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Pa'lopian: The Mastery of Tanjung Bira Seafarers in Navigating the Nusantara with Phinisi Vessels in Indonesia

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ABSTRACT

The successful voyages of the phinisi Nusantara, from historical crossings to Singapore and Malaysia during the Nusantara Kingdoms to late 20th-century expeditions to Vancouver, Madagascar, Australia, and Japan, highlight the exceptional skills of Tanjung Bira seafarers. This study explores the mastery of these sailors, known as Pa'lopian, in navigating the phinisi vessels. Conducted in Bira Village, South Sulawesi, Indonesia the research employs a constructivist framework using case studies and phenomenological analysis, with data gathered through observation, interviews, and documentation. The findings reveal that the seafarers' expertise lies in their ability to integrate knowledge of winds, currents, and waves for safe navigation. The study advocates for preserving this traditional maritime knowledge by establishing a Community University to support its transmission, especially in the context of maritime tourism. Integrating these indigenous practices into modern educational systems is crucial for their survival and relevance.

Keywords: Phinisi vessels; Pa'lopian; traditional navigation; maritime heritage; South Sulawesi.

INTRODUCTION

The maritime heritage of Indonesia, particularly that of the Bugis-Makassar people, has long been recognized for its significant contributions to the archipelago's development and maritime dominance. In 1988, Australian historian Peter Spillet brought global attention to the long-standing connections between Northern Australia and the Bugis-Makassar people, asserting that Husein Daeng Rangka, a Bugis seafarer, played a pivotal role in settling Northern Australia, a region known historically as Marege. To substantiate these historical connections, Spillet replicated a historic voyage using a traditional Bugis vessel, *Hati Maregge*, navigating from Makassar to Marege. This expedition, supported by Hasanuddin University and the Darwin Museum of Arts and Sciences, exemplified the profound socio-cultural exchanges facilitated by Bugis-Makassar seafarers during this period (Spillet, 1988).

The Bugis-Makassar maritime expertise reached global recognition through a series of significant voyages of the *phinisi* boats in the late 20th century. The *Phinisi Nusantara* sailed to Vancouver, Canada, in 1986 as part of a cultural promotion effort. In 1991, the *Phinisi Amanna Gappa* journeyed to Madagascar, tracing historical links and demonstrating the seaworthiness of the *phinisi* in crossing oceans. The 1994 voyage of the *Phinisi Damarsagara* to Japan further highlighted the craftsmanship of these traditional vessels, while also promoting Indonesia's rich maritime culture (Demmallino et al., 2019).

As an archipelagic nation with thousands of islands separated by vast seas, Indonesia's history has been shaped by the maritime activities of communities like the *Pa'lopian*—expert seafarers from Tanjung Bira, Bulukumba, South Sulawesi. These sailors possess a remarkable ability to navigate the *phinisi* boats through dangerous waters, relying solely on indigenous knowledge of winds, currents, and waves. This traditional expertise, rooted in local knowledge systems, stands in stark contrast to the reliance on modern technologies such as satellite navigation, engines, and advanced safety equipment (McDermott & Rife, 2023; Mina et al., 2023; Nakajima & Yamamoto, 2024; Simonetti & Crespillo, 2024).

Local knowledge systems, particularly in maritime contexts, represent a unique form of environmental adaptation and resilience. In the case of the Tanjung Bira seafarers, their expertise extends beyond navigation, encompassing a holistic understanding of environmental cues and the practical application of this knowledge in day-to-day maritime operations. Local knowledge systems, often termed as indigenous knowledge, have been documented across various cultures worldwide, each reflecting a deep connection between human societies and their environments (Benny, 2012; Nigren, 1999).

In Indonesia, the maritime traditions of the Bugis-Makassar people stand as a testament to the adaptive capabilities of local communities. Similar studies on local knowledge systems in Indonesia have highlighted practices such as the *Patorani* knowledge system in fisheries conservation (Hasriyanti, Alonge & Syarif, 2023), the indigenous time-keeping systems of the Batak people (Angerler, 2021), and the ecological wisdom of the Baduy people in rice conservation (Iskandar & Iskandar, 2017). These systems reflect the broad spectrum of knowledge utilized by local communities to adapt to environmental challenges and manage natural resources sustainably. However, despite their historical significance, these knowledge systems are often marginalized in the face of modernization.

