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Original Article

Sustainable Strategies for Preserving the Intangible Cultural Heritage of Pinisi Shipbuilding in South Sulawesi

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Abstract *- The Pinisi, a traditional wooden sailing vessel from the Bugis-Makassar maritime tradition in South Sulawesi, Indonesia, was inscribed by UNESCO in 2017 as an Intangible Cultural Heritage (ICH). Beyond its symbolic and cultural value, the Pinisi plays a crucial role in sustaining local livelihoods and strengthening maritime identity. However, traditional shipyards in Bulukumba face pressing challenges such as limited availability of quality timber, declining interest among younger generations in becoming panrita lopi (master boatbuilders), and insufficient investment. Previous studies have largely focused on technical, cultural, or economic aspects in isolation, leaving a gap in comprehensive preservation strategies. This study integrates a literature review, field observation, and in-depth interviews to explore the conditions of traditional shipbuilding in Bulukumba. Data were analyzed using a qualitative descriptive approach supported by SWOT analysis, enabling the identification of internal strengths and weaknesses and external opportunities and threats that influence the sustainability of the Pinisi industry. Findings indicate that while UNESCO recognition has reinforced cultural identity and opened economic opportunities—particularly in tourism and creative industries—significant obstacles remain. The scarcity of sustainable raw materials, the threat of knowledge extinction due to generational gaps, and weak policy implementation undermine long-term resilience. The SWOT analysis highlights opportunities for integrating cultural heritage into sustainable maritime development, including education-based regeneration programs, eco-tourism initiatives, and multi-stakeholder collaboration. This study provides a comprehensive framework that bridges cultural preservation with socio-economic development. It contributes academically by filling the gap left by fragmented earlier research and practically by offering strategic recommendations for policymakers, communities, and stakeholders. Ensuring the sustainability of Pinisi shipbuilding requires integrated policies, sustainable resource management, and youth engagement, positioning the Pinisi not only as cultural heritage but also as a driver of resilient maritime economies.*

Keywords *- Pinisi, Traditional shipbuilding, Intangible cultural heritage, SWOT analysis, Maritime sustainability.*

1. Introduction

Maritime transportation plays a crucial role in Indonesia, an archipelagic nation comprising more than 17,000 islands, a coastline of 95,181 km, and approximately 5.8 million km² [1] of territorial waters. Sea transport serves as a vital pillar of national connectivity to maintain the smooth flow of goods and passengers between islands. In this context, traditional shipping (pelayaran rakyat) plays a crucial role, particularly in remote and underdeveloped regions, such as frontier, outermost, disadvantaged, and border areas (3TP), through fleets of wooden vessels, including Pinisi, Lete, and Nade [2], [3]. These vessels function not only as transportation modes but also as cultural and historical assets representing Indonesia's traditional maritime technology [4].

The Pinisi, originating from the Bugis-Makassar maritime tradition, symbolizes the excellence of Indonesian seafaring. Bulukumba Regency, South Sulawesi, is widely recognized as the center of Pinisi boat-building, earning the title Butta Panrita Lopi (Land of the Boat Builders). The craft of boat-building in this region has been handed down across generations, serving both as the backbone of the local economy and as a marker of national maritime identity. UNESCO's recognition on 7 December 2017, inscribing the Pinisi as an Intangible Cultural Heritage (ICH) [5], further strengthened its global legitimacy and opened economic opportunities, particularly in culture-based tourism. Nevertheless, the sustainability of traditional shipyards faces serious challenges.

The scarcity of high-quality timber—most of which must be sourced from other regions—along with the declining interest of younger generations in becoming panrita lopi (master boatbuilders), and the lack of adequate investment, pose significant threats to the preservation of this tradition. Policy efforts have been made through Presidential Regulation No. 74/2021 on Empowerment of Traditional Shipping and Law No. 66/2024 on Shipping, which emphasize the importance of cultural heritage preservation and people's economic empowerment. However, the implementation of these policies continues to encounter structural barriers in terms of human resources, supply chains, and the competitiveness of traditional shipyards [6-8]. Previous studies have discussed various aspects of the Pinisi, ranging from construction techniques and technological evolution to social and economic dimensions. Yet, most of these studies remain fragmented, focusing on single aspects and failing to provide a comprehensive strategic framework for sustainable preservation and development. Table 1 presents a comparison of previous studies with the present research:

