Designing a Knowledge Management System for Tourism Management (Study Case: South Halmahera)

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Abstract—Halmahera is the largest island in Mollucas islands, North East of Indonesia. This island with beautiful beaches was home to four historical Sultanates, Ternate, Tidore, Jailolo and Bacan that once ruled this area. It has unique culture blended from the local inhabitants and from the Portuguese, Dutch and Japanese who set up a port there. Bacan Sultanate is located in Southern Halmahera, leaving this specific area with lots of historical sites as well as the breath-taking scenery. Despite of its tourism potential, in 2013 South Halmahera was only able to attract 279 local tourists and 250 international tourists. One of reason of this is because public awareness of South Halmahera as a tourist destination is low, due to lack of information of things to do, how to get there and where to stay. A Knowledge Management (KM) system is one of the solutions which could support tourism management in South Halmahera, especially to increase the tourist's awareness of South Halmahera. This study focuses on the design of KM system for tourism management in South Halmahera. Besides KM methodology, the SWOT analysis and Importance-Readiness Matrix are used to structure the information presented on the portal. Making an information portal which is easy to access is possible solution to promote the tourism in South Halmahera. A knowledge management method is used to structure information presented on the portal. An easy to access portal built as a tourism profile for South Halmahera will be analysed in this study.

Keywords—Knowledge Management, Tourism, Information Portal, SWOT Analysis, Importance-Readiness Matrix.

I. INTRODUCTION

The Mollucas islands, North East of Indonesia have a total area of 850,000 km2, 90% of which is sea. There are an estimated 1027 islands, where most are mountainous, some with active volcanoes. The climate is wet, so the vegetation of the small and narrow islands is very luxuriant; including rainforests, savannas, and mangroves, sago, rice, and the famous spices—nutmeg, cloves, and mace, among others.

North Mollucas Province consists of seven regencies and two municipalities, 6 of which include a part of Halmahera Island. Halmahera is the largest island in North Mollucas Province. This island lies to the east of Ternate, separated only by a narrow strait. It is a mountainous island which is largely covered with forests. The coastlines are white sand and coral reefs are found in its waters. This province with beautiful beaches was home to three historical Sultanates, Ternate, Tidore and Bacan that once ruled this area. It has unique culture blended from the local inhabitants and from the Portuguese, Dutch and Japanese who set up a port there.

This study would focus on one of the regencies in North Mollucas province, which is South Halmahera. South Halmahera is rich with natural scenery from the rainforests with its wildlife; it has 30 beautiful diving spots; it is the land form which Chrysocolla is found; and many other natural exquisites, other than its natural gifts, South Halmahera is also home to Bacan Sultanate, which afterwards was colonialized by the Netherlands, leaving this specific area with lots of historical sites. With its pristine beauty, both nature and culture, made South Halmahera as one of Indonesian potential tourism destination.

Despite of its tourism potential, the South Halmahera Tourism Board (2014) reported that they were only able to attract 279 local tourists and 250 international tourists in 2013. One of reason of this is because public awareness of South Halmahera as a tourist destination is low, due to lack of information of things to do, how to get there and where to stay. To solve this problem our study aims to help the South Halmahera Tourism Board to design a KM system for managing the tourism information more effective and efficiently. The KM system will be provided in form of user-friendly information in portal which is easy to access and maintained for promoting the tourism in South Halmahera.

II. METHODOLOGY

The Focus Group Discussion (FGD) is one of qualitative research methodologies that strongly associated with qualitative approaches to social research, the dominant theme of the latter being the provision of a rich understanding of people's lived experiences and perspectives, situated within the context of their particular circumstances and settings [1]. Another qualitative research methodology that can be used is SWOT Analysis. SWOT analysis aims to identify the strengths and weaknesses of an organisation and the opportunities and threats in the environment. Having identified these factors strategies are developed which may build on the strengths, eliminate the weaknesses, exploit the opportunities or counter the threats [2].

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This study would use FGD to gain insights and generate ideas from participants [4] in this case the locals, government and people in the tourism business, which results the understanding of the topic in greater depth. The output from the FGD would be analysed using SWOT analysis to assist strategy formulation, and Importance and Readiness diagram which would be then mapped out in a knowledge management framework for further processed as the input for the information portal.

