



Integration of Agile Governanve ini Maritime Safety System Development (SiKaPal): Adaptive Governance Model in the Archipelago Region of Sumenep Regency

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ABSTRACT: Sumenep Regency comprises 126 islands across 19 mainland and 8 maritime districts, resulting in high dependence on sea transportation and increased maritime safety risks. Between 2020 and 2023, official records show 20–30 maritime accidents annually, including ten major incidents causing nearly 100 fatalities. These conditions expose limitations in conventional governance approaches. In response, the local government implemented an agile governance framework through the Maritime Safety System (SiKaPal). Using a qualitative descriptive method based on in-depth interviews and thematic analysis, this study finds that agile governance improved emergency responsiveness, coordination, resource efficiency, and institutional adaptability in maritime safety management. This study adopts a qualitative descriptive approach to capture in-depth insights into the implementation of agile governance in maritime safety management. Data were collected through semi-structured, in-depth interviews with 20 informants, comprising policymakers, policy implementers, supervisory officials, and community members as policy beneficiaries. The data were analyzed using thematic analysis, focusing on patterns related to governance adaptability, institutional coordination, resource efficiency, and emergency responsiveness. The findings reveal that the integration of agile governance within SiKaPal has produced several significant outcomes. First, budget utilization became more efficient due to flexible planning and iterative evaluation mechanisms. Second, emergency response to maritime accidents was substantially accelerated through improved information flows and inter-agency collaboration. Third, preventive preparedness was strengthened by enhancing early warning systems and community engagement. In addition, agile governance contributed to improving human resource competencies through continuous learning processes and reinforced inter-institutional coordination among relevant stakeholders. This study concludes that agile governance constitutes an effective and contextually relevant governance framework for addressing complex maritime safety challenges in archipelagic regions. The integration of agile principles in the development of SiKaPal has not only improved operational efficiency and responsiveness but also strengthened institutional adaptability and collaborative capacity. Therefore, agile governance offers a strategic model for reinforcing adaptive public service systems in coastal and island-based administrations and holds strong potential for replication in other archipelagic governance contexts.

Keywords: Agile Governance, Maritime Safety, Public Policy; Maritime Governance; Sumenep Regency.



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INTRODUCTION

Sumenep Regency has 126 islands divided into 19 sub-districts on the mainland and 8 sub-districts in the sea, 48 inhabited islands and 78 uninhabited islands (Regent Regulation No. 53 of 2023, 2023). The northernmost island is Karamian Island, located in Masalembu District, approximately 151 nautical miles away, and the easternmost island is Sakala Island, approximately 165 nautical miles from the City Port. Geographically, Sumenep Regency is located between 113° 32' - 116° 16' East Longitude and 4° 55' - 7° 24' South Latitude, so it can be referred to as an archipelagic regency. As an archipelagic regency, Sumenep Regency naturally has a population that works as fishermen (Ministry of Home Affairs No. 88 of 2010, 2010). As an archipelagic region, the majority of the population's livelihood depends on the sea (Nurholis & Mokodompit, 2024)

According to data from the East Java Provincial Marine and Fisheries Service in 2023, there were 40,167 people working as fishermen throughout Sumenep Regency, accounting for around 25% of the total population of Sumenep Regency. This data shows that many people in Sumenep Regency work as fishermen (Mappangara, 2021). The large number of fishermen in Sumenep Regency poses a challenge for the government in fulfilling the rights of fishermen in relation to shipping safety and safety at sea. Shipping safety is one of the important issues that is the responsibility and priority of government programmes (Melnyk et al., 2024, 2025).

Based on data compiled by the Sumenep Regency Transportation Agency and the local Regional Disaster Management Agency (BPBD) indicate that between 2020 and 2023, approximately 20–30 maritime accidents were reported annually. Among these incidents, ten were categorized as major maritime accidents, resulting in nearly 100 fatalities during the same period.. The high number of maritime accidents that have occurred, such as the accident involving a fuel tanker in the Sepudi area, a passenger motor vessel (KMP) in Sapeken, the KLM Anugerah ship in Arjasa, the Motor Ship (KM) Fajar Nusantara in Sepudi, and the KLM Arta Jaya ship in Masalembu, as well as the sinking of the Tampomas ship in the waters of Masalembu, which attracted worldwide attention, are indicators of the high number of maritime accidents in Sumenep Regency (Hendriyansyah et al., 2022). Given this series of maritime accidents, the Maritime Safety System (SiKaPal) will be the appropriate solution.

