

Analysis and Implications of the Information Equity System Model for Coastal Communities

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Abstract—Riau Islands Provincial Medium-Term Development Plan for 2016-2021, was explained that investment opportunities in Riau Islands began to get into coastal areas. For this reason, coastal communities are expected to be able to support the realization of these investments. In Batam City, there are still many coastal areas that are far from the city center, and are located on small islands. For communities in small islands, equal distribution of information is needed. The Batam City Government has tried to distribute evenly information through information technology, such as internet, that has get into small islands. But unfortunately, the existence of internet access on small islands has not been maximized. Although coastal communities have commonly used the internet through smartphones, the internet is still widely used only as entertainment such as playing online games, or social media. This study aims to develop a concept for system development that can be used to present information needed by coastal communities to increase productivity and quality of education for coastal communities. The system will show the informations that convenient with the needs of coastal communities. This system will be built with the Agile method with an extreme programming approach. The steps in this study begin with understanding the process of exchanging information that occurs in coastal communities, then identifying the needs of coastal communities. The results of this study are a framework for how the system can run to present framework will also facilitate the development of the system in the future.

Keywords—Analysis concept, Android Application, agile method, Extreme Programming, Coastal Community.

I. INTRODUCTION

Indonesia has abundant natural resource potential from the sea, but this potential has not increased the prosperity of coastal communities. The amount of poverty in coastal areas and islands remains large. [1] The government through its programs has an important

role in improving the prosperity of coastal communities. [2] The use of technology is one of the strategies to increased the prosperity of fishermen. [3] The development of information technology-based systems supports fisheries management in coastal areas. [4] Through cellular phones which are now more popularly namely smart phones, fishermen can monitor weather forecasts to help with current weather uncertainties. [5]

Batam City, which is part of Indonesia, has a strategic area because it is directly conterminal to the State of Singapore. This causes the City of Batam to grow and develop rapidly. Unfortunately, the growth of Batam City is not accompanied by equitable development for its people. [6] Many coastal communities are marginalized due to settling on islands that are located far from the city center.

In Riau Islands Province Medium-Term Development Plan (RPJMD) for 2016-2021, it was explained that investors had the opportunity to invest in Riau Islands Province in developing enormous fisheries resources as an opportunity for the development of highly competitive fishery product processing industries, including tourism development. beaches, sea and small islands. To support this, coastal communities must also be developed and receive the same information in development.

The Batam City Government is trying to get people to access this information with the help of the internet. Through the internet, it is expected that coastal communities can access applications or websites so they don't miss out on information. So that equitable development continues. Unfortunately, even though in some areas has been supported by adequate internet access, its utilization is still lacking. Nowadays, internet is only used as a media of entertainment and communication.

Nowadays in some coastal areas observed by the research team, information on weather forecasting and

also education becomes an information need for coastal communities. This need is intended to increase the productivity of coastal communities, especially fishermen, and also improve the quality of education for students in the region.

This study aims to build an android application-based system for equitable information for coastal communities, especially those who live on small islands and already have adequate internet access. The system will provide information that convenient the needs of coastal communities.

In developing a system, a special method is needed that can adapt to a dynamic environment. The method must have the ability to produce a system with the ability to fulfill changes in the business environment that convenient the needs of users. Because users are central of functional requirements incorporation and feedback about changing needs. [8]

One of the most popular development methods is Agile. The Agile method has changed the practice of software development by emphasizing change tolerance, evolutionary delivery, and active end-user involvement [9]. Based on an evaluation of 51 software engineering practitioners from five IT companies that compared various agile methods, it was found that the Agile method with the approach of Extreme Programming approach was carried out quite a lot of 51 practices in software engineering. [10] The Extreme Programming approach is suitable for use because this approach can react quickly to changes in the planning. Responding to rapid changes is very important in software development. [11]

This research will use the Agile method with an extreme programming approach to build the concept of an Android application based system. Android is an open source platform that uses advanced hardware and software, with local data and servers. Android is easier to generate innovation and value for users. Although open source, Android is designed with multilayered security that provides the flexibility needed for open platforms. So that Android can be said as a complete core application. [7]

II. LITERATURE REVIEW AND METHOD

A. Literature Review

The research that conducted by Shaffrill, et al. (2015) found that cellular telephones have helped fishermen to improve fishermen's work productivity. One of the Fisher Friend Systems allows the fishing community to get information related to current weather and market information simply by sending a single button click request from the menu-driven client software on their mobile. Similar systems in Malaysia will improve the safety of fishermen, expand their networks and increase their incomes and such systems are expected to be accepted by fishermen when they receive something new that can benefit their daily lives. Second, as a response to minimal cellphone use for marketing purposes. Research also found that

cellphones contribute more to fishermen's social development than their economic development. [5]

