

## Fish Savings Management Strategy for Increasing the Economy of Fishermen Communities in Indonesia

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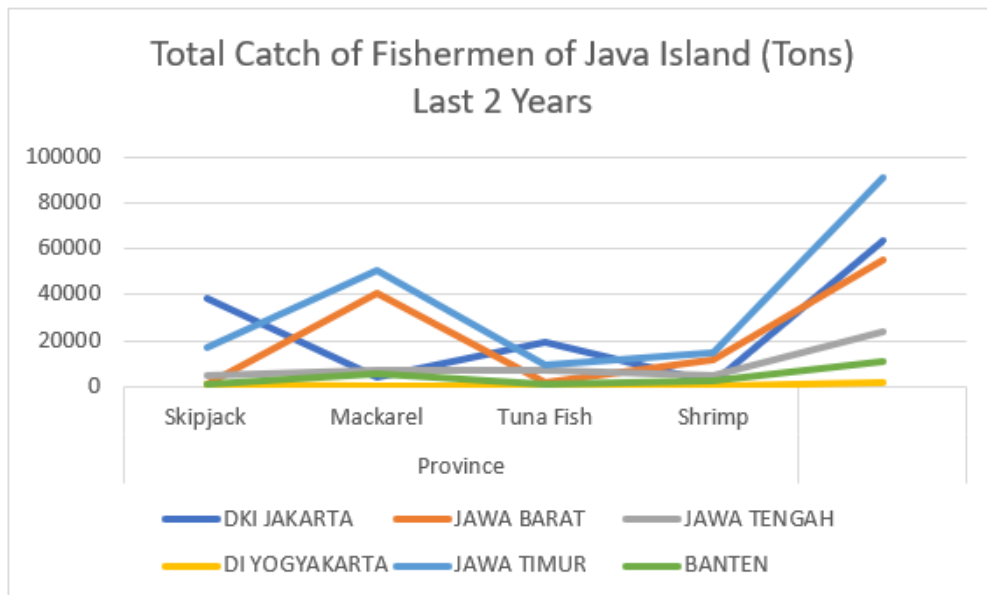
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**Abstract.** Most of the fishermen's paradigms, especially in coastal areas, are families with a poor economy. Many of the catches of traditional fishermen at sea have decreased in volume as a result of the catch being bought by traders while still in the middle of the sea, of course at prices outside the normal limits when sold on land. This causes fishermen's income to be smaller. In facing a famine for fish catches, it is necessary to anticipate fishermen so that they still have the income to be able to fulfill their daily needs. Due to their low income, during times of famine, the fishermen usually borrow money from big fish traders with high interest. This study analyzes how the strategy for managing fish savings in the form of savings cooperatives in the form of depositing fish caught every day for fishermen can be realized. It is hoped that fishing communities can have financial independence in the future so that when there are urgent special needs or during times of famine, the fish catch can be used. From the results of the analysis, it is necessary to change the form of cooperatives that already exist in several regions, which on average are in the form of savings and loans, it is also necessary to add the form of the concept of fish savings. Members of the savings cooperative are free for anyone who is a fisherman but needs to be regulated with the required daily income criteria. For the technical location of the savings manager, you can immediately standby at the fish auction location using an application created using the web-based Rapid Application Development method. The management strategy for implementation requires the mobility of the manager of fish savings to be able to be directly in a location close to the fishermen's catch being sold and the need to educate fishermen to start depositing a portion of their fish catch for savings.

**Keywords:** coastal fishermen, fish savings, famine, rapid application development, fish deposits.

## 1. Introduction

Indonesia has sea, land, and air limits that form a coherent entity that cannot be split, and it is the world's largest archipelagic country, with 17,508 islands distributed around the equator from Sabang to Merauke. Fishermen in Indonesia make a living primarily from fish captures. Fish captured by fishermen can also be controlled through fish processing mechanisms in the form of other commodities, in addition to selling directly. Fishermen's catch prices frequently fluctuate due to a variety of factors such as season, supply, demand, and economic situations [1]. There are instances when fish catches drop dramatically or become unprofitable. This is an indication that fishermen's income is unclear, speculative, and fluctuating [2], resulting in an economy that is below the poverty line. However, according to FAO (2005), fishery resources continue to have significant potential in many countries for food security and poverty alleviation. This corresponds to an increase in fishing activity to meet the food demands of the neighboring population as well as inter-island market demand at home and abroad [3].



