

IMPLEMENTATION OF THE SIGPUKAN WEBSITE IN PROVIDING STATISTICAL DATA ON THE PROCESSING AND MARKETING OF FISHERY PRODUCTS IN EAST JAVA

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Abstract

Indonesia, as a maritime country, holds significant potential in the marine and fisheries sector, with East Java being one of the provinces that contributes substantially to investment in this sector. To support investment development, the East Java Marine and Fisheries Agency has developed the Geographic Information System for Fisheries Entrepreneurs (SIGPUKAN), a digital platform that provides statistical data on the processing and marketing of fishery products. This study aims to analyze the implementation of SIGPUKAN in providing statistical data using Edward III's implementation theory. The research method employed is qualitative with a case study approach through observation and interviews. The results indicate that the implementation of SIGPUKAN has been effective, as evidenced by the regular updating of statistical data, ensuring its relevance to the administrative needs of the agency and the general public. Additionally, the platform's mapping feature for marine and fisheries potential assists investors in identifying precise investment locations. This innovation promotes data transparency and enhances the efficiency of public services. The implementation of SIGPUKAN is expected to strengthen collaboration between the government, entrepreneurs, and the public in providing statistical data that supports the development of the marine and fisheries sector in East Java.

Keywords: Business and Marine Affairs, Data, Innovation SIGPUKAN.

A. INTRODUCTION

Indonesia as a maritime country certainly has great potential for business in the marine and fisheries sector (Banu, 2020). According to (Burhanuddin & Natsir Nessa, 2018) the marine potential in Indonesia covers various important sectors, such as fisheries, marine tourism, renewable energy, and sea transportation. All of these sectors play a major role in supporting the country's economy. This is also in line with what was said by Budi Sulistyono as the Directorate General of Strengthening the Competitiveness of Marine and Fisheries Products. In the Business Empowerment Workshop held in Pasuruan, East Java, he invited Micro, Small and Medium Enterprises (MSMEs) in the processing and marketing of fishery products to improve their business performance. According to him, MSMEs are one of the driving forces of the economy and have a major contribution to Gross Domestic Product (GDP), especially in the marine and fisheries sector (Silviana et al., 2023).

The Ministry of Maritime Affairs and Fisheries (KPP) noted that, until the first semester of 2024, investment realization in the maritime and fisheries sector in Indonesia had only reached IDR 5.15 trillion or the same as 57.22% of the target set at the beginning, which was IDR 9 trillion.

From the percentage figure of 57.22%, there are several provinces that are the main destinations for investment in the marine and fisheries sector in Indonesia, the three provinces are Maluku province which has succeeded in contributing 21% of the total investment in the marine and fisheries sector in Indonesia, then there is DKI Jakarta province which has a percentage of 13%, which is then followed by East Java province which is in third place with a total of 11% of the total percentage of investment in the marine and fisheries sector in Indonesia (Hindari & Maula, 2021).

This potential can continue to be explored, especially geographically, natural resources, infrastructure, and human resources (HR) East Java itself is a qualified area because it has 235 thousand fishermen, 277 thousand fish farmers, 7 thousand salt farmers, 18 thousand marketing business units, 8 thousand micro fish processing units and 428 large fish processing units. With these advantages, as of February 2024 East Java held the highest national fishery export figure of 385,083 tons (Sari, 2024). However, even so, there are still significant obstacles in the use of statistical data that supports decision-making by business actors and investors. Low accessibility to organized and accurate information is often an obstacle to the development of the marine and fisheries sector in this area (Purba et al., 2020).

Seeing the potential and obstacles in the marine and fisheries sector, the existence of an accurate and organized statistical data platform is important so that the development of the marine and fisheries sector in East Java can be even better in the future (Yulianti & Sandri, 2024). According to (Fitry Zuya & Padli Nasution, 2024) the process of formulating public policies requires data that is always updated and accurate, so that Big Data management is crucial so that policies can adapt to changes and dynamics of society as their targets. The implementation of Big Data in the economic sector has driven significant progress, where digitalization in banking, industry, and trade has changed Indonesia's economic conditions (Muhammad Wali et al., 2023).