Given this complex situation, the Sumenep Regency government needs to choose the right strategic plan to address it. The choice of governance method will be one of the determinants of the success of this policy. Agile governance is needed (Busri et al., 2023; Janssen & van der Voort, 2016; J.H.de O.Luna et al., 2014; Luna et al., 2015a, 2020; Margel et al., 2020; Mergel et al., 2018; Rasaili et al., 2024b) to resolve the safety issues faced by fishermen in Sumenep Regency. This is especially true given the push for cooperation in government policy-making, so that the existing problems can be effectively resolved (Temmerman et al., 2021).

Therefore, the Sumenep Regency government needs to implement agile governance as a basis for resolving issues related to fulfilling the maritime safety rights of fishermen in Sumenep Regency. Agile governance means that the community is able to perceive, adapt and respond quickly and continuously to changes in their environment, through a coordinated combination of agile capabilities and governance capabilities to deliver value faster, better and cheaper for the business processes of a bureaucracy (Luna et al., 2015a, 2020) (Luna et al., 2020, 2015). The principles of

agile governance itself include good enough governance, business-driven, human-focused, based on quick wins, a systematic and adaptive approach, and simple design and continuous refinement, which must be fulfilled in order to create an optimal agile governance concept (J.H.de O.Luna et al., 2014; Luna et al., 2015b).

By understanding agile principles such as responsibility, flexibility, and collaboration, we can improve the quality and efficiency of development. However, the implementation of Agile Governance also requires an understanding of the challenges that may be encountered, such as organisational cultural barriers and the need for changes in work processes. Thus, the application of Agile Governance can help improve the flexibility, speed, and quality of SiKaPal development, so that the system can be more responsive to user needs and environmental changes.

This shows that Agile Governance is indeed appropriate and important to be implemented for public organisations and is suitable for solving complex problems such as those faced by Sumenep Regency regarding the safety of fishermen in Sumenep Regency. To this end, the Sumenep Regency government, through the Communication and Information Agency, has formulated a system capable of translating Agile Governance into a method used to resolve the issue of fishing vessel safety, which demands rapid response and change (Rasaili et al., 2024a).

Seeing such a complex situation, the Sumenep Regency government sought to formulate steps to translate and implement agile governance as a solution. The result of this deliberation and formulation is SiKaPal by the Sumenep Regency Communication and Information Agency as a breakthrough that can translate agile governance and also solve the problem of fishing safety in Sumenep Regency (Dong et al., 2024). Furthermore, the implementation of SiKaPal is also an effort to realise the Ministry of Transportation Law Number 17 of 2008 concerning Shipping, making it even more relevant to be implemented.

SiKaPal is an example of the successful implementation of Ministry of Transportation regulations in the development of information systems. With the aim of improving shipping safety and efficiency, SiKaPal was developed in accordance with Ministry of Transportation regulations and has received numerous awards for its success in improving shipping safety and efficiency. These awards are proof that SiKaPal has met the standards and requirements set by the Ministry of Transportation.

Since 7 November 2022, SiKaPal has been officially launched and has won the top 45 public service innovation awards at the national level, the 2023 APDI (Indonesian Local Government Appreciation) award with 2 awards, the 2023 Satya Lencana Wirakarya award, and the 2023 Madura Award (Public Relations of the Ministry of State Apparatus Empowerment and Bureaucratic Reform, 2023). However, despite these awards, SiKaPal still requires further development to optimise the creation of agile governance and become a viable solution, as currently only 18 SiKaPal units and 3 monitoring posts are operational. Therefore, the development of SiKaPal based on agile governance in Sumenep Regency is highly relevant and urgent to be explained and holds novelty value within the framework of governance and policy research.