Table 1. Comparative matrix of previous studies and this research

Author / Year	Research Focus	Main Findings	Limitations / Gap	Contribution of This Study
[9]	Traditional boat-building process in Bonto Bahari	Described the construction stages and cultural values of the Pinisi	Focused only on technical aspects, without long-term preservation strategies	Examines not only processes but also preservation strategies through SWOT analysis
[10]	Technological development of the Pinisi	Highlighted the evolution of design and technology	Did not address socio-economic or policy dimensions	Integrates technological aspects with socio-economic and policy perspectives
[11]	Regeneration of panrita lopi (master boatbuilders)	Identified difficulties in the generational regeneration of skilled craftsmen	Did not propose strategic solutions to attract younger generations	Provides strategies based on education and collaboration to foster interest among youth
[12]	Development prospects of the Pinisi industry	Identified its economic potential and tourism value	Lacked a comprehensive strategic model combining culture, economy, and environment	Proposes sustainable development strategies using SWOT analysis
This Study (2024)	Preservation of Pinisi cultural heritage and traditional shipyard development	Formulates preservation strategies through literature review, field study, and SWOT analysis	–	Provides an integrated strategic framework for preservation, regeneration, and economic development of the Pinisi industry

The comparison shows that previous research has largely emphasized specific aspects—technical, technological, socio-cultural, or economic—without adopting an integrative approach. [9] highlighted the technical process, [10] focused on technology, [11] on generational regeneration, and [12] on economic prospects. However, none of these studies developed a comprehensive framework that integrates cultural preservation with sustainable industry development. This study fills that gap by presenting novelty through an integrated approach that combines literature review, field investigation, and SWOT analysis to formulate comprehensive preservation strategies.

This approach enables a sharper mapping of strengths, weaknesses, opportunities, and threats in the traditional shipbuilding industry of Bulukumba. Consequently, this research not only preserves cultural values and heritage but also proposes sustainable maritime economic development strategies that remain relevant in the context of modernization and globalization.

1.1. Research Objectives

Based on the identified gaps and opportunities, this study specifically aims to:

1. Identify internal factors (strengths and weaknesses) and external factors (opportunities and threats) influencing the sustainability of the traditional *Pinisi* shipbuilding industry in Bulukumba.
2. Analyze the existing conditions of the traditional shipyard industry by integrating literature review, field findings, and SWOT analysis.
3. Formulate strategies for preserving the *Pinisi* as intangible cultural heritage that safeguard traditional values while enhancing local economic competitiveness.
4. Provide practical recommendations for policymakers, communities, and stakeholders to support the sustainability of traditional shipyards in the face of modernization and globalization.

With these objectives, this study is expected to contribute academically by offering a conceptual framework

for *Pinisi* preservation and practically by presenting sustainable maritime economic development strategies rooted in local cultural heritage.

2. Methodology

This research is a literature review and field study using Metasynthesis analysis, which refers to several previous related studies, in order to draw a new understanding of a phenomenon that is always discussed in the maritime community. Thus, a recommendation on how to preserve the Intangible Cultural Heritage of the Pinisi Ship produced by the Traditional Shipyard was produced.

Field research was conducted in the center of the traditional shipbuilding industry located in Bonto Bahari Subdistrict, Bulukumba Regency. Primary data was obtained through direct observation of the traditional shipbuilding industry to understand the production process, facility conditions, and resource requirements. In addition, interviews were conducted with 16 informants, consisting of 12 Panrita Lopi, 3 ship owners, and 1 community leader, to gain in-depth insight into the conditions of the traditional shipbuilding industry. Secondary data was collected from various documents, such as books, journals, historical reports, and general publications in the community media. Data analysis was conducted using qualitative descriptive methods to explain in detail the factors that influence the preservation of intangible cultural heritage in the traditional shipbuilding industry.