Due to awareness of this, the East Java Provincial Maritime Affairs and Fisheries Service created an innovation in the Geographic Information System for Fisheries Business Actors (SIGPUKAN). SIGPUKAN is a database of Micro, Small and Medium Enterprises (MSMEs) and Fisheries Product Processing and Marketing Groups (POKLAHSAR) which has been developed since 2018. Until now, the SIGPUKAN innovation continues to develop to be even better in the future.

In the early years of its development, SIGPUKAN added several E-Book features for mapping potential business opportunities and investments in the marine and fisheries sector in East Java. This feature is intended so that investors and the general public can find out the map of marine and fisheries potential in the province of East Java. Then, in 2020, SIGPUKAN innovation developed an online marine and fisheries product processing and marketing statistics feature. The purpose of this feature is to help investors identify market potential and facilitate access to statistical data related to marine and fisheries. Then, in 2024, the development of this SIGPUKAN innovation can be seen from the optimization of the system in the form of acceleration in the data entry process and data access on the SIGPUKAN page itself (Milenia et al., 2022).

In addition to seeing the potential for investment in the marine sector, this innovation is also evidence of bureaucratic reform in the East Java Provincial Marine and Fisheries Service (Suhendra, 2022). Digitalization in the service sector is one example of bureaucratic reform in the East Java Provincial Marine and Fisheries Service. Digitalization of public services is aimed at revolutionizing the old public service design, with a manual system, to be able to switch to a new digital system (Afdila & Adnan, 2023). This new digital system is expected to simplify all ongoing administrative processes and provide maximum results for achieving initial goals (Hasan & Anita, 2024).

The role of SIGPUKAN cannot be separated from the efforts of the East Java Provincial Marine and Fisheries Service in utilizing information technology to support the marine and fisheries sector. This system is designed to provide convenience in mapping the potential of fisheries businesses while providing relevant data for business actors and investors. This shows that SIGPUKAN is not just a digital innovation, but also a strategic step in strengthening the competitiveness of the marine and fisheries sector in East Java.

The existence of SIGPUKAN is also a concrete form of digitalization of public services in the marine and fisheries sector. This digitalization aims to encourage efficiency and transparency in providing statistical data on the processing and marketing of fishery products in East Java, so that it can increase the trust of business actors and potential investors in business opportunities in East Java. In addition, this system facilitates coordination between local governments and the community and the business world, especially in strengthening synergies to support the sustainability of regional economic development (Suhardi & Panjaitan, 2025).

However, in the implementation process, SIGPUKAN still faces various challenges from all sides. One of them is understanding how this system can be optimally utilized by all stakeholders, especially small and medium business actors who are the main targets of this marine and fisheries sector innovation. For this reason, SIGPUKAN development continues to be carried out so that existing features can be increasingly relevant to user needs and easily accessible to all parties, both at the central and regional levels.

With its geographical advantages and potential resources, East Java has a great opportunity to make SIGPUKAN one of the driving forces of investment in the marine and fisheries sector based on existing statistical data on marine sector products. Therefore, the success of this system is expected to provide a significant contribution to achieving the development targets of the marine and fisheries sector, both at the regional and national levels.

In contrast to previous studies which generally only reviewed the digitalization of public services in general, this study not only reviewed the digitalization of public services in general, but specifically analyzed the implementation of SIGPUKAN in providing statistical data on the processing and marketing of fishery products. In addition, this study aims to identify the challenges of implementing this system in East Java and explore its strategic role in attracting investment and strengthening the competitiveness of the marine and fisheries sector at the local and national levels.

B. LITERATURE REVIEW

Geographic Information Systems and Statistical Data Processing

Geographic Information System (GIS) is a technology used to collect, store, analyze, and display location-based data. GIS enables the integration of various types of spatial data to support decision making (Erkamim et al., 2023). In the context of statistical data processing, GIS can be used to present information on the distribution, production, and marketing of fishery products more systematically and easily accessible to stakeholders (Wardani et al., 2021).

Digital Based Fishery Product Marketing

Digital-based marketing is increasingly developing with the existence of e-commerce platforms and web-based information systems. (Rahmawati et al., 2024) explained that digital marketing allows producers and consumers to interact more effectively, increase distribution efficiency, and expand market reach. The implementation of the SIGPUKAN website in marketing fishery products can help accelerate the distribution process, expand market access, and increase the competitiveness of fishery products in East Java.