The seafaring knowledge of the Tanjung Bira community is a distinctive part of this broader system of local maritime knowledge. Their exceptional skills in navigating *phinisi* boats, relying on wind patterns, ocean currents, and environmental signs such as the position of stars and the colour of the sea, form an intricate web of knowledge passed down through generations. This study aims to document and analyse the maritime expertise of the Tanjung Bira seafarers, highlighting the value of their local knowledge systems in contemporary contexts, particularly in the face of growing interest in maritime tourism and the preservation of cultural heritage. By doing so, this research not only enriches the body of knowledge on local maritime systems but also underscores the need for preserving and integrating these systems into modern educational frameworks (Hviding, 1996; Dekker, 2018; King & Watson, 2021; Breen, Green & Esposito, 2022).

METHOD

This study adopts a qualitative research approach grounded in a constructivist paradigm to explore the indigenous knowledge systems of the *Pa'lopian* (master seafarers) from Tanjung Bira, South Sulawesi, Indonesia. The research employs a case study method combined with phenomenological analysis, aiming to understand the lived experiences and traditional maritime practices used by the seafarers to navigate *phinisi* boats. By utilizing the constructivist approach, the study emphasizes the subjective meanings constructed by the seafarers regarding their interaction with environmental elements such as wind, currents, and waves (Creswell & Creswell, 2018).

The research was conducted in Bira Village, located in Bontobahari Sub-district, Bulukumba Regency, South Sulawesi, Indonesia, which is known as the origin of skilled *phinisi* boat builders and expert sailors. The participants were selected through a snowball sampling method (Marcus et al., 2017), beginning with prominent figures within the maritime community, such as boat captains (*ponggawa laut*) and helmsmen (*juru mudi*). These key informants, consisting of 15 individuals including five captains, five helmsmen, and five crew members (*sawi*), were chosen due to their extensive experience and knowledge in traditional navigation. Additionally, boat owners (*ponggawa darat*) and community elders were included as supplemental informants to provide a comprehensive understanding of the indigenous knowledge system.

During the data collection phase, several methods were employed to ensure rich and reliable data. First, participant observation was conducted by joining short voyages on the *phinisi*, during which the decision-making processes and the ways sailors navigated the boat based on environmental cues were directly observed. This approach enabled an immersive understanding of how the *Pa'lopian* utilize traditional methods to interpret natural elements. Second, in-depth interviews were conducted with the informants, using semi-structured questions specifically designed to explore their indigenous maritime knowledge. The interviews, lasting between 60 and 90 minutes, were recorded and subsequently transcribed to capture detailed insights into their understanding of winds, currents, waves, and other natural signs. Lastly, historical records and documents related to the maritime history of the Bugis-Makassar people were analysed to situate the practices within a broader historical context.

To ensure the accuracy and credibility of the findings, data triangulation was employed by cross-referencing information gathered from observations, interviews, and document analysis (Yin, 2018). This method allowed for the validation of the consistency of the data from different sources.

The data analysis was conducted through a multi-stage process, beginning with the organization of collected materials. Field notes, interview transcripts, and observational records were systematically arranged into thematic categories. Through initial coding, recurring themes related to navigation practices and their reliance on environmental factors were identified. Subsequently, a horizon analysis was performed (Moustakas, 1994) to capture the unique perspectives of each participant, focusing on how they interpreted environmental cues to guide their navigation. This step was crucial in identifying the core elements of their navigational knowledge, free from external theoretical biases.

Thematic analysis was then employed to group similar codes into broader themes that reflected the collective experiences of the *Pa'lopian*. Relationships between different themes were mapped, particularly in relation to pre-sailing preparations, navigation during voyages, and post-sailing rituals. Through this process, a coherent representation of the indigenous knowledge system was constructed. Finally, the findings were synthesized into a narrative that highlighted the unique traditional practices of the Tanjung Bira seafarers, offering a comparison between their knowledge systems and modern navigation techniques, and discussing how traditional and contemporary methods can complement one another.

Throughout the research process, ethical considerations were strictly adhered to. Approval was obtained from the Institutional Review Board (IRB) of Hasanuddin University. Informed consent was secured from all participants, and their identities were anonymized through the use of pseudonyms to maintain confidentiality.

