activities to achieve its goals.

Many types of capabilities have been postulated for organizations to win over their rivals since the concept was first proposed: continuous innovation capability (Slater, 1997), marketing capability (Zarvsnick, 2005); dynamic capability (Walsh et al., 2013), organizational capabilities (Boonpattarakan, 2012), information system capability (Gil-Padilla & Espino Rodriguez, 2008), technological capabilities, learning capabilities, dynamic capabilities (Walsh et al., 2013), and innovation capabilities (Baumane, Lund, Simonova, Timofejevs, Vedina, & Wrobel, 2011).

ICT and digitalization are imperative to the tourism sector. Their requirement is especially vital for the growth of competitive marine tourism destinations because much specialized information must be managed for marine tourists. Hence, this study proposes that digital capabilities are crucial for by marine tourism destinations. The dimensions of digital capabilities refer to the ability of destinations to use digital technology as proposed by Buhalis et al. (2013). These authors assert that tourist destinations must develop cloud computing capabilities or provide robust web platforms that include data storage through certain networks. Travel destinations should also have the ability to tap into the Internet of Things so that they can provide and control information through the consumer’s location and activities as well as develop location based digital advertisements. Tourism destinations must also inculcate their ability to provide end-users the Internet connectivity through varied applications. Table 1 presents the indicators of digital capabilities used in this study.

| Variable                  | Definition                                                                 | Indicators                         |
|---------------------------|---------------------------------------------------------------------------|------------------------------------|
| Digital Capabilities      | The ability of tourism destination and its tourism industries to utilize ICT and digital technology | Cloud computing competence         |
|                           |                                                                          | Internet of things capability       |
|                           |                                                                          | Ability to manage various end user applications |
2.2 Co-creation of Experience

Prahalad and Hamel (1991) were the first researchers who developed the notion of value co-creation even though the idea was initially introduced by Kotler (1986), who coined the term ‘prosumer’ as the merging of the producer and consumer to co-create value (Terblanche, 2014). The conceptual cognition of value co-creation was adapted from Normann and Ramirez’s (1993) ideas on co-production to explain a process in which suppliers, partners, allies, and customers co-produce value. The principal strategic task entails the reconfiguration of an enterprise’s relationships and business. The goal is not to create value for the customer but to mobilize the customer to create value from the various offerings of the enterprise. The concept continued to develop to the co-creation of value by all stakeholders active in the value chain (Allen, 2009; Prebensen et al., 2010), especially in the current economic philosophy that is centered on the creation of business ecosystems and collaborations.

The new service-dominant logic (SD logic) of marketing (Gronroos, 2006; Lusch & Vargo, 2006; Vargo & Lusch, 2004, 2006, 2008) acknowledges the consumer’s or tourist’s role in value creation and co-creation. This rationale includes the idea that consumers act as resource integrators (Arnould et al, 2006; Dabholkar, 1990; Holbrook, 1996, 2006; Vargo & Lusch, 2006) in the process of value co-creation. Value is focused on the experiences of consumers (Prahalad & Ramaswamy, 2004; Prebensen & Foss, 2011; Richards & Wilson, 2006). The foundational idea of the SD Logic is that the service encounter is a value exchange process between the customer and the service provider. This perspective holds that the consumers, their skills, and their knowledge, depicted as operant resources, contribute to value creation by integrating physical, social, and cultural resources (Arnould et al., 2006; Prebensen, Vittersø, & Dahl, 2013).

For the tourist, the experience value rests in the travel destination and the traveler participates in the production and enjoyment of varied experiences during the visit (Sandstorm et al., 2008). Planning, discussing, and selecting vacation trips may be seen as positive activities in themselves, enhancing the overall experience value of the trip (Hoch & Deighton, 1989). Travelling involves encountering unfamiliar scenes and people, and also the rendering, coping with, and co-creating of valuable situational experiences depending on the skills, interests, and knowledge of the tourist such as socializing, discussing, receiving information, rescheduling planned activities. (Prebensen & Foss, 2011). The more customer puts into at tourist experience, the more that person experiences positive and memorable experience value (Kim et al., 2012).

The consumer is seen as an active agent in the consumption and production of experiences according to the theory of the co-creation of values, which regards customer involvement as essential for the defining and designing of the experience. In addition to participation and involvement, co-creating experiences on vacations involve interactions with other people (e.g., between the host and guest) and with products and services in various service-scapes (Bitner, 1992). These interfaces result in increased or decreased value for themselves and others, in that it is an interactive, relativistic, and preferential experience (Holbrook, 2006). Experience value occurs through co-creation processes. The time, the effort or even the money spent are important resources that contribute to the manner in which tourists become involved in host-guest interactions. Experience value comprises the perceived benefits of the tourist from the travel to and hospitality at a destination. It includes the assets or resources that the tourist, other tourists, and hosts bring to the process of co-creating experiences. Major benefits of co-created value lie in its potential to raise the perceived service quality levels and elevated experience levels (Payne, Storbacka, & Frow, 2008) for Customers. The concept of value co-creation is, however, not necessarily limited to customer interactions with service staff. To illustrate, for services provided in customer group formats, value may also be co-created through interactions that occur solely between service customers (Gruen, Osmonbekov, & Czaplewski, 2007). As addressed, value may be co-created not only by virtue of human interactions but also through consumer contact with the digital communications environment (Sawhney, Verona, & Prandelli, 2005).