Implementation of SIGPUKAN in the Fisheries Sector

SIGPUKAN as a web-based system is expected to be able to integrate fishery product processing and marketing data more efficiently (Alamsyah et al., 2021). According to previous research, the implementation of a GIS and website-based system can increase the efficiency of data management and accelerate information access for users (Fardanty, 2024). With SIGPUKAN, fisheries industry players in East Java can obtain more accurate information about markets, prices, and more effective marketing strategies.

C. RESEARCH METHODOLOGY

This study uses a qualitative case study method. A case study is a study in which researchers explore a particular phenomenon (case) in a time and activity (program, event, process, institution or social group) and collect detailed and in-depth information using various data collection procedures over a certain period (Creswell, 2023). This research method is considered appropriate because researchers gain a deeper understanding of the data through this approach. The indicators studied can also be further explored using a quantitative case study approach. Because this study tends to focus on public services in a social context, research using this method can provide final results in the form of recommendations and benefits that are more detailed and easy to understand (Achjar et al., 2023).

In addition, the data collection techniques used in this study include direct observation and interviews in order to obtain more accurate information to be used as a reference in discussing the indicators of the theory used. This technique is considered appropriate to be used in this study because the author's current situation, which is currently carrying out an internship, allows the author to conduct direct observation activities on the objects being studied so that the data obtained can be more factual in accordance with the actual conditions in the field. Interview techniques are also carried out to obtain data that is the basis for research on how the implementation of the SIGPUKAN website as a provider of statistical data on the processing and marketing of fishery products in East Java is running. In addition, the interview technique used is

An equally important component in a study is how to determine informants in a study. According to (Ardiansyah et al., 2023) Key informants should be people who are willing to share concepts and knowledge with researchers, and are often used as a place for researchers to ask questions. In addition, there are four criteria in determining key informants, namely:

1. Must be an active participant in the group, organization, or culture being studied, or have gone through the enculturation stage
2. Must be involved in the culture being studied "at this time". The emphasis on "at this time" is very important, because the key informant must not forget the problem to be studied
3. Must have sufficient time. Key informants are not only willing, but can provide information whenever needed
4. Must convey information in their own language (natural). Informants who convey information in "analytical language" should be avoided because the information produced is no longer natural.

Then the researcher decided to make the Staff of the Business and Investment Section of the Marine and Fisheries Product Processing and Marketing Sector of the Marine and Fisheries Service of East Java Province as the key informant for the following research through the purposive sampling method.

Then, the theory used as the basis for this research is the implementation theory from Edward III in (Subarsono, 2011), according to Edward III, the implementation of a policy is influenced by several variables, including:

1. Communication, communication needs to be done so that a policy can be implemented properly so that the goals or targets of the policy can be achieved with a low possibility of implementation deviation.
2. Resources, resources have an equally important role as communication. In the implementation process, there needs to be qualified resources so that implementation can run effectively.
3. Disposition, is a characteristic of the implementer which can be in the form of commitment and honesty. If this disposition is correct, the policy that will be implemented will also run according to the attitude of the implementer or will also be more effective
4. Bureaucratic Structure, in a policy implementation process, a clear bureaucratic structure and Standard Operating Procedure (SOP) are needed to facilitate the implementation process.

D. RESULT AND DISCUSSION

The Geographic Information System for Fisheries Business Actors (SIGPUKAN) is a database of Micro, Small and Medium Enterprises (MSMEs) and Fisheries Product Processing and Marketing Groups (POKLAHSAR) developed by the East Java Provincial Marine Affairs and Fisheries Service since 2018. This innovation in statistical data on fisheries processing and marketing was funded using the 2018 Fiscal Year PAPBN owned by the East Java Provincial Marine Affairs and Fisheries Service. In the process, the East Java Provincial Marine Affairs and Fisheries Service collaborated with PT. Alugara Inovasi Utama as the developer of this database website. Before being officially released, this innovation trial had been implemented by collaborating with 38 Regencies or Cities and 4 Branches of the Marine Affairs and Fisheries Service in East Java.