The SWOT analysis [13], which considers internal factors such as strengths and weaknesses as well as external factors including opportunities and threats, is used to formulate strategies for preserving the intangible cultural heritage of the traditional shipyard industry recognized by UNESCO. The analysis is conducted using the Internal Factor Evaluation (IFE) matrix to identify the key strengths and weaknesses of the traditional shipbuilding sector, the External Factor Evaluation (EFE) matrix to highlight the opportunities and threats it faces, and the Internal-External (IE) matrix to determine the current position of the people's shipbuilding industry.

3. Results and Discussion

3.1. Traditional Pinisi Ship Architecture

Traditional ship architecture produced by shipyards in Bulukumba has a distinctive and unique shape, using building materials such as Ulin wood, Teak, Bitti, and before the wood tree is cut down, a "permission ceremony" is held so that the guardian spirit of the tree is willing to move to another tree. After that, selected wood that fits the curved shape needed in shipbuilding components is dried in preparation for ship construction in traditional shipyards.

One of the architectural features of the ship construction produced in the Bulukumba traditional shipyard is the "mast," which is the two main masts on the ship. The function of the mast becomes the support and binding of the sail system for the ship's propulsion in windy weather conditions, and as a support so that the ship will be stable when sailing and able to set the direction of the ship properly. The shape of this architecture is the main strength of traditional ships to go fast. The speed of the Pinisi ship is relied upon by traditional Indonesian sailors in exploring vast waters. Not only that, the stern of the Pinisi ship also has a curved shape and pointed ends, giving the traditional Pinisi ship its own beauty and uniqueness.

Fig. 1 Bulukumba Traditional Ship

Source: Heaven Komodo website

3.2. Traditional Shipyards

Bonto Bahari district is one of the coastal areas in Bulukumba Regency, which, with an area of 108.60 km2, directly facing the Flores Sea, has various potential resources for the management of the maritime industry of Pinisi Ship construction, capture fisheries, maritime tourism, seaweed cultivation, ponds, floating net cages, plantations, and sea transportation. However, the most famous potential in the Bonto Bahari district is the Pinisi Ship construction industry.

The history of ship construction in the shipyard has its own story, namely, Panrita Lopi was asked to make a ship that would be used in the West Irian liberation mission. It was the time of President Suharto in the 60s, when the mission was to liberate West Irian. The community was given the trust to make ships, so the term Butta Panrita Lopi was born, meaning the Land of Expert Shipbuilders in Bulukumba Regency. The ability to make ships is carried out from generation to generation, and with this basis, the beginning of the development of traditional shipyards was to anticipate the demand for sailing ships or PLM Pinisi.

The challenges faced by traditional shipyards today are partnerships or investors, especially if the Indonesian Ship Industry 'IKI' in Makassar has the possibility to partner. However, the capacity of the shipyard is still limited, requiring field land for wider assembly work. For now, it is necessary for investors to work together to develop shipyards. It would

be great if there were investment assistance from the government or if there were cooperation from private companies or the government to develop traditional shipyards.

Another challenge is that human resources are starting to lose interest in traditional ship construction skills. Instead, they are more inclined to other fields, such as migrating for office work. The government has also conducted human resource development through cooperation with the Ministry of Maritime Affairs and Fisheries. So, the coastal community is facilitated for anyone who wants to continue their education for the younger generation, especially in the marine and fisheries fields.

Sailboats, especially traditional Pinisi ships in Bulukumba, have gone global and are recognized as technically good in the manufacturing process. This makes it an important opportunity for the potential development of community shipyards. This ship construction activity in Bulukumba is not only a potential for the shipping industry. But also tourism, so it can attract tourists to see the ship construction process from an area that is already known as the center of ship construction, especially pinisi ships.

Shipbuilding is a skill passed down from ancestors. So, it is considered a characteristic of cultural heritage because people know Bulukumba as a traditional lopi or ship maker. Not to mention that the Bulukumba area is already famous for its ship construction techniques, which earned it the award at that time. Now that is an opportunity for the development of community shipyards.

3.3. Construction Materials

Another limitation is that ship construction materials, such as quality wood, have become difficult to obtain, having to be imported from other regions. The quality of the wood can affect the ship construction and retrofitting process. Another challenge is related to the process of bringing in wood as the main raw material in ship construction. Sometimes there are problems when transported by cargo ships, such as being detained by security forces at sea.