**Fig. 1.** Fish catch data for the last 2 years, especially on the island of Java based on statistical data from the National Validation Database for Marine Fisheries Data. (<https://www.bps.go.id/indicator/56/1515/1/produksi-perikanan-tangkap-di-laut-menurut-komoditas-utama.html>)

Why, despite rising marine catches, particularly on the Indonesian island of Java, are fishermen still considered the lowest of the poor? Many traditional fishermen's catches at sea have declined in volume as a result of the catch being purchased by traders while still in the middle of the sea, at rates well above market value when sold on land. This reduces the income of fishermen. Furthermore, many impoverished fishermen capture fish in places along the coast with non-motorized boats, therefore their catches are tiny [4]. Product innovation and entrepreneurship are practiced in various industrialized countries to enhance economic

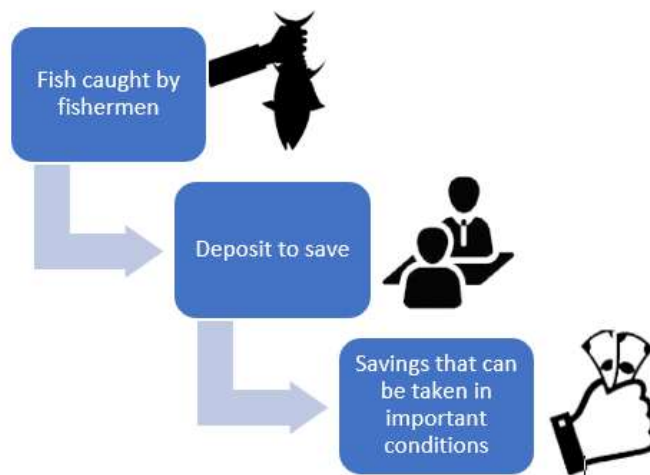
development growth. Cultivating these two sorts of creativity concurrently in people's daily lives is a more productive and effective strategy to address the persistent poverty problem [5]. Fishing communities are part of the social construction of communities in coastal areas, although not all villages in coastal areas have residents who work as fishermen. However, in coastal villages where the majority of the population work as fishermen, fish cultivators, or water cultivators, the fishing culture has a major influence on the formation of the cultural identity of the coastal community as a whole.[6]

An unfavorable economic environment in coastal areas is considered to make fishermen poor because it is caused by several factors such as low knowledge and skills of fishermen, lack of technological tools, absence of alternative employment opportunities, lack of sources of investment capital, lack of institutional and political support, declining marine resources and policymakers who are less proactive, innovative and creative in the regions. All of that is principally caused by the lack of a coastal area management system [7].

**Table 1.** The main priority of the Indonesian government is to advance marine fisheries products (Litbang Kompas: March 22-25, 2022).

No	Priority	%
1	Providing capital assistance for traditional fishermen	32,2%
2	Carry out strict supervision of foreign ships	31,9%
3	Build adequate infrastructure, especially for traditional fishermen	14,6%
4	Maintain the quality of seawater from waste pollution	10,6%
5	Encouraging exports of fishery products abroad	10,7%

In the face of a fish famine, it is vital to anticipate fishermen so that they have enough income to meet their daily demands. Financial planning is vital since their income will have an indirect impact on their quality of life because fishing is their primary source of revenue. Due to their limited income, fishermen typically borrow money at exorbitant interest from huge fish traders during times of famine [8]. The concept of conserving the caught fish is one type of financial management. Every time you catch a fish, you must deposit it with the savings manager to convert the price of the fish into savings money.



**Fig. 2.** Management of fish savings concepts.

It is envisaged that fishermen would be able to deposit their daily catch to the fish savings manager, where it will be transformed into a nominal sum for savings, with the conversion price of fish adjusted to market prices. It is intended that fishing villages would gain financial independence in the future, allowing them to use their catch to meet urgent particular needs or during times of famine. This type of fish savings management can be implemented through cooperatives in each fishing area.

## 2. Literatur Review

The Management of marine resources in coastal areas that is not profitable and efficient will not bring more benefits to coastal fishermen. A single solution is required to manage all of the lagging coastal areas by designating coastal areas as Special Economic Zones (SEZs), to increase investment and business activity in coastal areas [5]. The economic policy system in which a person lives determines their living conditions and behavior. As a result, no civilized society can be more innovative, creative, productive, efficient, or live in wealthy economic conditions without the assistance of government intervention programs [9].