Five years since this innovation, SIGPUKAN continues to develop and add new features according to the needs of users which are gradually increasing. Based on the theory put forward by Edward III in (Subarsono, 2011) Implementation of the SIGPUKAN Website in Increasing Investment in Marine and Fisheries Sector Products in East Java can be described as follows:

Communication

According to (POSANGI et al., 2020) a policy decision must be communicated clearly and consistently to both government officials and the wider community. As previously mentioned, the SIGPUKAN innovation has been around since 2018 and has been socialized since then. Information about this innovation is disseminated through the official website of the East Java Provincial Marine Affairs and Fisheries Service. In addition to the official website of the East Java Provincial Marine Affairs and Fisheries Service, information about this innovation is disseminated through the official social media of the East Java Provincial Marine Affairs and Fisheries Service, such as Instagram, Twitter (X), Youtube, Facebook, and other social media.



(Source: Instagram Diskanlajetim)

Meanwhile, for users or statistical data officers themselves, the East Java Provincial Marine and Fisheries Service routinely holds socialization every time there is a feature update or data entry every year which is attended by representatives of each City or Regency Marine and Fisheries Service in East Java.

On Thursday, November 7, 2024, the East Java Provincial Marine and Fisheries Service through one of its fields, namely the Marine and Fisheries Product Processing and Marketing Sector (P3KP) held a meeting entitled, "Finalization of Fisheries Product Processing and Marketing Statistics," At that meeting, representatives from the Service and Branch Office of each City and Regency in East Java were given directions regarding the importance of statistical data for each line and sector in government, including the marine and fisheries economic sector.

At that meeting, socialization was also provided regarding the stages of data entry on the SIGPUKAN website itself. The socialization material was provided directly by the SIGPUKAN website developer, namely a representative from PT. Alugara Inovasi Utama. After providing material on the procedures for entering statistical data on the SIGPUKAN website, representatives from each Service from each City or Regency in East Java were given material on the Projection and Finalization of Statistical Data on the Processing and Marketing of Marine and Fishery Products in East Java in 2024.

After the agenda of providing material was completed, the meeting activities were continued with a Sharing Session regarding obstacles during the collection of statistical data in each Regency or City and statistical data entry on the SIGPUKAN website. In this session, the researcher conducted observations and found that most of the representatives of the Regency or City stated that there were not many obstacles faced when entering data on the SIGPUKAN website. The obstacles themselves were more often faced when collecting data at the location. They said that when re-verifying, there was a lot of outdated data. When the location of the fishery business was visited for a survey using the random sampling method, it turned out that many businesses were no longer operating and had closed permanently.

They also discussed features that could be added in an effort to improve the quality of the SIGPUKAN website itself. One important feature that must be added is the self-deletion feature for statistical data officers in the field, because in some cases errors occur during data entry, and when the data has been entered and updated, only SIGPUKAN operators who are employees in the Business and Investment Section of the Processing and Marketing of Marine and Fisheries Products of the East Java Provincial Marine and Fisheries Service can delete the data. The representatives of the Regency or City expressed that their work was slightly hampered because of this.

In addition, they also want additional features that can automatically reject the data entry process if the data entered is already available in the system. Because in certain circumstances, statistical data officers accidentally enter data that already exists so that double data occurs. Similar to the first problem, only the SIGPUKAN operator can delete the data. All suggestions submitted by the field statistical data officers at that meeting were then collected by the developer to be used as a reference in the development of this SIGPUKAN innovation in the future.

Resource

The implementation of a policy tends to be ineffective if it lacks the resources needed by the implementer to implement the policies (Wahid, 2014). Resources here can include several things, namely Human Resources (HR) or Material Resources that play an important role in the process of implementing a policy.

In this SIGPUKAN website innovation, it can be said that innovation is run by qualified resources from various sides. As for the developer itself, this innovation was developed by PT Alugara Inovasi Utama which is indeed an expert in the field of developing statistical data innovation. Based on the results of interviews with the staff of the Business and Investment section who are one of the operators of the SIGPUKAN website, the East Java Provincial Marine and Fisheries Service chose PT Alugara Inovasi Utama to be the developer based on previous experiences. Becoming a developer for digital innovations for the East Java Provincial Marine and Fisheries Service is not something new for them, previously they had also been several times the developer of innovations from the East Java Provincial Marine and Fisheries Service. In addition, PT Alugara Inovasi Utama specifically has experience in building the maritime industry, which experience is an important point why PT Alugara Inovasi Utama was chosen to be the developer of the SIGPUKAN website which is an innovation provider of statistical data for processing and marketing fishery products.