RESULT

In general, the Local Knowledge System in the Navigation of the Phinisi Nusantara can be divided into three stages: (1) Pre-Sailing Stage, (2) Sailing Process Stage, and (3) Post-Sailing Stage. These three stages of the Phinisi Nusantara navigation will be elaborated as follows:

Pre-Sailing Phase

The fundamental philosophy for the master sailors of Bugis-Makassar, particularly the expert sailors of Tanjung Bira, is *Kuallengi Tallanga na Toawalia*, which translates as "Better to Sink than to Return." The phrase *Kuallengi Tallanga na Toawalia* carries a profound meaning, particularly during the pre-sailing stage. It implies that before setting sail, sailors must thoroughly prepare themselves, leaving no room for returning due to forgotten or incomplete preparations, whether mental or physical, for both the sailors and the boat they are navigating (Hviding, 1996). This philosophy represents the deep-seated maritime ethics of the Bugis-Makassar people, where responsibility, honour, and preparedness are considered essential virtues. It also reflects the communal expectation that every voyage must be undertaken with utmost discipline and spiritual readiness, aligning with the sailors' worldview that the sea is both a livelihood source and a sacred domain.

In the pre-sailing stage, locally referred to as *Appanaung Lopi*, two key activities are carried out by the sailing community: (1) preparing the boat to ensure it is fully seaworthy, and (2) mentally preparing the sailors so that they have no doubt or fear when setting sail. A boat is deemed seaworthy when it has undergone necessary renovations, including repairs to the hull to prevent leaks, the replacement of masts to improve speed, and other essential adjustments or replacements. These practices demonstrate a holistic understanding of seafaring, emphasizing that technical readiness must be matched with emotional and psychological balance among the crew. The importance of ensuring the boat's structural integrity and the sailors' mental readiness has been emphasized in various maritime anthropological studies, where pre-departure rituals and vessel inspections are seen as forms of both practical safety and symbolic assurance (Dekker, 2018).

Additionally, the boat must be fully equipped for the voyage, including essential items such as nautical charts, a compass and backup compass (for navigation), balance stones (to stabilize the boat from tilting), provisions for the journey, a flashlight (for illuminating the boat's direction), and a mirror (as a signalling device for other vessels in case of an emergency). A key aspect of this preparation process is ensuring that the boat can withstand the open sea, with every component being carefully tested before departure. The boat is considered ready for sailing only after it has been thoroughly inspected and successfully tested on a trial sail of 3–5 nautical miles in the local harbour (see Figure 1). This rigorous testing phase mirrors practices observed in other traditional seafaring communities, where the success of the voyage depends on the careful balance of technical and mental preparedness (Dekker, 2018; King & Watson, 2021).

These preparatory stages are not merely procedural but also carry deep symbolic meaning in the Bugis-Makassar maritime tradition. The inspection and trial voyage are accompanied by ritualistic expressions of gratitude

and supplication, reflecting the belief that sailing is both a human and divine collaboration. Such rituals are cultural manifestations of the local epistemology that acknowledges nature as an active agent requiring respect and negotiation rather than domination. Similar perspectives have been documented in other maritime societies in Southeast Asia, where navigation and craftsmanship are infused with spiritual values that reinforce community solidarity and intergenerational transmission of knowledge (Breen, Green & Esposito, 2022).

Furthermore, the mental preparation of the sailors—often led by the *ponggawa laut* (boat captain)—serves to align the crew's collective spirit before departure. The philosophy of *Kuallengi Tallanga na Toawalia* functions as a moral compass, ensuring that every sailor recognizes the gravity of their responsibilities. This process fosters not only technical competence but also moral discipline and courage, which are essential for facing unpredictable maritime conditions. The interplay between technical preparation and spiritual fortitude underscores a holistic maritime culture that integrates practical seamanship with ethical and cosmological principles.

Thus, the pre-sailing phase of the *Pa'lopian* tradition embodies both material and immaterial dimensions of maritime expertise. It highlights how indigenous seafaring knowledge in Tanjung Bira represents a sophisticated form of applied wisdom—an integration of technical, environmental, and spiritual knowledge that continues to sustain local identity and heritage. By situating this tradition within broader maritime cultural frameworks, it becomes evident that the *Pa'lopian* knowledge system not only ensures survival at sea but also preserves a worldview rooted in respect, resilience, and interdependence between humans and nature (Keesing, 1990; Hviding, 1996; Dekker, 2018).