The main material for making wooden ships is definitely tree trunks with strong and sturdy characteristics, coming from certain trees that are not planted and preserved, and eventually run out in the forest. The alternative to Bitti wood in Bira, since the 1990s, has also disappeared. Kasambi has also disappeared; ironwood and amaranth are imported from Kalimantan and are also rare. Now, more black wood and kandole wood from Southeast Sulawesi and Central Sulawesi are used. Or with alternative traditions moving according to the source of raw materials, “If it runs out in Buton, move again to Aru. After Aru, move to Papua. So, if there is money, all materials are easy.”

The impact of the scarcity of wood building materials for ship construction is a problem today and in the future. It is predicted that in the coming years, the price of traditionally rich shipyard production ships will be higher than that of steel hull material. As an illustration for ship construction using raw materials of black wood and kandole wood, because they have strong and sturdy characteristics, they are suitable for use in the ship construction process here. For the manufacture of wooden ships of 200 GT, the wood requirement is 50 cubic black wood. 75 cubic kandole wood, 500 trees of bitti wood for the hull.” An illustration of the price of a piece of ebony wood, from one whole tree 23 m long, measuring 45 x 40 cm. For a 23m-long ship, the price is around IDR 300 million per beam, and these beams must be imported from various islands, making them expensive.

In addition, shipbuilders make adjustments in design, materials, and construction methods to ensure that the boats produced meet current safety standards and requirements. The integration of modern technology in safety monitoring is part of these adjustments to ensure that every pinisi produced meets the necessary safety standards. This can be seen from the use of raw materials that adjust the availability of wood from trees.

Fig. 2 Ship structure

Source: Private Documentation

3.4. Construction Processing

The initial stage of shipbuilding is usually determined by the best day to look for wood on the 5th and 7th days of the same month. But now it is different because they already use black wood or kandole wood as raw material and just buy it. The next stage is felling, drying, and cutting the wood. Now there is no need to cut down, just dry and cut the wood that has been imported from other areas.

The wood is then assembled into a boat by laying keels, planks, caulking, and installing sail masts. Next, the part to be cut is marked with a chisel, and the cutting is done all at once without stopping, which is why the cutting must be done by a strong person. The third stage is the ship's launching (Annyorong) into the sea. Usually used as a vacation attraction, before the ship is launched into the sea, a maccera lopi ceremony (purifying the ship) is held. This ceremony is marked by the slaughter of animals. For ships weighing less than 100 tons, the animal slaughtered is a goat; if the weight is more than 100 tons, then the animal slaughtered is a cow. For a long time, the people of Bulukumba have been famous for their ability to make pinisi boats. The center of the pinisi boat craft is located in Tana Beru Village, Bontobahari District, Bulukumba. Until now, Bulukumba is still known as a pinisi boat producer, where the craftsmen still maintain the tradition of making the boat. Most only follow the times and standardize the safety and security of sailing.

Fig. 3 Material and construction of a traditional shipyard

Source: Private Documentation

Technically, there are not too many changes, only in the systematic planning that aims to make the work more effective. Overall, ship construction still holds the traditional way. The manufacturing process still uses traditional rules as passed down from the ancestors, namely, traditional techniques. Changes occur in the tools used; there have been innovations over time, such as using chainsaws, to facilitate the shipbuilding process. Then, from the ship's shape, there is also not much change, only paying attention to safety standards such as fire extinguishing systems, warnings, and other security on board.

3.5. Cultural Values

In the traditional construction process, shipbuilders (panrita lopi) show how culture and local wisdom can produce works that are highly valued in the maritime world. Traditional technology, not involving modern technology, shows that Panrita Lopi has high expertise and intuition built on long experience in ship construction and seafaring. This tradition makes Bulukumba an important example in the study of maritime culture in Indonesia, and reinforces its status as the center of the traditional shipping industry in the archipelago.