Meanwhile, on the operational side itself, it can be said that the people behind the operation of the SIGPUKAN website are indeed people who understand and know how this innovation works. Understanding statistical data and the fisheries business sector is the provision they have to manage and operate this website in accordance with the initial purpose of this innovation. They are the parties who are ready if there are problems at the stage of statistical data entry for processing and marketing fishery products in each Regency or City in East Java. This analysis is supported by the results of observations that researchers conducted during meetings attended by developers who were ready to accommodate user aspirations.

Meanwhile, in the context of financial resources, this innovation is funded by the 2018 Fiscal Year PAPBN owned by the East Java Provincial Marine and Fisheries Service. Meanwhile, for the operational or maintenance costs of the SIGPUKAN website, the manager explained that the funds used came from the APBN budget owned by the East Java Provincial Marine and Fisheries Service. It can be said that in the resource indicator, this innovation has everything needed with the appropriate portion. Experts and funding sources, which are two important components in implementing a policy, are not obstacles to the implementation of the SIGPUKAN website innovation which has been running for approximately five years.

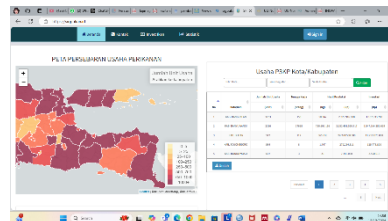
Disposition

In line with the available resources, the number of parties involved in the implementation of this innovation is an interesting thing to analyze. So far, the East Java Provincial Marine and Fisheries Service has shown a high commitment during the implementation of this SIGPUKAN innovation. This commitment can be seen from how the management is still actively promoting the SIGPUKAN website as a website that provides statistical data on the processing and marketing of fishery products in East Java. The management consistently understands the target users by promoting the SIGPUKAN website through social media such as Youtube, Instagram, Facebook, and other social media.

Although this website has existed and been developed since 2018, based on observations made through the social media pages of the East Java Provincial Marine and Fisheries Service, it was found that the contents of the SIGPUKAN website are still often seen on recent social media pages so that users can easily find information about this SIGPUKAN innovation. The consistency that the manager has run so far has made this website continue to grow and reach more and more users and make this website one of the options that investors can consider if they are interested in investing in the marine and fisheries sector in East Java.

According to the data collected on the SIGPUKAN website, there are currently 36,733 statistical data on marine and fisheries sector business units in 38 regencies or cities in East Java. In addition to complete statistical data on marine and fisheries sector business units in East Java, the SIGPUKAN website also provides statistical data on the number of Processing

and Marketing Groups (POKLAHSAR) in East Java, which currently totals 1,608 from a total of all groups, both primary and novice. The large amount of data collected by the statistical data officers in the field also shows their commitment to developing and making the SIGPUKAN website a statistical database for processing and marketing fishery products in East Java. The more data collected from the total regencies or cities in East Java, the more it can be said that this website can be a reference for investment in the marine and fisheries sector in East Java.



(Source: SIGPUKAN)

Bureaucratic Structure

According to (Fahturrahman, 2016) Bureaucracy as an institution implementing public policy, must be able to develop bureaucratic systems and procedures that are carried out legally, rationally; efficiently and effectively. In line with this understanding, SIGPUKAN innovation has a clear organizational structure in the division of tasks and responsibilities that must be carried out by each worker or individual involved in it. The SIGPUKAN website operator explained that the tasks and responsibilities of running this website are divided into several, namely, tasks regarding website management and development are the main responsibility of PT Alugara Inovasi Utama. PT Alugara Inovasi Utama has an important role in the development of this innovation. PT Alugara Inovasi Utama must be able to facilitate users by adding several new features that are useful so that the data entry process on the website can run more effectively and efficiently.

Through an interview with the person in charge of collecting data on the statistical application on the SIGPUKAN website, it was conveyed that, "There are several obstacles in implementing this SIGPUKAN website, the first is regarding the server which is often slow when used to input the collected data. Second, the statistical data officers and staff who serve as operators cannot access the collected data so that only developers can access the data. Operators and statistical data officers can only see the data that has been presented on the SIGPUKAN website." PT Alugara Inovasi Utama as a developer must be willing to accept suggestions and input for the development of a better and more useful website in the future.