An individual's income can be described as the amount of money earned and services rendered at a specific time or gained from assets [10]. According to theoretical economics, income is the result of the free use of wealth or human services in the form of money and other material consequences. However, numerous variables make them hesitant to save a percentage of their income. The decision that purchasing something will create higher hedonic rewards for oneself or others than the option of raising money over some time [11].

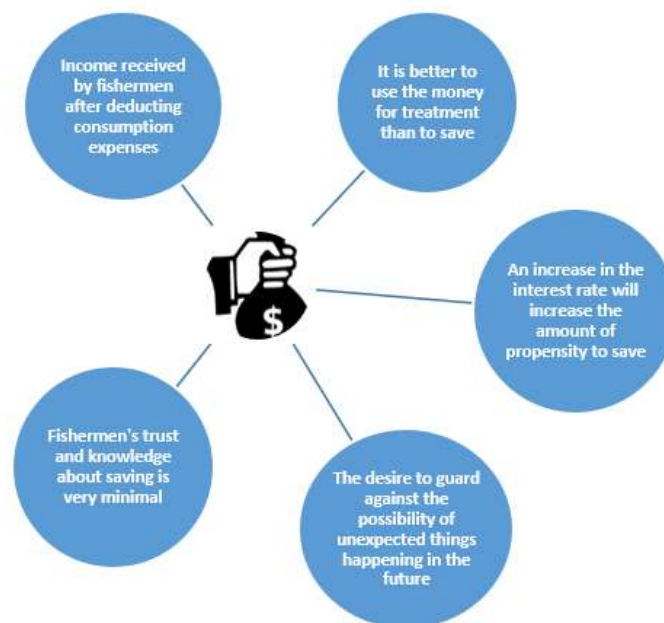


Fig. 3. Factors that affect fishermen's income used for saving.

### 3. Research Methodology

This study investigates how fishermen can actively engage in strengthening their economy in the future by using a fish savings management system in which they deposit the fish they catch every day to the manager. Management can take the shape of a unique cooperative that only accepts deposited seafood collected by coastal fishermen daily. The amount of fish placed is determined by the ability of coastal fishermen to capture fish, and the amount is adjusted to market prices. According to data from the Indonesian Central Bureau of Statistics, numerous coastal fishing areas already have fisherman's cooperatives, although only a small number of members belong to these cooperatives.

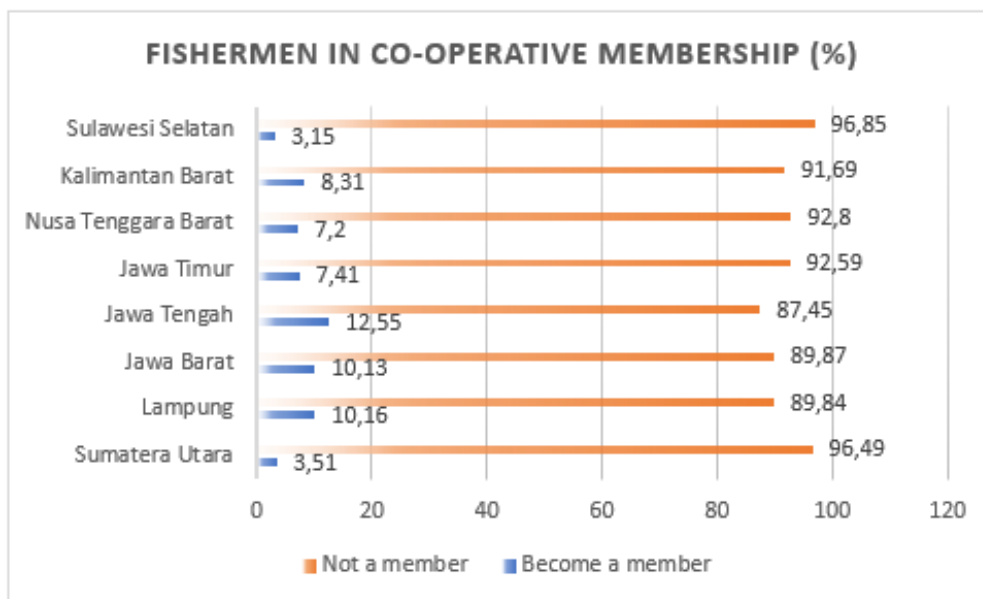


Fig. 4. The percentage of coastal fishermen who are members of the cooperative in Indonesia.