| Variable                     | Definition                                                                 | Indicators                      |
|------------------------------|---------------------------------------------------------------------------|---------------------------------|
| Co-creation of experience    | The collaborative, collective, and dynamic co-creation of experience by customers and tourism stakeholders in tourism destinations, through utilization of the Internet. | Interactive discourse          |
|                              |                                                                           | Customer’s access to resources  |
|                              |                                                                           | Customer’s understanding of risks and benefits |
|                              |                                                                           | Transparency of information     |
|                              |                                                                           | Management Technology           |

Prahalad and Ramaswamy (2004) suggest the DART model that covers four value co-creation components: 1) dialogue or interactive discourse mechanisms at each stage in value chain activities; 2) access to resources and processes of businesses that enable a number of discrete experiences to customers; 3) risk assessment, which
allows customers to transparently compare the risk-benefit relationship; and 4) transparency in information dissemination to develop trust between a business and a customer in developing close relationship so that value co-creation can be realized. Besides DART, Anne Coussment and J Teague (2013), as well as Schiavone, Metallo and Agrifoglio (2014), consider it important to add technology management to the Prahalad and Ramaswamy’s DART model on the premise that technology management supports customer interactions in the customer experience or social networks. Table 2 evinces the dimensions of the co-creation of experience used in this study.

2.3 Digital Capabilities and Co-creation of Experience

Some researchers such as Ngugi, Johnsen and Erde’lyi (2010) and Preikschas (2014) assert the existence of a relationship between capabilities and value co-creation. Others such as Rajah, Marshall and Nam (2008) and Lusch and Vargo (2011) identify the association between marketing strategy and value co-creation is. According to the above premises on digital capabilities and the co-creation of experience, the research framework may be illustrated as follows:

![Figure 1. Research Methodology](image)

**Hypothesis**

Based on the above discussion, the hypothesis for this study is:

**H1**: Digital capabilities affect value co-creation in marine tourism destinations in Indonesia, specifically in the specialized sector of yacht sailing.

3. Methodology

This research adopts a quantitative method and utilizes the Structural Equation Modelling (SEM) to generalize the results. It maintains the features obtained from a principal component analysis and applies multiple regression analyses to the data (Hanlein & Kaplan, 2004). It is useful to predict a set of dependent variables from a large set of independent variables. Data were collected through the administration of questionnaires from yachting tourists as they were berthing. A total of 106 questionnaires were collected, representing 67 yachts participating in the Wonderful Sail to Indonesia in 2017. The time of horizon for the research was one-shot. The respondents were asked for their perspectives on 3 indicators of digital capabilities and 4 markers of value co-creation on a five point scale where 1 implied very bad and 5 signified very good. The t-test with the error rate of 0.05 was used for the statistical examination of whether digital capabilities exerted significant effects on value co-creation.

4. Results and Discussion

The data analysis results reveal that the overall suitability of the model is adequate as the global fit indices, Chi-Square (28.96), CFI (0.95), and TLI/NNFI (0.94) were within the range of good fit (Table 3). The chi-square statistic test is conducted to ascertain whether the observed data fit the hypothesis of the proposed model, and a smaller chi-square value indicates a better fit (Sim et al., 2006). However, for small sample sizes that might have slightly departed from normality, chi-squares are not robust model fit indicators (Sim et al., 2006). The chi-value in Table 2 is significant ($\chi^2$ with 160 degree of freedom = 28.96 ($p< 0.05$)). Other measures of fit include the goodness of fit index (GFI) and the normed fit index (NFI). Both the GFI and NFI are always between zero and one, with one indicating a perfect fit while any value above 0.9 suggests a good fit (Bentler & Bonett, 1990). The model has a GFI of 0.94 and an NFI of 0.88. The GFI shows a good fit while NFI and the adjusted goodness of fit (AGFI) are 0.88 shows marginal fit. Similarly, the non-normed fit index (NNFI) and the comparative fit index (CFI) are two additional measures ranging from 0 to 1, where values close to or greater than 0.9 represent a reasonable model fit (Sim et al., 2006). The NNFI and CFI for the model are 0.92 and 0.95 respectively and evince a good fit. Thus, the GFI, AGFI, NFI, NNFI, and CFI all indicate that the model is fit. Table 3 below, shows the Goodness of Fit of the study.
Table 3. Goodness of Fit