METHOD

This study uses a qualitative approach with a descriptive-analytical design to analyse the integration of agile governance in the development of the Maritime Safety System (SiKaPal) in Sumenep Regency. The qualitative approach was chosen because it is able to capture in depth the complexity of public policy phenomena, actor interactions, and governance dynamics in the context of an archipelagic region. Data collection techniques were carried out through semi-structured in-depth interviews with 20 informants selected purposively, including policy makers, policy implementers, policy supervisors, and users of sea transportation services. To strengthen data validity, this study also utilised documentary studies of regional regulations, maritime accident reports, SiKaPal programme planning and evaluation documents, and reports from relevant institutions as secondary data sources (Bowen, 2009). Data analysis was conducted thematically through the stages of data reduction, data presentation, and iterative conclusion drawing (Miles & Huberman, 1994). Open, axial, and selective coding processes were used to identify patterns of integration of agile governance principles, such as adaptability, collaboration, responsiveness, and continuous improvement in the implementation of SiKaPal (Braun & Clarke, 2006; Mergel et al., 2018). The validity and reliability of the findings are ensured through triangulation of sources and methods, as well as confirmation of results with key informants (member checking) to enhance the credibility of the research. With this approach, this study ensures that the results have an adequate level of credibility, dependability, and transferability as a basis for scientific and practical contributions to the development of maritime safety governance in the archipelago.

RESULT AND DISCUSSION

The principles of Agile Governance as research indicators will dissect and examine how SiKaPal works and develops in each existing indicator. Agile governance certainly aims to create an effective and efficient design so that it can build an organisation by providing value quickly, which in turn can strengthen the organisation's competitiveness. This study will describe how SiKaPal was developed based on agile governance in Sumenep Regency.

Analysis of Programme Suitability to the Role and Function of the Organisation.

The SiKaPal programme is one of the Sumenep Regency Government's strategic initiatives to improve shipping safety and security in the region (Nurhayati, 2022). In its implementation, the SiKaPal programme requires support and synergy from various parties, including the Communication and Information Agency (Diskominfo). As one of the organisations that plays an important role in the development and implementation of the SiKaPal programme, Diskominfo has the responsibility to ensure the suitability of the programme with the role and function of the organisation (Kofman et al., 2009). This includes managing information and communication technology infrastructure, developing applications and information systems, and managing data and information related to the SiKaPal programme (Baporikar, 2023).

The principle of Good Enough Governance, one of the principles of agile governance, facilitates and provides a solid foundation for the implementation of SiKaPal development. The development of SiKaPal based on Agile Governance in Sumenep Regency can improve effectiveness, efficiency, and accountability in maritime safety management by maximising the role of organisations that are already involved and need to be involved (Kikasu & Dorasamy, 2025; Sjarlis et al., 2025). Currently, organisational involvement is still fully filled by Diskominfo, but if we examine it in depth, in addition to the role of Diskominfo, there needs to be an additional role from BPBD or the Maritime Service. However, maximising the role of Diskominfo alone can already yield various successes, so if there is support from other related organisations, the SiKaPal programme will reap even greater success (Larabi, 2025).

Budget Efficiency in Marine Accident Management Through SiKaPal

Maritime accident management is one of the major challenges faced by the Sumenep Regency Government. In addition to requiring trained human resources, maritime accident management also requires a substantial budget to finance operational management, ship maintenance, and data management (Mkuhlana & Jowah, 2022; Nestico et al., 2022). In recent years, the Sumenep Regency Government has allocated a budget of Rp. 331.122.583 for maritime accident management in 2025. However, there are still several problems faced, such as a lack of budget efficiency, slow management processes, and a lack of data integration.

In this context, SiKaPal is presented as a solution to improve the efficiency of the maritime accident management budget (Mudiyanto & Febriana, 2021). By integrating data and information related to maritime accident management, SiKaPal can assist the Sumenep Regency Government in optimising the use of the budget (*communication informant*: Sukardi, 14 November 2025). With SiKaPal, the budget allocation that should have been used for maritime accident management can be allocated to other things that can provide other benefits for the welfare of the community (*communication informant*: Abdus Syukur, 16 November 2025). Indirectly, this means that the efficiency brought about by the implementation of the agile governance method not only reduces maritime accidents but also automatically provides efficiency effects in the budget sector (Lestari et al., 2025; Zhang, 2024).

Public Interest and Safety as Program Priorities

The SiKaPal program was designed with the primary objective of improving public safety and security in the shipping area of Sumenep Regency. In this context, public interest and safety are the main priorities of the SiKaPal program (Morrell & Harrington-Buhay, 2012; Pilarz, 2019). By integrating information and communication technology, SiKaPal can provide accurate and up-to-date information on sea conditions, weather, and other potential hazards (Bharathy et al., 2022; Ibraheem et al., 2024). This can help the public make wiser and safer decisions when conducting activities at sea. In addition, SiKaPal can also help improve the responsiveness and effectiveness of marine accident response (*communication informant*: Agustiono Sulasno, 16 November 2025). Thus, the public can feel safer and more protected when conducting activities at sea.