Figure 1. The Vessel Declared Seaworthy (Undergoing Trial Sail)

After the vessel has been declared seaworthy, mental preparation of the crew is equally crucial, as the state of the ship and the crew must align perfectly. This mental preparation is carried out through a series of protective rituals (*tolak bala*), either collectively on the ship before a trial sail or individually with family members after the trial. These rituals often take the form of prayers for safety during the voyage, led by an experienced elder or religious figure, while offerings (*sesajen*) serve as symbols of protection (Spillet, 1988; Demmallino et al., 2019). The final ritual, considered highly sacred, involves a personal moment between the sailor and his wife. They sit opposite each other, knees touching, with a white cloth between them, symbolizing spiritual and physical unity. During this intimate moment, they recite sacred phrases, reaffirming their trust in divine protection for the sailor during his journey (Benny, 2012; Hasriyanti et al., 2023). This practice reflects the profound cultural belief that even in the face of potential danger, the crew's spiritual and mental state can determine the outcome of the voyage (Hviding, 1996; Keesing, 1990).

This spiritual preparation reflects the broader indigenous belief systems seen in other maritime cultures, where success at sea is often attributed to the favor of the spiritual world and the balance between human and natural forces (Dekker, 2018; King and Watson, 2021; McGoodwin, 2001). In the case of the Bugis-Makassar seafarers, their strong sense of fate and duty—embodied in the prayer for safe return—is a testament to the intertwined relationship between their spiritual lives and their maritime livelihood (Demmallino et al., 2019; Loch and Riechers, 2021; Breen et al., 2022). The ritual reinforces the idea that the sea is not just a physical space to be conquered but also a realm influenced by forces beyond human control, requiring deep respect and reverence (Keesing, 1990; Agrawal, 1995). By combining meticulous technical preparation with spiritual and mental readiness, the Bugis-Makassar seafarers create a holistic system that ensures both physical and emotional resilience (Spillet, 1988; Demmallino et al., 2019; Sillitoe, 2007). This approach highlights the importance of integrating indigenous practices into modern understandings of maritime safety, particularly in the context of long voyages where psychological endurance is as crucial as technical skill (Loch and Riechers, 2021; Ramos et al., 2020).

Sailing Phase

Conceptually, every movement of the *phinisi* boat is assumed to be at the centre of the cardinal points (see Figure 2). Winds generally blow from west to east and from north to south, or vice versa; however, winds from the west to east or from the north to south are typically stronger compared to those in the opposite direction (Spillet, 1988; Demmallino et al., 2019). Winds from other directions—such as southwest, northwest, northeast, and southeast—are considered to have less strength compared to winds coming directly from the west or north (Keesing, 1990; Dekker, 2018). The direction or movement of the wind is always aligned with the movement of the currents and waves, reflecting the traditional maritime understanding of natural forces among the Bugis-Makassar seafarers (Hviding, 1996; McGoodwin, 2001). The challenge arises when the boat's course or destination is not aligned with the wind direction, or is in opposition to the wind, current, and waves. This is where the skillful control of the boat—the sailor's dexterity and experiential knowledge—plays a critical role in navigating the *phinisi* across the ocean (Demmallino et al., 2019; Breen et al., 2022; Ramos et al., 2020).

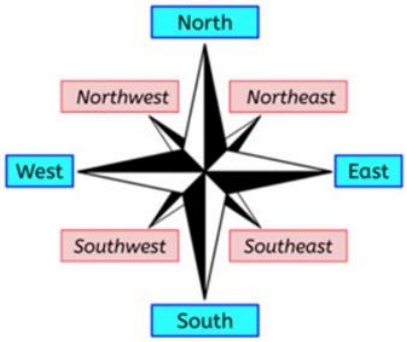

Figure 2. The cardinal points serve as the primary navigational guide in sailing

The first action in starting the voyage is to find the optimal position to capture the strongest winds, allowing the boat to move more swiftly. This process is locally referred to as *Attunggeng* and *Akkarakkaji*. In seeking this position, careful consideration must be given to the strength of the currents and waves (*Allinjai*), ensuring that the boat maintains its course towards its destination and is not carried off by the currents and waves (see Figure 3). This traditional maritime knowledge reflects the Bugis-Makassar sailors' deep understanding of natural forces and their adaptive navigation strategies developed through generations (Spillet, 1988; Demmallino et al., 2019; Hasriyanti et al., 2023). It also illustrates how indigenous seafaring practices embody ecological wisdom that integrates observation, intuition, and experience in reading the sea (Keesing, 1990; Hviding, 1996; Sillitoe, 2007).