The values of local wisdom contained in the pinisi ship include the value of identity or cultural symbols of the people of the South Sulawesi region. Then the Religious values contained in the ship's 7 sails are interpreted as symbolizing 7 verses from Surah al-Fatiha. This symbol is used as a philosophy of the Bulukumba community as a prayer for safety when sailing at sea, and as a social value. Another local wisdom value is the boat blessing ceremony, which is done when the boat is made and when it is used. The Annyorong Lopi ritual is also performed by the community as a sign of gratitude for the completion of a boat-building activity, and will be operated at sea. The goal is for the boat to bring safety and abundant sea products for the owner and user of the boat.

Fig. 4 Traditional and modern ship launch

Source: https://fajar.co.id/wp-content/uploads/2021/02/Festival-Pinisi-Bulukumba-4.jpg

Originally, Annyorong Lopi was a ship-launching tradition performed entirely through human effort, where the community collectively pushed the vessel from land into the sea. This practice symbolized unity, cooperation, and the deep bond between people and the ocean, carrying profound cultural and spiritual meaning for fishing communities. With the passage of time, modern technology has transformed this process. Today, Pinisi ships are commonly moved into the water using machines such as hydraulic systems or heavy equipment, which makes the work more efficient. Nevertheless, even though mechanical power has largely replaced human labor, the essence of the Annyorong Lopi ritual remains intact. The ceremony continues to be carried out with reverence and prayer, serving as a symbol of respect for the sea and as an appeal for the safety of those who sail upon it.

"From the design of the ship, it can be seen that the ornaments carved on several parts of the ship. Like the dragon symbolizes strength and courage, there are images of birds that symbolize freedom and natural beauty. So the ornaments are an illustration of how the characteristics of the people of Bulukumba are influenced by the surrounding nature."

Based on the interviews above, it can be seen that while maintaining the values of the heritage, they also have the responsibility to adapt to change and enrich the tradition through innovation. Over time, the motivation and passion of the pinisi makers have evolved. While the passion remains rooted in hereditary values, shifting times have changed the focus of pinisi makers. Today, the passion remains rooted in ancestral values, but is increasingly mixed with a spirit of personal achievement. Today's *pinisi* makers feel a sense of pride and fulfillment through innovation, dedication to quality work, and personal achievement in the face of rapidly changing demands. Changes include an emphasis on innovative values, creating new ways to enrich and sustain the tradition. Pinisi makers are now more open to new ideas and technologies that can improve the quality of the pinisi without compromising the traditional essence. Although these new elements enter the pinisi-making process, hereditary values such as respect for one's ancestors and pride in being a pinisi maker remain strong and unchanged.

3.6. Preservation Strategy

From the results of observations and interviews with respondents, several strategic factors were obtained that affect the development of the traditional shipping industry. These strategic factors consist of internal factors, which include strengths and weaknesses, and external factors, which include opportunities and threats. Based on the results of processed data from respondents' questionnaires and the SWOT analysis conducted, it was found that the position map of respondents' perceptions of the development of the traditional shipping industry was in Quadrant I. This position indicates that the existing conditions of the traditional shipping industry are not good. This position indicates that the existing conditions of the traditional shipping industry have significant strengths that can support development and great opportunities to be utilized.

Table 2. Mapping of internal and external factors

Internal (IFE) / **External (EFE)**	**Strength (S)**	**Weakness (W)**
	• The expertise of the local community is no doubt in the shipbuilding process. • Ship construction techniques still maintain traditional values. • The Pinisi shipbuilding technology in Bulukumba has been recognized by UNESCO as a World Intangible Cultural Heritage.	- The raw materials for shipbuilding wood must be imported from other areas, which takes a lot of time. - Wood obtained from trees is not the result of being planted and nurtured but grows wildly, so there is the potential for raw material limitations.
Opportunity (O)	**S-O**	**W-O**
• Sailboats, especially traditional Pinisi ships in Bulukumba, have gone global. • The government has also conducted human resource development through cooperation with the Ministry of Maritime Affairs and Fisheries. • Potential as a tourism object, and is considered part of the cultural heritage and characteristics.	• Optimizing local expertise by leveraging UNESCO's recognition of Pinisi to expand export markets. • Integrate traditional values in shipbuilding techniques with human resource development through formal training to attract the younger generation. • Develop Pinisi as a maritime culture-based tourism and eco-tourism object with local community involvement. • Utilize Pinisi's global status to attract partnerships with local and foreign	• Building a sustainable wood raw material supply system through cooperation with the government and related ministries. • Establishing cooperation with relevant government bodies to develop environmentally friendly and easily accessible alternative raw materials, without compromising the quality of Pinisi ships. • Integrating local human resource development with Pinisi tourism opportunities to support the economy and address raw material distribution.