In principle, the government's orientation emphasises its role as a provider of public services and a facilitator of community empowerment. This principle affirms that the community is the main focus in policy formulation, so that every policy is directed at increasing community empowerment capacity and the quality of services to the community (Soverall, 2015; Zhao & Zhao, 2011). So far, SiKaPal has clearly been a product of the Sumenep Regency government's policy in serving its community who work as fishermen. This is especially true when we consider that many people in Sumenep Regency still depend on fishing for their livelihood (*communication informant*. Suwalki. 27 November 2025). As the safety of the fishing community is the focus, as a form of development of this policy product, the addition of units can be a solution to provide maximum service to the community. Currently, there are 50 SiKaPal units ready to be distributed to fishermen in Sumenep Regency, which is proof that sustainable development continues to be carried out by the Sumenep Regency government. By applying the Human Focused principle, the development of SiKaPal based on Agile Governance in Sumenep Regency can improve the quality of life of fishermen and the community, as well as enhance maritime safety.

Program Speed in Becoming a Safety Solution

The SiKaPal programme is designed to be an effective and efficient solution in improving safety and security at sea (Mobo, 2025). In this context, the speed of the programme in becoming a safety solution is very important (Wang et al., 2012). By utilising advanced information and communication technology, SiKaPal can provide accurate and up-to-date information on sea conditions, weather, and other potential hazards (Yang, 2018). This can help to increase awareness and preparedness among the public and other stakeholders in dealing with potential hazards at sea.

In addition, SiKaPal can also help improve the responsiveness and effectiveness of maritime accident response. Thus, this programme can be an effective and efficient solution in improving safety and security at sea. This principle is clearly applied when SiKaPal is in operation, as seen from how simple the SiKaPal tool is to use: just press the emergency button and it will immediately connect to the Sumenep Regency Communication and Information Office, which will then immediately connect to the monitoring post to carry out swift and quick rescue actions. With this simple, swift and quick process, the number of maritime accidents in Sumenep Regency can be reduced. Although the current system is already quite good, development continues, such as the addition of monitoring posts to speed up the rescue process, in an effort to reduce the number of maritime accidents in Sumenep District as much as possible (*communication informat*. 14 August 2025). By applying the principle of Based on Quick Wins, the development of SiKaPal based on Agile Governance in Sumenep District can improve maritime safety and provide tangible benefits for fishermen and the community.

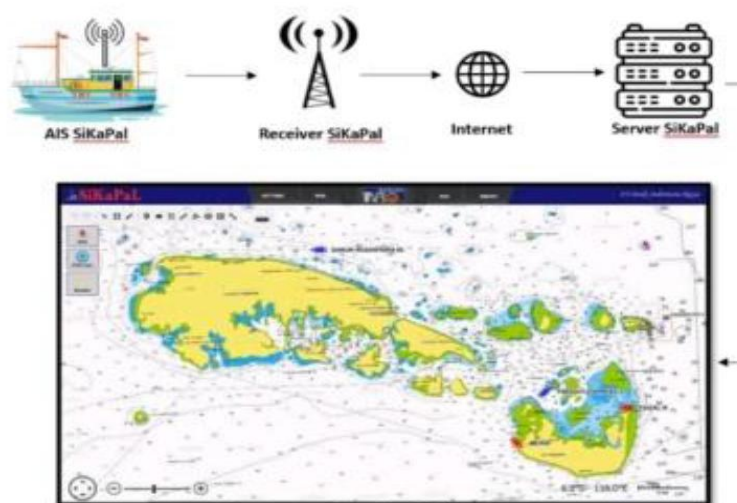


Figure 1. Sistem Kerja SiKaPal

Team Responsiveness in Maritime Accidents

Maritime accidents are unpredictable events that can cause significant losses to communities, the environment, and the economy. Therefore, team responsiveness in handling maritime accidents is crucial (Dimitrakiev & Milev, 2025; Simões-Marques et al., 2021). In this context, teams involved in marine accident response must be highly sensitive to the situation and conditions at hand. They must be able to quickly and accurately understand what is happening and make appropriate and timely decisions to handle the situation. Team implementation sensitivity in marine accidents also requires effective coordination between various parties involved, including marine accident response teams, safety officers, and local communities. Thus, the team's sensitivity to implementation can help improve the effectiveness and efficiency of maritime accident response (Chauvin et al., 2013).