Meanwhile, the Business and Investment Section of the Processing and Marketing of Marine and Fishery Products (P3KP) of the East Java Provincial Marine and Fishery Service has the task and responsibility to be the operator of this SIGPUKAN website. They are also the party that collects data from field statistical data officers. The Business and Investment Section is also the party that recaps the honorarium data for field statistical data officers every month. Based on an interview with the SIGPUKAN website operator, he also explained that their duties as website operators also include the responsibility to approve data deletion proposals from field statistical data officers who are tasked with entering statistical data on the processing and marketing of fishery products in each city or district in East Java.

Meanwhile, the task and responsibility for collecting statistical data is carried out by field statistical data officers in each city or district in East Java. They are tasked with directly collecting data on marine and fisheries sector businesses in East Java through the random sampling method. Based on the explanation from a lecturer from Brawijaya University who is a team of statistical experts from the East Java Provincial Marine and Fisheries Service who was a resource person at the Finalization of Fisheries Product Processing and Marketing

Statistics event, it was revealed that the random sampling method was chosen because of the vast area of East Java. With geographical conditions covering 38 districts/cities, this method is considered the most appropriate for collecting statistical data efficiently. This method allows for the collection of representative data without the need to visit every fisheries business unit throughout the region, which can save time, money, and energy. In addition, the random sampling method helps reduce the potential for bias by providing equal opportunities for each business unit to be selected as a sample, so that the data produced can better reflect real conditions in the field. This is very relevant in the context of East Java, which has a variety of fisheries businesses from small to large scale in various locations. With a clear organizational structure and division of tasks, this innovation can run well until now. Cooperation and division of tasks according to each capacity make the work completed quickly so that the responsibility for providing statistical data on the processing and marketing of marine and fishery products in East Java can be fulfilled.

E. CONCLUSION

The Geographic Information System for Fisheries Business Actors (SIGPUKAN) is a strategic innovation developed by the East Java Provincial Marine and Fisheries Service to support increased investment in the marine and fisheries sector by providing accurate and organized statistical data. Through SIGPUKAN, data on the potential of fisheries businesses in East Java can be accessed more easily by business actors, the government, and investors. The geographical advantages and resources of East Java provide great opportunities for SIGPUKAN to become one of the main drivers of economic growth in this region.

Based on the analysis using Edward III's implementation theory, SIGPUKAN has shown success in the communication aspect through routine socialization, adequate resources from both the developer and funding side, a disposition that reflects a high commitment from the management, and a bureaucratic structure that supports the operation of the system. However, challenges such as suboptimal servers and constraints on data collection and the need to develop additional features in the system indicate that there is still room for improvement. With continued optimization, SIGPUKAN is expected to become a more relevant and effective platform, not only as a data provider, but also as a strengthener of the competitiveness of the marine and fisheries sector in East Java. The sustainability of this innovation will have a positive impact on marine and fisheries-based economic growth, while supporting efforts to digitize transparent and efficient public services.

To improve the effectiveness of the implementation of the Geographic Information System for Fisheries Business Actors (SIGPUKAN) as a provider of statistical data on the processing and marketing of fishery products in East Java, several strategic steps are needed. First, data quality and system integration need to be improved through regular data updates so that the information available is always relevant. In addition, strengthening human resource capacity is a priority through intensive training for system managers and involving experts from various fields to present innovative features that support user needs. The development of SIGPUKAN features is also an important step, such as adding spatial analysis that can help investors determine strategic locations, and creating mobile-based applications to increase accessibility. More intensive socialization and promotion efforts also need to be carried out, both online and offline, by involving local media and holding regular campaigns to increase awareness of business actors and the general public about the benefits of SIGPUKAN.

Finally, continuous evaluation and monitoring are key to ensuring that SIGPUKAN runs according to its objectives. Regular evaluation of the effectiveness of the system, supported by a dedicated monitoring team, can identify obstacles as well as opportunities for development. Through these steps, SIGPUKAN is expected to become a strategic platform

that not only provides statistical data on the processing and marketing of marine and fishery products in East Java, but also makes a real contribution to the growth of the marine and fishery sector in East Java.

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