	investors and strengthen the traditional shipping industry in Bulukumba.	• Enhancing access to government incentive programs to expedite the ship production process.
Threats (T) • There is a need for larger partnerships or investors in the ship construction industry. • The sustainability of boat experts (panrita lopi) is threatened due to a lack of regeneration among the younger generation interested in learning traditional boat-building skills.	**S-T** • Optimizing UNESCO recognition to attract the attention of investors and international partners to support the sustainability of the industry and the regeneration of traditional boat experts. • Enhancing the skills of local communities through training based on traditional techniques and modern innovations to address the threat of a lack of regeneration among experts (panrita lopi). • Developing a regeneration program for experts (panrita lopi) by involving local communities and educational institutions, utilizing traditional advantages and technology as key attractions.	**W-T** • Seeking alternative sources of local and sustainable wood raw materials to reduce dependence on other regions. • Building partnerships with investors and the government to address the threat of a shortage of investors and strengthen the traditional ship construction industry. • Developing a regeneration program for experts (panrita lopi) with training based on tradition and modern technology to mitigate the threat of a scarcity of skilled workers.

Source: Data analysis results, 2024

The IFE Matrix is used to determine the significance of internal factors present in the people's shipbuilding industry. The IFE Matrix illustrates the internal conditions of this industry, consisting of strengths and weaknesses, which are calculated based on ratings and weights.

Table 3. Internal Factor Evaluation matrix (IFE)

No.	Internal Factors	Weight	Rating	Score Weight
	Strength			
1.	The expertise of the local people in the shipbuilding process is beyond doubt.	0,22	4,88	1,07
2.	Ship construction techniques still maintain traditional values.	0,21	4,75	1,00
3.	The technology for making pinisi ships in Bulukumba has been designated by UNESCO as a world intangible cultural heritage.	0,22	5	1,10
	Total	**0,65**		**3,17**
	Weakness			
1.	The raw wood materials for construction ships must be brought in from other areas, which takes a lot of time.	0,17	3,88	0,66
2.	Wood obtained from trees is not the result of being planted and maintained, but grows wild, so there is the potential for limited raw materials.	0,18	3,94	0,71
	Total	**0,35**		**1,37**

Source: Analysis Results, 2024

From the weighting results, the total value of internal factors is 3.17 for strengths and 1.37 for weaknesses. Thus, the overall internal score is 1.80 (3.17 - 1.37). This score indicates that strengths are more dominant than weaknesses. The EFE (External Factor Evaluation) matrix is used to evaluate external factors that affect the people's shipping industry, both opportunities and threats. This matrix helps analyze external factors that can affect the strategic position of an organization in dealing with them, and it is calculated based on ratings and weights.

Table 4. External Factor Evaluation (EFE) matrix

No.	External Factors	Weight	Rating	Weight Score
	Opportunity			
1.	Sailing boats, especially the traditional Pinisi ships in Bulukumba, are world famous.	0,24	4,94	1,19

2.	The government has also carried out human resource development through cooperation with the Ministry of Maritime Affairs and Fisheries.	0,19	4,06	0,77
3.	The *Pinisi* ship has the potential to be a unique and distinctive tourist attraction.	0,23	4,94	1,14
	Total	**0,66**		**3,09**
	Threats			
1.	Lack of partnerships or large investors is a challenge in the development of the shipping industry.	0,17	3,56	0,61
2.	The sustainability of boat craftsmen (panrita lopi) is threatened by the lack of regeneration of craftsmen among the younger generation who are interested in learning traditional ship construction skills.	0,17	3,63	0,62
	Total	**0,34**		**1,22**

Source: Analysis results, 2024

For external factors, the total value of opportunities is 3.09 and threats 1.22, so the overall external score is 1.87 (3.09 - 1.22). This score shows that opportunities are more dominant than threats. Based on the results of Tables 1 and 2, the position of the traditional shipping industry in Bonto Bahari District, Bulukumba Regency, is in Quadrant I: Strengths and Opportunities. In this quadrant, significant internal strengths and large external opportunities provide opportunities to develop and build the traditional shipping industry better.