The research that conducted by Zheng et al. (2016) states that nowadays the existence of information technology gives an important role in education sector, such as the stimulant of learning facilities and then sharing learning facilities. The results of this study indicate that the quality of the system, the quality of information and the quality of new IT services will directly affect access to user capabilities, further influencing the user's intention to use and user satisfaction, and then affect the realization of educational equality. [12]

Furthermore, research that conducted by Lubis (2018) found that domination of technology is one of the strategies to increase the knowledge and prosperity of society. This research was conducted on coastal communities. In addition to domination of technology, there are other strategies namely government policy, service quality, development of capital access, and construction of school facilities, construction of facilities and infrastructure, access to fisheries resources, and skills development. With the strategy of developing coastal construction that has been produced is expected to be a solution that needs to be implemented through a comprehensive strategy by placing socio-economic systems and cultural values that have been in the community as a stimulant factor for change. [3]

B. Agile Method

Agile method is an iterative and incremental software development method with an emphasis on changing needs, user satisfaction, and team collaboration. This method is also a collection of best practices and also the principles of software engineering. The Agile approach can accommodate software development needs rapidly. [13] One of approach in this method is Extreme Programming (XP). XP is a software development approach that is floaty, more flexible and low risk. XP is more suitable for small and medium-sized teams. XP emphasizes user satisfaction. A fast response to feedback can reduce defects in the final product and also reduce costs for product manufacturing. [8], [13]. The XP approach starts from collecting user needs, then those needs will be divided into small cycles. The small cycle will be developed by each development team. After that, iterations will be planned for each small cycle according to user needs. Subsequently, testing will be conducted to obtain feedback and input on the next iteration phase. [10]

C. Coastal Communities

Coastal communities can be described as a group of people living in coastal areas with a source of economic life depending on resources from the sea and the coast. Usually they consist of fishermen, fishermen workers, fish farmers, fish traders, fish processors, fisheries production suppliers. The coastal area can also be

mentioned as a place to collect fish and other resources that will be distributed to the mainland. [3]

D. Method

This research was conducted through several stages showed in the figure 1 below.

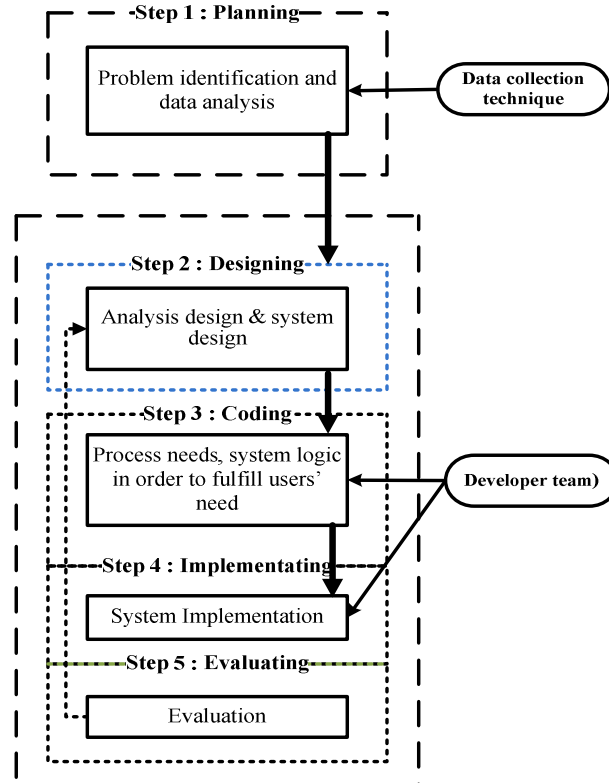


Fig. 1. Research Procedures

On figure 1, it can be seen that overall the development of this system starts from the phases of planning, design, coding, implementation, and evaluation. But in this article, it will be focused on the planning and design phases.

1. Planning: It is the initial phase, where the research team is assisted by survey officers to do the needs analysis through observation and interviews. At this phase, the research team will determine the output of the system, features, and functions that are in the system to be built.
2. Designing: After the planning process, the next phase is designing the system based on the data that has been collected and analyzed. The system design will produce an overview of the system model that will be designed along with its framework.
3. Coding: At this phase, the design that has been generated will be applied to become a system through the coding process using a programming algorithm. This phase will be supervised by a research team that will cooperate with the development team.
4. Implementation: After the system is made, then the implementation process of the system is then carried out to test the features and functions that exist in the application. At this phase, the research

team and the development team will jointly implement to the community. This process will repeat several times iterations and enough to fulfill the user needs.