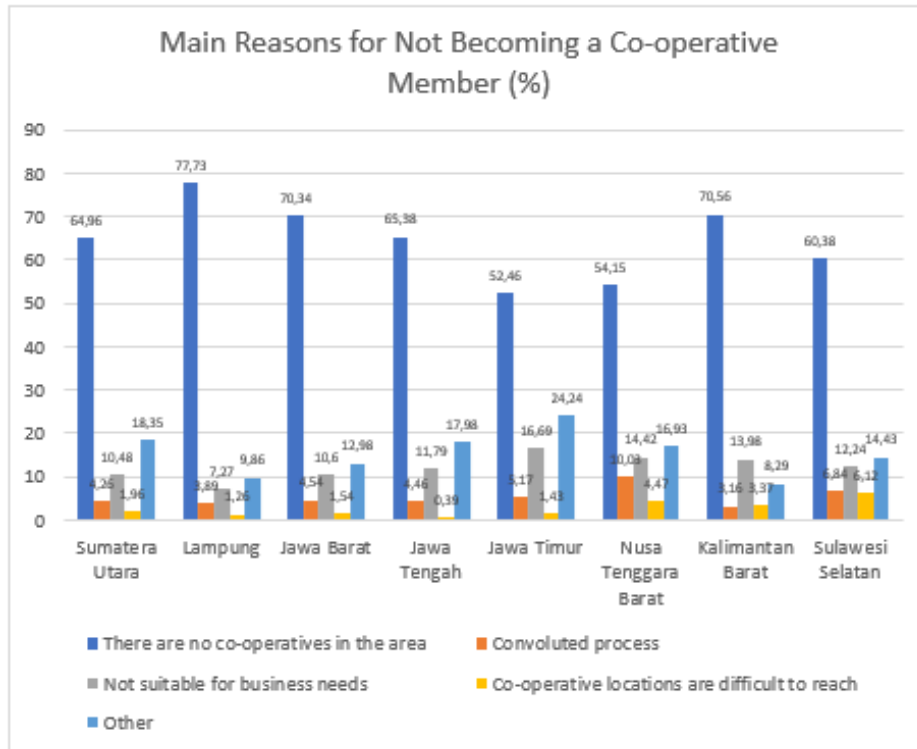


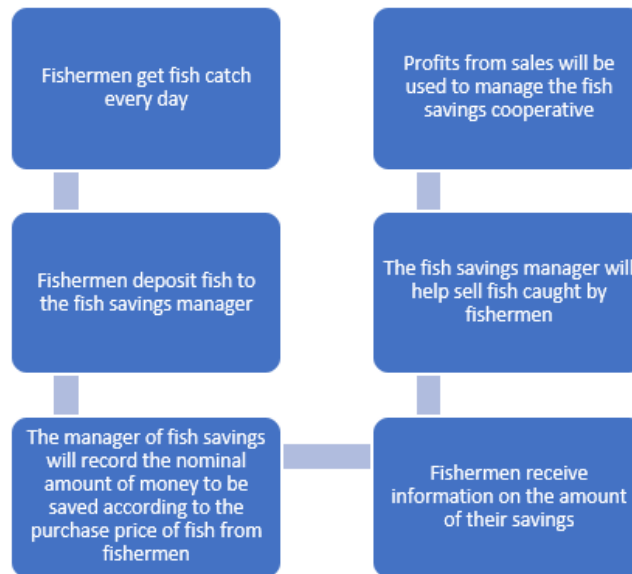
Fig. 5. The percentage of main reasons for not becoming a cooperative member in Indonesia.

The strategy for managing fish savings in the form of a cooperative is analyzed through several phases in terms of the problems encountered, namely as follows:

Table 2. Fish savings management analysis phase.