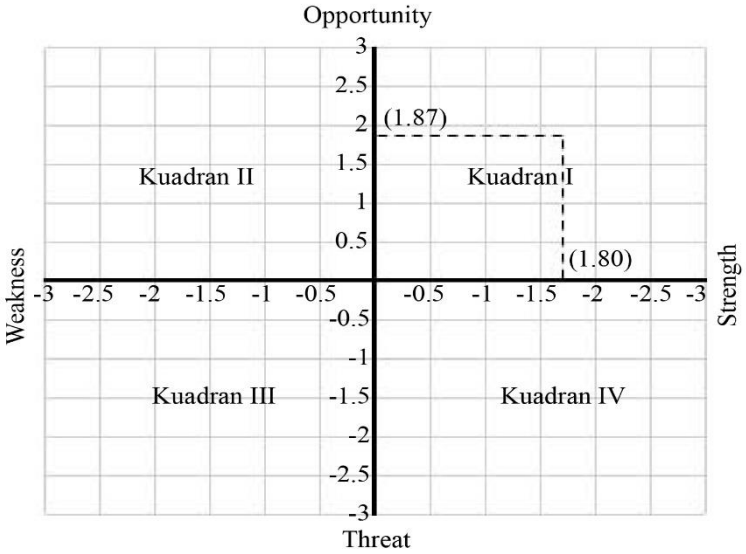

Fig. 5 SWOT analysis quadrant diagram

Source: Data analysis results, 2024

The appropriate strategy in this situation is to grow and build, which emphasizes efforts to strengthen local expertise and expand markets.

Several strategies that can be undertaken are: (1) Optimizing local expertise by leveraging UNESCO recognition of the Pinisi to expand export markets [14]; (2) Integrating traditional values in ship construction techniques with human resource development through formal training to attract the younger generation [15]; (3) Developing the Pinisi as a cultural-based tourism and eco-tourism object with local community involvement; and (4) Utilizing the global status of the Pinisi to attract partnerships with both local and foreign investors to strengthen the traditional ship construction industry in Bulukumba [16]. However, to support this strategy, internal weaknesses such as limited wood raw materials and external threats such as competition with modern technology need to be systematically addressed through innovation, collaboration, and empowerment of local resources. With this approach, the development of the people's shipbuilding industry is expected to significantly contribute to maritime transportation, the local economy, and the preservation of cultural heritage in Bulukumba Regency, particularly in Bonto Bahari District.

4. Conclusion and Recommendation

Safeguarding the Pinisi ships in Bulukumba, South Sulawesi, involves more than just maintaining the vessels themselves; it also includes protecting the traditional expertise, shipbuilding methods, and cultural rituals associated with their construction. This heritage, handed down from generation to generation, continues to be preserved by the local community through various efforts, such as annual festivals that highlight and promote maritime traditions. The acknowledgment of the

Pinisi ship by UNESCO as a World Cultural Heritage underscores its significance as a cultural icon with international value. Amidst the challenges of modernization and socio-economic changes, the Pinisi ship continues to adapt to meet contemporary needs, such as in tourism and education, without losing its traditional values. One example of innovation is the initiative by Pinisi Pusaka Indonesia, which has successfully transformed this traditional vessel into a luxury cruise ship while maintaining its appeal as a stunning cultural heritage [17-19].

To maintain the sustainability of the Pinisi ship, formal education and training for the younger generation need to be intensified so that these traditional skills continue to be preserved. Additionally, international collaboration can be expanded to introduce the Pinisi ship to the global market and as part of Indonesia's cultural diplomacy. Challenges such as the scarcity of raw materials and the regeneration of skilled workers must also be addressed through reforestation programs, government support, and partnerships with the private sector and local communities.

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