A. Focus Group Discussion

Focus groups are best defined as a form of group interview that places particular importance on interaction between participants [5]. This method lets each participant answer questions without the fear of being right or wrong even on sensitive issues, where the ground rules are read out by the moderator prior to the discussion (Krueger 1994).

Usually, focus groups consist of 6 and 12 members from each segment of population, which occurs from one and two hours [5]. For this study we conducted an FGD with 12 participants who consist of 4 people from the government of South Halmahera, 4 people from the tourism industry and 2 people form Bacan Sultanate. This FGD is done on November 2015 with 1 moderator, and 1 floor guide and 2 people to take notes and to record the discussion. This number of participants is small enough for everyone to contribute but also large enough to share diverse opinions across the whole group [6]. The task of the moderator is to open the focus discussion on the topic of interest, while the floor guide would make sure that the discussion is on track. This discussion is recorded for further analysis and is conducted in Indonesian language (Bahasa Indonesia).

This FGD is done to draw upon respondents' beliefs, attitudes and feelings, from their point of view as participants based on the main topic stated on the beginning of the discussion [7]. Before this study was done, 4 people in this research team formulated questions and made a discussion guide to lead the FGD, This step is important to answer the preliminary assumptions, where the end goal is to find validity and reliability of these assumptions.[8].

B. SWOT Analysis and Importance and Readiness Diagram

SWOT analysis originates in the 1960s which is a decision-making tool for strategic planning which maps out Strengths, Weaknesses, Opportunities and Threat (SWOT) analysis, which allows building on the strengths, eliminating the weaknesses, exploiting the opportunities or countering the threats. [2, 9-11]. The strengths and weaknesses are identified by an internal appraisal of the organisation and the opportunities and threats by an external appraisal. The internal appraisal examines all aspects of the organisation covering, for example, personnel, facilities, location, products and services, in order to identify the organisations strengths and weaknesses. And the external appraisal examines all aspects of the organisation's environment, for example, the opportunities

coming from regional policies and competitor's strategies [2].

An example of the use of SWOT analysis is used to identify the advantages, disadvantages, threats and opportunities of franchising [12], where this analysis could help organizations, projects or even individuals use systematic thinking and comprehensive diagnosis of factors in developing and adopting a strategy [11]. The outcome of this study is South Halmahera's case is to show which are the strength, weakness, opportunity and threats of the tourism which then allows the promotions more intensive on these potential factors.

The results of the SWOT analysis are then rated based on its importance and readiness to show which tourism element is potential to promote. The need to seek the importance and readiness of alternatives found in terms of changing from conventional system into internet-based system are essential. This diagram facilitates the mapping of useful information about the readiness of the alternatives and the importance of those aspects that will help make lasting changes for the long-term. The information provided are the alternative solutions which will be applied. Alternatives collected were varying in many aspects regarding the case selected. By making importance and readiness diagram, researcher may be able to make priorities of which alternate should be done firstly. It has aims to generate the alternatives resumed and compiled from the participants of the focus group discussion. Researchers recommended that the project assess community readiness for the program by considering key stakeholder perspectives. [13].

C. Knowledge Management and Information Portal

Knowledge management involves a strategic commitment to improving the organization's effectiveness, as well as to improving its opportunity enhancement. As the Information Age moves into the knowledge economy, knowledge has become an essential resource for developing competitive advantage based on the production, distribution and use of information [3]. Knowledge management is also suitable for the tourism industry, such as hotels industry [14]. This use for KM in the tourism industry is commonly used to achieve a sustainable competitive advantage[15].

Information portals are one of the commonly used information products nowadays, which is also takes part in the knowledge management system A portal is a 'supersite' that provides a variety of services including web searches, news, free e-mail, chatting, shopping and links to other sites. [16] The aim of the Portal is to support advisory and information services for innovative business. The Portal provides information about the innovation and required for innovation and sustainable consumption and production at one place. Information portal can be used as a gate to make others know what producer want to give. For tourism, the function of the information portal is able to provide any related information for sale to make tourists want to be into this area [17].