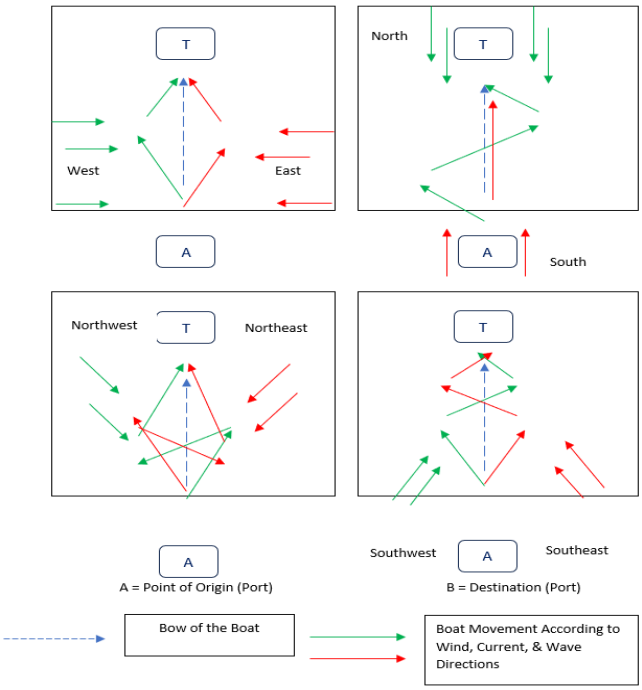

Figure 3. The movement of the phinisi based on wind, current, and wave direction

In addition to controlling the direction of the boat's movement, the sails must also be properly managed to ensure they function optimally, allowing the boat to move more efficiently. Figure 4–6 illustrates how sail adjustments are made depending on whether the wind comes from the front, back, or from the right or left, either from the front or rear of the boat. These sail adjustments demonstrate the Bugis-Makassar sailors' sophisticated understanding of wind dynamics and vessel balance, reflecting an advanced level of indigenous maritime engineering (Spillet, 1988; Demmallino et al., 2019). The coordination between sail control and navigation is a crucial skill transmitted through generations, ensuring stability and efficiency even in unpredictable sea conditions (Hviding, 1996; Dekker, 2018). Such practices exemplify how traditional maritime systems combine empirical knowledge with cultural adaptation to optimize sailing performance (King & Watson, 2021; Loch & Riechers, 2021).

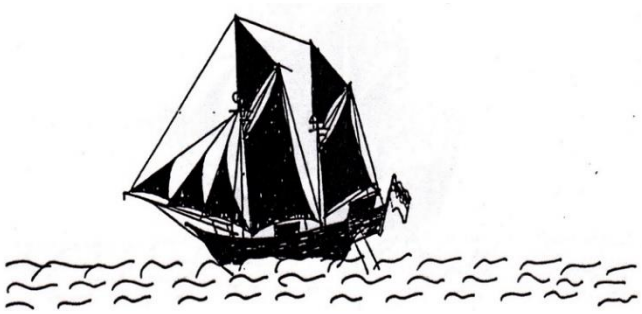

Figure 4. Sail control when the wind comes from the side of the boat

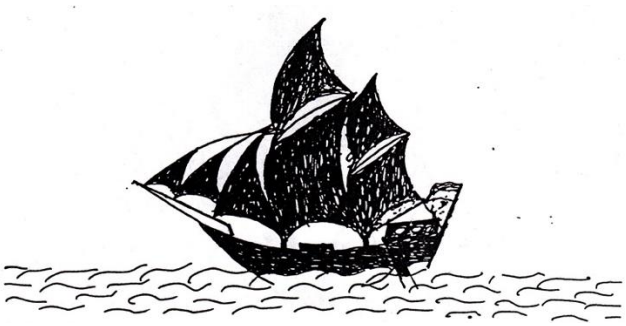

Figure 5. Sail control when the wind comes from the front or back of the boat

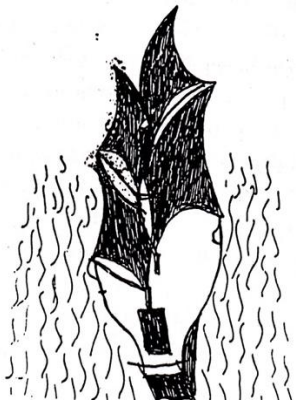

Figure 6. Sail control when the wind comes from behind the boat

In addition to controlling the direction of the boat's movement, proper sail management is essential to ensure optimal functionality, enabling the boat to move more efficiently. Effective sail handling, depending on the wind's direction, is a critical skill for traditional sailors. Adjusting the sails according to wind patterns ensures that the vessel maintains its speed and course, even in complex maritime environments. Research in traditional navigation systems has shown that sail handling is key to balancing boat stability and speed, especially in unpredictable wind conditions (Rahman, 2021).