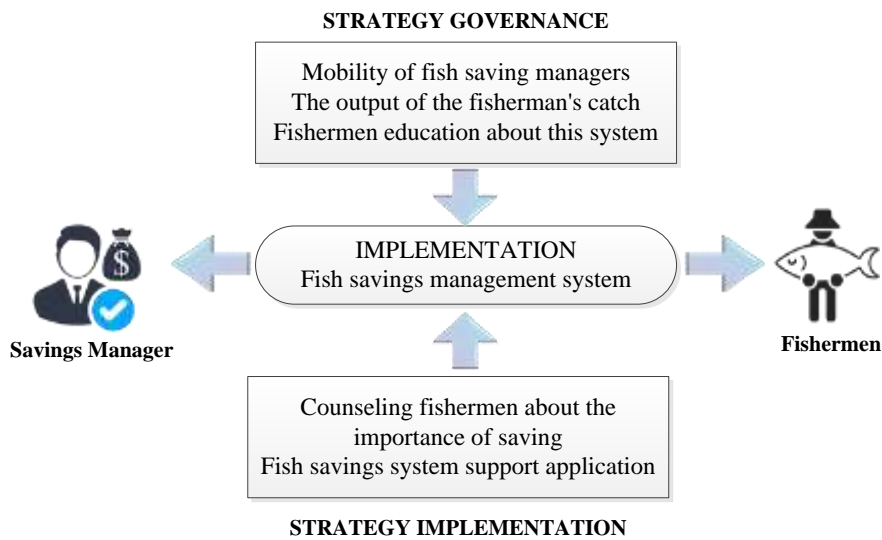
The system currently running	Management analysis of the fish savings system
Co-operatives in the form of savings and loans	The cooperative was added in the form of fish savings
Only registered cooperative members meet the requirements	To become a fish savings member, anyone can register with the required daily income criteria
Co-operative locations are only in certain areas/places	The location of the fish savings co-operative can be mobile and can even immediately standby at the fish auction location using an application

In order to determine the procedures for managing fish savings, the concept of managing fish savings in the form of a good cooperative is needed where the requirements must be determined in advance, which must be prepared in the proposal process as follows:



**Fig. 6.** Process of managing fish savings.

The analysis phase follows, which provides governance supervision of the implementation architecture by guaranteeing compatibility with the architectural aims and governance architecture functions in accordance with the development of this fish savings cooperative.



**Fig. 7.** Fish savings strategy governance phase.

The Rapid Application Development (RAD) method can be used to create programs that can be utilized on mobile devices. This method is an object-oriented approach to system development that incorporates a linear sequential development process as well as software with a relatively fast development cycle [12]. The system is designed using the Unified Modeling Language (UML) in the following manner:

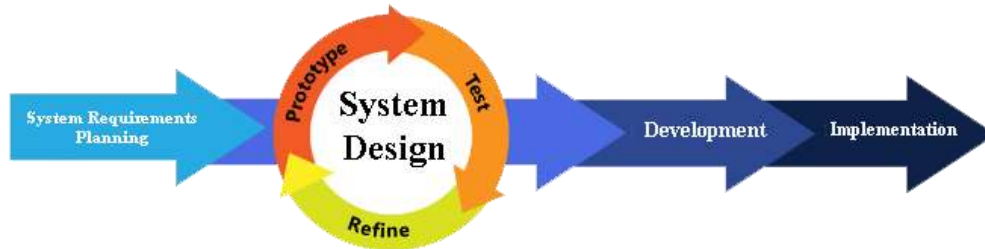


Fig. 8. RAD Process Development.

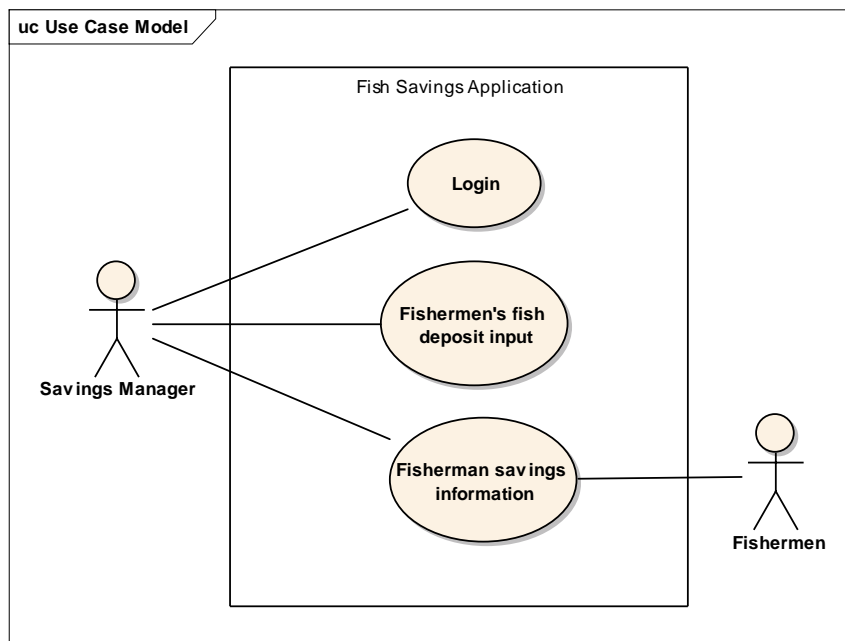


Fig. 9. UML model fish-saving application.