III. RESULTS AND DISCUSSION

A. Results of the FGD

Before the FGD was conducted we did a pilot research on tourist attraction in Soult Halmahera. All printed brochures, explanations and other sources from the internet on South Halmahera's tourism was gathered and classified into some categories based on its type of attraction. We used six categories of the tourism which are costal and maritime, nature, culture, culinary, wildlife, and history. Costal and maritime tourism consists of diving spots, Panamboang port, Sally bay, Gura Ici Islands, Nusa Ra Island and other things that relates to the sea. The nature category was about sight-seeing on natural scenery such as waterfalls (Air Belanda, Gandasuli and Bibinoi), lakes (Telaga Nusa and Danau Mayanggoang) and so on. In the culture category we have dances that originate from this region, such as Tarian Cakalele, Tarian Katrely, Tarian Soya-Soya and Tarian Togal, while in the culinary category we have dishes from sago and salt-water fish. The wildlife categories is about natural resources of South Halmahera, which consists of rubber in the old Dutch plantation; spices such as cocoa, nutmeg, cloves and cinnamon; tropical fruits such as durian, duku, mangosteen and rambutan; wild birds; insects; rare butterflies; and Chrysocolla (Batu Bacan). The history category comes from decades ago where the Bacan Sultanate ruled the region leaving the crown, mosque, and the re-built sultanate itself, as well as the remainders of the Dutch colony such as Barnaveld fort and so on.

This FGD took place in SDN Amasing 2, Bacan Island on Friday, November 6th, 2015 starting at 09:00 am for 2 hours. Every participant gave their point of view of the problem where our big topic was to map the current condition, see the regulations and the infrastructure planning and know which of the tourist attractions are potential to develop. To trigger the discussion we introduced our big framework and gave examples of good tourist destinations in Indonesia which are Raja Ampat, West Papua and Komodo Island, East Nusa Tenggara. To gather the demographic data we made a questionnaire for each participant to fill in.

Fig. 1: The FGD in SDN Amasing 2, Bacan Island, South Halmahera

There were 10 participants who returned the questionnaire, where we found that 6 of them were originally from Bacan Island, while the others were from Ujung Pandang, Makassar, Surabaya and the other on did not fill-in. All of them have lived in Bacan for at least 6 years and maximum 49 years, with an average of 16 years. This shows that all participants know Bacan island well since they have lived in Bacan for quite a long time.

B. Results of the SWOT Analysis

Based on the FGD done in South Halmahera, we listed out some SWOTs for its tourism, where we divided the tourism field into 6 categories, namely costal and maritime, nature, culture, food, wildlife, and history. All of these aspects were analysed and scored based on its importance and readiness.

Table I: Results of the FGD based on the SWOT analysis

No	Category	Internal	External
1	Costal and Maritime	**Strength** • 30 spots for diving • Around 100 small islands • Some resorts are available in Kusat island, Naichi island, and Bidadari island • Pulau Sali is a good attraction • Resources and infrastructure are planned on developing tourism on the small islands and beaches **Weakness** • Private yacht outside from South Halmahera is forbidden for diving • It is forbidden to put down an anchor	**Opportunity** • The scuba diving attraction makes it potential for developing the resorts **Threats** -
2	Nature	**Strength** • Bibinoi waterfall, Air Belanda and Nusa Pond are beautiful • Mengaluan Lake, is 40 m^2 located in the center of city, across Labuhan to Babang (easy to reach) • Sebatang Tourism is promising. • Potential forest resources • Sibela Mount is beautiful as well as it has Mandailin nutmeg **Weakness** • The sanitation in Musa Ra island is not good. • There needs to be toilets in the island • Sebatang Tourism is difficult to access, the road leading to this place needs to be made. • Nature jungles/forests are difficult to access • The roads that already are provided are not good enough. • Lack of complete information about tourism and sight-seeing spots.	**Opportunity** • Making a road access to Bibinoi waterfall • Making a road to access beaches, as well as accommodating the needs of the society where most houses are on the costal lines. **Threats** • Caves are still risky too enter, since they are hundreds of years old • Low partnership with government
3	Culture	**Strength** • Woven craft • Bacan stone accessories • 18 tribes in South Halmahera • South Halmahera's birthday is celebrated as "Festival Kampung Nusantara" **Weakness** • Rituals are not yet being set annually or at any certain time period. • There is no database for cultural events • The lack of information on tours • No event calendars • The archives of the Bacan Sultanate is not complete • There is not yet any permission for publishing archives of the Bacan Sultanate	**Opportunity** • The Bacan Sultanate has a close relationship to the Ternate Sultanate, Tidore Sultanate and Jailolo Sultanate • Lots of tourists come to search for the crafts made of Chrysocolla (Bacan Stone) • Others craft opportunity other than Chrysocolla could be possible to offer. **Threats** • The trend of Bacan stone has already passed. • The lack of transportation to tourisms place
4	Culinary	**Strength** • Dabu-dabu is a well-known recepie, which could preserved for 2 weeks. • 16 kind of chili sauce. **Weakness** • There is no food that is specifically from this region	**Opportunity** • Dabu-dabu can be sent and sold to others place because of long durable. • Probably has other kind of chili sauces. **Threats** • The taste may not be suitable for people
5	Wildlife	**Strength** • There is a rare species of ape (black ape with red bottom) *Macaca migra* • Wide fauna diversity of birds such as Kutkut Bird • There are rare species of Butterflies that only live in South Halmahera • There is a 200 years old rubber plantation • Mandailin Nutmeg, only live in Bacan island (• There is a 5000 m^2 clove plantation **Weakness** • There is no conservation protecting natural wildlife. • The society still does not know the potential of the Butterflies Tourism and Mandailin Nutmeg, so they are still not well managed. • There is no natural resources database	**Opportunity** • Lots of natural products are still not well acknowledged though its actually valuable • Agro Tourism is potential. **Threats** -
6	History	**Strength** • The fortress has been there for hundred of years • The Bacan Sultante building has been re-built **Weakness** • The access to the fortress is still difficult • There are no database registered	**Opportunity** - **Threats** - Relationship of the Bacan Sultanate with the government is still poor