In agile governance, there is a principle that emphasises the implementation of the old bureaucratic style into a new bureaucratic style that is more adaptive, open and responsive (Janssen & van der Voort, 2016). SiKaPal, as a policy product, is proof that the Sumenep Regency government has adapted and is trying to be more responsive to the issue of fishing safety in Sumenep Regency. The operation of SiKaPal is able to translate this principle, especially with 24-hour monitoring helping the system to adapt even to unpredictable weather conditions that require a quick response. The adaptive governance model prioritises and emphasises the importance of adaptive governance, where innovative policies are designed based on the local context and involve the community in the decision-making process (Janssen & van der Voort, 2020). and this can be translated through SiKaPal, which is suitable for the archipelagic nature of Sumenep Regency, thereby forming an agile governance system as a solution to the problem of fishing safety in Sumenep Regency.

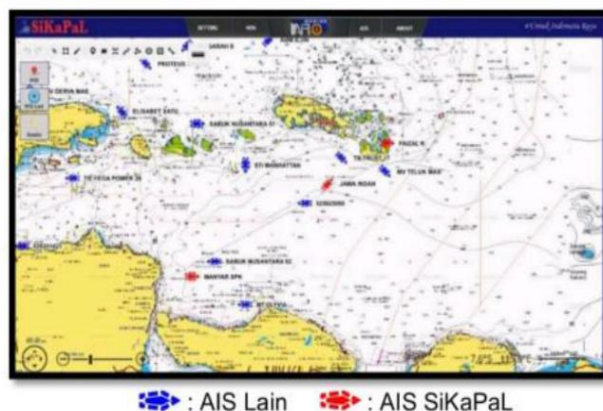


Figure 2. Monitoring Screen for SiKaPal User Fishermen

The Importance of Resource Competence in Marine Accident Prevention Readiness

Marine accident prevention is one of the top priorities in improving safety and security at sea. In this context, human resource competence is a very important factor in determining marine accident prevention readiness (Dang et al., 2025). The promotion of resource competency can help improve the abilities and skills of human resources in dealing with emergency situations and making the right decisions. Thus, resource competency can help improve the effectiveness and efficiency of maritime accident prevention (Veltsin et al., 2025). When the Sumenep Regency government decided to implement Agile Governance, the performance management of the Sumenep Regency government would focus more on innovative processes and changing the work culture to be more collaborative and responsive in order to increase productivity and accelerate the achievement of results. This was realised through SiKaPal (Adi Wijayanto, 2021).

SiKaPal is innovation has been able to translate agile governance into a method for resolving the issue of fishing safety in Sumenep Regency. The procurement process, which also involved the private sector and several other parties, made SiKaPal the result of collaborative and responsive governance on the issue of fishing safety in Sumenep Regency, thereby reducing the number of fishing accidents in Sumenep Regency and ensuring that fishermen's rights to safe fishing are fulfilled. SiKaPal is supported by several approaches, such as the use of digital technology, training and education, inter-agency collaboration, innovation in regulations, safety management systems, public awareness, and the use of data and analytics. With this design concept, it is hoped that SiKaPal can be significantly improved, reducing the risk of accidents, protecting the maritime environment, and becoming a system that can be used sustainably.

CONCLUSION

This study confirms that the integration of agile governance in the development of the Maritime Safety System (SiKaPal) in Sumenep Regency is an effective governance strategy in strengthening

maritime safety and security in the archipelago. The application of agile governance principles, such as flexibility, adaptability, collaboration, and responsiveness, enables the development of SiKaPal to be carried out more quickly and to adapt to the dynamics of field requirements and changes in policy priorities. The results of the study show that the integration of agile governance contributes significantly to improving budget efficiency, accelerating the handling of maritime accidents, and strengthening preparedness in accident prevention. In addition, this approach also encourages the improvement of human resource competencies and strengthens coordination between agencies involved in maritime safety management. Operationally, the development of SiKaPal based on agile governance has resulted in three main achievements, namely increased efficiency in the maritime safety management process, increased effectiveness in reducing accident risks, and improved quality of maritime safety services in Sumenep Regency. These findings indicate that agile governance functions not only as a managerial approach but also as an adaptive governance framework capable of addressing the complexities of maritime safety issues in archipelagic regions. Therefore, the development of SiKaPal based on agile governance can be viewed as a best practice model in strengthening the maritime safety system in Indonesia.

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