Manager login data, input data on the names of fisherman savings participants, input fish deposit data from fishermen, information on the amount of each fisherman's savings, input for saving withdrawals by fishermen, and information on the final balance of savings are all included in the application system. A cellphone may access all data and information from any location.

#### 4. CONCLUSION

It is envisaged that the establishment of a fish-saving management strategy in the form of a savings cooperative in the form of deposits of fish caught every day for fishermen will assist fishermen, particularly in coastal areas. It is intended that fishing villages would gain financial independence in the future, allowing them to use their catch to meet urgent particular needs or during times of famine. The form of cooperatives that now exist in numerous locations must be developed, especially, in addition to the form of savings and loans, the notion of fish savings must be added. Members of the savings cooperative are free to everyone who is a fisherman but must adhere to the requisite daily income standards. You can immediately standby at the fish auction place for the technical location of the savings manager using an application produced using the web-based Rapid Application Development approach. The implementation plan demands the mobility of the fish savings manager to be able to be immediately in a location close to the fisherman's catch being sold, as well as the necessity to teach fishermen to begin depositing a portion of their fish catch for savings.

#### References

- [1] A. Rahim, "Analisis Pendapatan Usaha Tangkap Nelayan Dan Faktor-Faktor Yang Mempengaruhinya Di Wilayah Pesisir Pantai Sulawesi Selatan," *Sosek KP*, vol. 6, no. 2, pp. 235–247, (2011).
- [2] A. Kusnadi, *Ekonomi Perikanan*. Jakarta: Gramedia Pustaka Utama, (2007).
- [3] M. Primyastanto, "Economic Analysis Of Pandega Fishermen Household At Madura Strait To Keep Food Security," *Int. J. Ocean. Oceanogr.*, vol. 9, no. 2, pp. 97–104, (2019).
- [4] R. A. H. dan M. Sholichah, "Fishermen Alleviation Poverty Model In The North Coastal East Java," *J. Ekon. Pembang.*, vol. 12, no. 2, pp. 147–162, (2011).
- [5] J. Kurien, "Evolving towards unsustainability: a personal statement on Kerala's marine fishery spanning three decades"," *Int. J. Rural Manangement*, vol. 1, no. 1, pp. 73–96, (2005).
- [6] W. Chilmy, "Local Wisdom of Fishermen Community in Brakas Village, Ra'as District," *Sumenep Regency J.*, vol. 2, no. 2, (2015).
- [7] H. Richard, J.S., Rudi, F., Ibnu, R.P. and Erikson, "Developing character and entrepreneurship among young men in a fishing community in West Sumatra, Indonesia," *J. Int. Dev.*, pp. 1–7, (2021).
- [8] A. K. P. Bhaskar Mahanayak, Subhasree Chakraborty, "Preliminary Survey on the Primary Fishermen Co-Operative Societies (PFCS) of Murshidabad District of West Bengal," *Indian J. Biol.*, vol. 4, no. 2, pp. 142–145, (2017).
- [9] K. Daisy, I.E., Sundhai, A., Suman, S. and Paulus, "How coastal development, environment change, and adaptive behavior affects fisheremen's welafer?: (A study of traditional fishermen from Coastal Area of Menado Bay, Indonesia)," *IOSR J. Humanit. Soc. Sci. (IOSR-JHSS)*, vol. 17, no. 4, (2013).
- [10] H. Gardner, *Intelligence Reframed*. United States of America: Basic Books, (1999).
- [11] A. P. Mellers, B. A., & McGraw, "Anticipated emotions as guides to choice," *Curr. Dir. Psychol. Sci.*, vol. 10, no. 6, pp. 210–214, (2001).
- [12] K. & Kendal, *Information System Analysis and Design 5th edition*. (2010).