A. Results of the Importance-Readiness Diagram

The importance-readiness diagram in Figure 1 shows that all aspects of the tourism are important, where all values are more than 2.5, while the readiness are not as well as it should be. Historical sites readiness indicator lie below 2.5 while culture

lies on the boarder of being ready. This shows that there needs to be improvements for these two aspects. Moderator's judgements on these 6 tourism aspects were also considered in the calculation.

While costal and maritime lies on the upper left region, showing that it is already fit to sell as a tourist attraction. Based on this diagram we would set the information portal based on the raking of its importance and readiness. By using this rank, we would promote the best tourist attraction in South Halmahera, leading satisfaction of the tourists who come. These results are shown in the information portal shown in Figure 2.
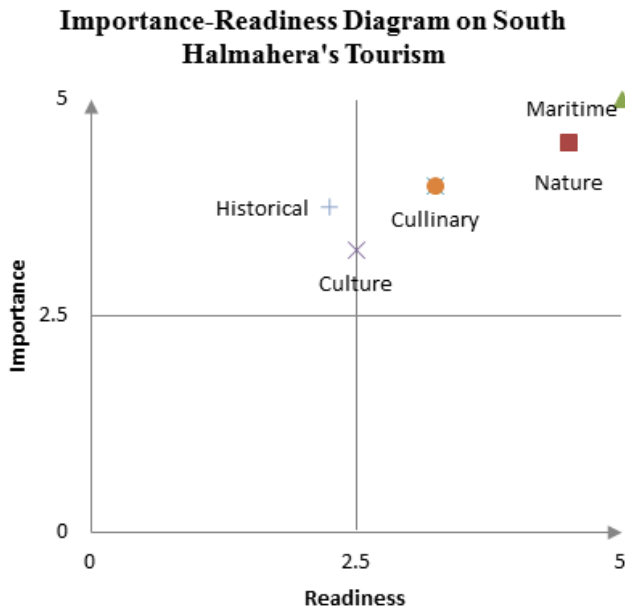

Fig. 2: Importance-Readiness diagram on South Halmahera's tourism

Fig. 3: Information Portal of South Halmahera

IV. Conclusion

A knowledge management framework is applied to South Halmahera's tourism through an information portal made accessible for public. Inputs and evaluation through the FGD and SWOT analysis were used to structure the information portal. All six elements of the tourism namely; costal and maritime, nature, culture, culinary, wildlife, and history were included and promoted in the information portal, which would be easier to access. The tourism board of South Halmahera was also involved in the making and was given a short course on

tourism management to enhance their understanding of the importance of promoting tourism. Providing easy to access information on tourism could hopefully raise the number of tourism from 2015 both international and domestic.

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