5. Evaluating: This is the final phase of the research. At this phase, it will be done after the implementation to find out the evaluation of the use of the system that has been made.

III. ANALYSIS

A. Needs Analysis

This needs analysis is the need for inputs, processes, and outcomes. Based on the results of observations and interviews which has been done the research team, the needs identified as input were information needs about weather forecasts to help fishermen go to sea in transitioning weather conditions as they are now, then needed information related to scholarships for students to continue to a higher level of education, and to keep in touch with island communities a discussion forum is needed that can be used as a means of sharing information. The system to be built, is planned to show information related to the needs that have been mentioned through an Android application system. As an output of this system are information that can be used

for the benefit of coastal communities. Furthermore, it also keeps the results of discussions for follow up to develop the next system.

B. Data Collecting Technique

The techniques of data collection in this study are divided into several techniques, such as :

1. The literature studies used to study journals, books, seminar results, and also articles relating to Agile Method, XP Programming, and Application based Systems.
2. Observations and Interviews. The observations were carried out in 4 Islands, namely Belakang Padang's Island, Lenggang's Island, Sarang's Island, and Mecan's Island to see the use of

information technology for coastal communities. Then, the interviews were done with several people representing each island to complete the data related to the need for information distribution.

IV. RESULTS AND DISCUSSION

Nowadays, the existence of the internet is accessible to coastal communities. The existence of the internet for coastal communities is widely used as an entertainment media and also communication such as in fig. 2.

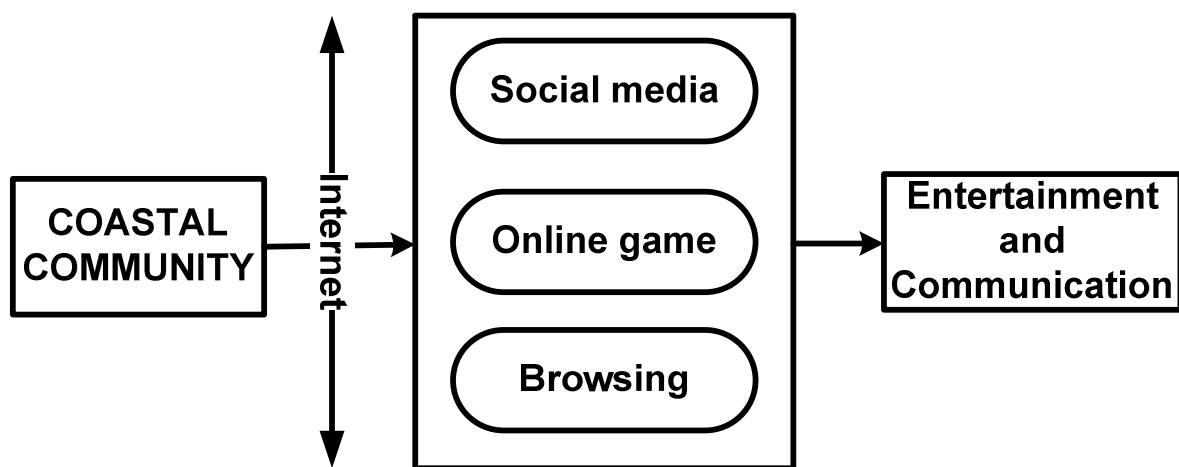


Fig. 2. Exciting Model of Using Technology

Figure 2 explains that currently coastal communities use the internet to access social media, online games, and browsing. Social media commonly used are Facebook, Instagram, Twitter, and YouTube. Whereas the commonly used chat application is WhatsApp. Internet access is also used to play online games for children and young people. Some also use the internet to find information usually related to school assignments. In general, the purpose of accessing the internet is for entertainment and communication.

Based on the results of interviews and observations of several things that researchers encountered related to the conditions of coastal communities and also the need for information, data was obtained that :

1. The habit of coastal communities accessing the internet is more dominant using application-based software, not websites.

2. The media that used to access these uses more smartphones.
3. The fishermen need information related to the weather forecast.
4. The students need information related to scholarships to be able to continue their education to a higher level.
5. The coastal communities also need media / forums to discuss in order to maintain communication between them.

According to the results of the interviews and observations that have been done, then this research proposes the concept of representing information that compatible with the needs of coastal communities such as

Figure

3.