| Indeks Goodness of Fit | Model Fit Criteria | Research Findings | Remarks |
|------------------------|--------------------|-------------------|---------|
| Chi-Square             |                    |                   |         |
| Chi-Square             | $\chi^2 < \chi^2 \text{ tabel}$ | 28.96             | Good    |
| P-Value                | $P \geq 0.05$      | 0.06665           | Good    |
| Absolute Fit Measures  |                    |                   |         |
| GFI                    | $\geq 0.90$        | 0.94              | Good    |
| Normed Chi-Square      | $< 2$ or $< 5$     | 1.524             | Good    |
| Incremental Fit Indices|                    |                   |         |
| NFI                    | $\geq 0.90$        | 0.88              | Marginal|
| NNFI                   | $\geq 0.90$        | 0.92              | Good    |
| CFI                    | $\geq 0.90$        | 0.95              | Good    |
| IFI                    | $\geq 0.90$        | 0.95              | Good    |
| RFI                    | $\geq 0.90$        | 0.82              | Marginal|
| Parsimon Fit Indices   | $\geq 0.90$        | 0.88              | Marginal|

From Table 3, the greatest indicator of digital capability is the X3 of 82%, although both X1 and X2 also apply significant influence at 76% and 75% respectively. While transparency is the most dominant factor for value co-creation. It is proved through access to information about risks and benefits and through technology management. Access to resources and dialogue were tested at 35% and 29%, respectively.

Table 4 below shows the contribution of every dimension of digital capabilities.

Table 4. Intra-class correlations for variables

| Variable/Dimension   | Items                                | Intra-class correlation |
|----------------------|--------------------------------------|-------------------------|
| Digital Capabilities | Cloud computing ability              | 0.76                    |
|                      | Internet of Things capability        | 0.75                    |
|                      | Ability to manage various end user applications | 0.82                |
| Co-creation of       | Dialog                               | 0.29                    |
| Experience           | Access                               | 0.35                    |
|                      | Risk and benefit                     | 0.55                    |
|                      | Transparency                         | 0.76                    |
|                      | Technology Management                | 0.51                    |

The results of a structural equation model for Indonesia’s marine tourism destinations are based on the LISREL Model Approach. Each of the observable variables was checked for construct validity and reliability. Construct validity was established by verifying the results of the factor analysis, with all the items representing one factor accounting for about at least 58% of variance. Reliability refers to the degree of stability of the scale (Jackson et al., 1997). The reliability of a construct is demonstrated by the checking of the Cronbach alpha for the items for each construct and confirming the correlation among the items of the construct. All the items exhibited reliability coefficients higher than 0.58. To test hypotheses 1 for causal relationships, the LISREL 8 program was used (for details concerning LISREL 8.53, see Jöreskog & Sörbom, 2001). The LISREL model consists of a measurement model and a structural model. Figure 2 illustrates how the latent variables of digital capability and value co-creation were measured (the measurement model) and how the latent variables were proposed to relate to one another (the structural equation model).

Figure 2 shows the results relating to the relationships between the constructs under consideration. Hypothesis 1 covers the multi-level relationship between ICT (destination level) and its effects on value co-creation (customer level). The relationship ($p,<.5$) was found to be statistically significant, and an effect of 0.40 detected. Therefore, there is statistical support for this hypothesis, and it can be concluded that digital
capabilities exert a positive effect on value co-creation. This outcome is congruent with the findings of previous investigations (Gallarza & Gil-Saura, 2006; Polo-Peña, Fras-Jamilena, & Rodríguez-Molina, 2012).

The proposed model shows that digital capabilities influence value co-creation by 40%. The other 60% of value co-creation is influenced by other variables that were not researched in this study. The ability to manage various digital end-user applications is the most important indicator contributing to digital capabilities. The capacity for cloud computing and the capability to tap the Internet of Things also applied a significant impact on digital capabilities. It is interesting that the most influential factor in the co-creation of experience is transparency (76%), followed by risks and benefits (55%), technology management (51%), and access (35%). The contribution of dialogue to the co-creation of tourist experience is insignificant or even negligible, implying that the destinations should focus on providing transparency in what tourists will receive from the destination in their interactions with customers or tourists. Visitors also seek to understand the risks and benefits that they are likely to experience at the destinations, and they would like some certainty that they are able to connect with the destination through the experience network at all times: before, during, and after their visit.

5. Conclusion

Digital capabilities to value co-creation are found to exert a significant effect. The ability of destinations to utilize varied end-user applications is the most prominent indicator influencing value co-creation. However, all the relevant markers should be developed and managed in a combined manner as applications cannot be adequately executed without big data and without the Internet of Things. From the purview of the co-creation of the tourist experience, the discourse was not found to contribute significantly. Access to resources influenced the co-creation of value to a slight extent. These results indicate that tourists require transparent information on marine tourism destinations, and would like to understand the risks and benefits of sailing to or visiting Indonesia. Technology management is also important to enable tourists to access information while they are sailing.
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