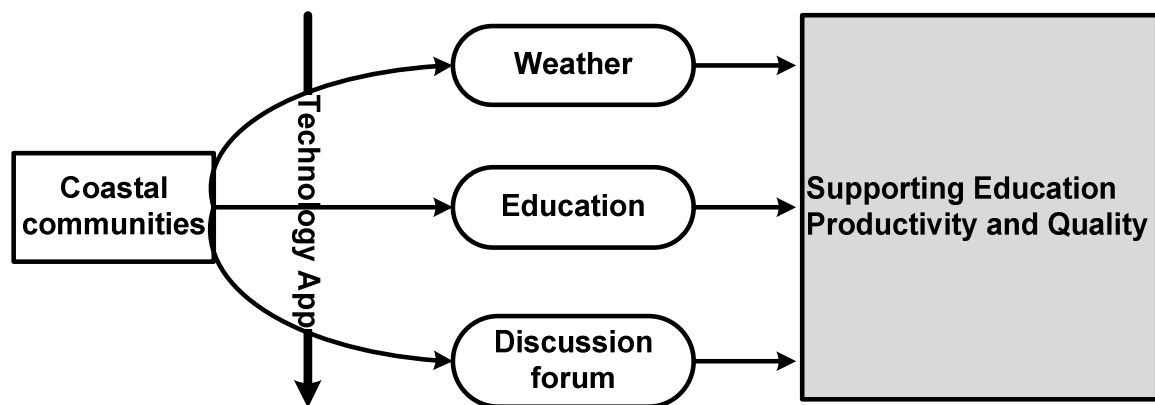


Fig. 2. Model of Equality Information System Android Based

Figure 3 illustrates that the system is designed based on application. The application will represent information such as the weather forecasts, information relating to education, i.e. scholarships, and also discussion forums. With the application, information will focus on the needs of coastal communities. Furthermore, the final goal of this application is to have a weather forecast, which will make it easier for

fishermen to go fishing. The scholarship information accessed by students of coastal communities will motivate them to overcome financial problems to continue to a higher level. Discussion forums can be used for communication between coastal communities. Next in Figure 4, the framework of the system will be explained.

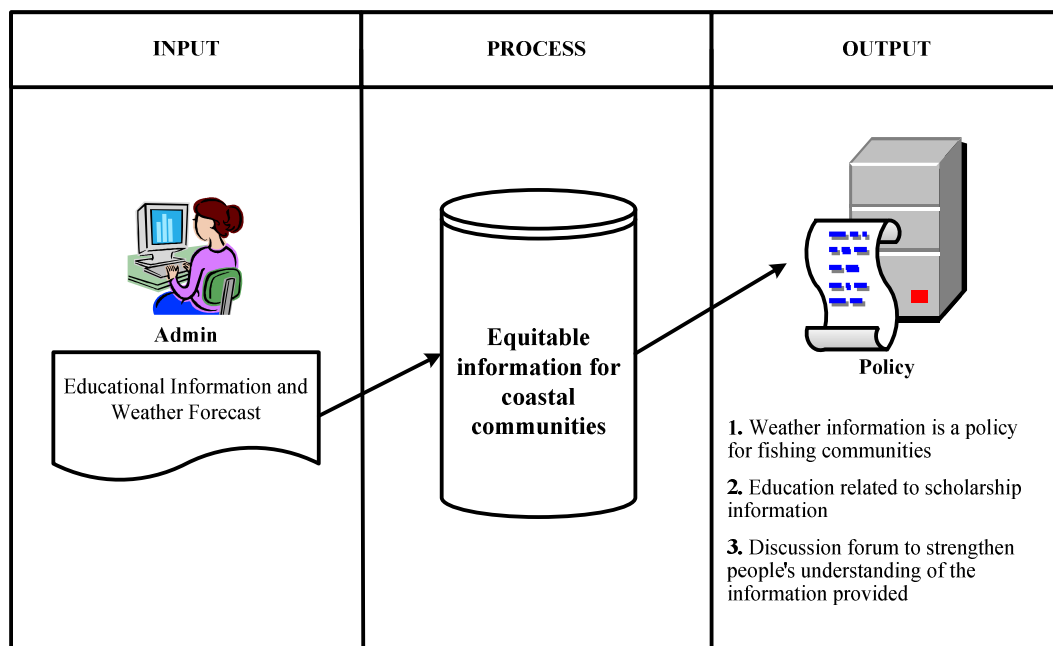


Fig. 3. The Framework of Equality Information System Android Based

V. CONCLUSIONS

Analysis and Implications of the Information Equity System Model for Android-Based Coastal Communities in this study using the agile method. Agile method with the Extreme Programming (XP) approach. This research

begins by understanding the process of information exchange that occurs in coastal communities. Then identify the needs of coastal communities.

One of the outputs of the initial step of this research is the implications of the system model. Development of

this model is highly recommended to facilitate system development based on needs.

VI. SUGGESTIONS

For the next researchers, it is worth it to consider the development of concept analysis into account by adding another feature like questionnaire that can be administered to resource person. Every SMME that participate in the activities can do this in order to build resource person's professionalism through feedback.

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