Figure 4a–4c illustrates the various sail adjustments that need to be made depending on whether the wind originates from the front, back, or from the right or left side of the boat. Such manoeuvres are especially significant when sailing in open seas, where wind directions frequently change, and the *phinisi* must be able to adapt to maintain forward momentum. It is important to note that *phinisi* sailors rely heavily on natural cues in addition to modern

navigational aids like compasses and maps. Traditional sailors have long utilized the sun, sea colour, wind, and wave patterns for safe passage, a practice well documented in studies on indigenous maritime systems (Darmawan, 2020). For instance, the color of the sea is used to determine depth, with black waters indicating depths greater than 500 meters, blue signalling moderate depths (30–500 meters), and gray suggesting shallow waters (<30 meters).

Moreover, *phinisi* sailors categorize currents and waves into three types: (1) Small Currents and Waves that occur during the transitional seasons between monsoons; (2) Medium Currents and Waves that arise 2–5 days after strong winds begin; and (3) Large Currents and Waves, also known as *Arus dan Ombak Tua*, which are most dangerous during the western and eastern monsoon seasons (Basri, 2019). Similarly, wind patterns are classified into three types based on their impact on navigation: (1) Normal Winds (*Angin Biasa*), which pose no threat; (2) Moderate Winds (*Angin Tengah*), which create slightly darker patches on the sea surface; and (3) Dangerous Winds (*Angin Berbahaya*), which appear as fog-like conditions on the water's surface before striking (Sudirman, 2018).

At night, traditional navigators rely on stars, lightning, sounds, and smells to guide their voyage. Stars such as *Bintang Babi* (7:00 PM) indicate west, while *Bintang Besar* (4:00 AM) signals east. Lightning provides additional navigation cues, with vertical strikes suggesting the presence of a large island, while horizontal lightning indicates smaller islands or reefs (Darmawan, 2020). Sounds like the swishing of water or the "tak-tak-tak" of coral under the boat are also vital indicators of proximity to land or shallow waters, requiring immediate course adjustments to avoid danger (Iskandar, 2022).

Unlike modern ships that rely on advanced technology such as GPS, satellite navigation, and radar systems, *phinisi* sailors depend on these ancient knowledge systems, which have been passed down through generations and are invaluable for navigating Indonesia's complex maritime landscape (Iskandar, 2022; Basri, 2019). The resilience and precision of these indigenous techniques have garnered academic interest, highlighting their relevance even in the era of modern navigation.

Post-Sailing Phase

After approximately nine months of sailing each year, the sailors return to their homeland, Tanjung Bira, to reunite with their families and rest their boats for a period of about three to four months. This period is crucial for both the physical restoration of the boats and the social lives of the sailors and their families.

Resting and Maintaining the Boats

Upon returning from their long voyages, the *phinisi* boats are typically beached along the coastline, where they are positioned on wooden stands to prevent them from touching the seawater. During field interviews with the local boatbuilders, it was noted that this practice, called *sanggah perahu*, is essential to allow the wood to dry and prevent further deterioration from constant exposure to moisture. Additionally, roofs made of palm leaves or tarpaulins are placed over the boats to shield them from sunlight and rain, both of which can accelerate the decay of the boat's structure.

According to one senior boatbuilder, Pak Ridwan, who has been repairing *phinisi* boats for over 40 years, "We have seen boats last for more than 30 years because of these practices. Without properly resting the boats during the off-season, the wood would rot much faster, and repairs would be costly." Research supports the importance of dry-docking practices in extending the lifespan of wooden vessels, as moisture and prolonged sun exposure are leading causes of structural damage in traditional boats (Rahman, 2021).

Pre-Departure Renovation and Repairs

One month before the next sailing season, significant repairs and maintenance are carried out on the boats. The primary focus is on renovating the hull and ensuring that the boat remains waterproof. According to field observations, this process involves replacing damaged or rotten wooden planks with new ones, repainting the hull to seal any cracks, and replacing essential components such as ropes and sails. Sail replacement is particularly important, as both the size and material of the sails directly impact the boat's speed and manoeuvrability. Interviews with sailors revealed that they prefer using thicker cloth sails for longer voyages, as these are more durable in harsh weather conditions.

Pak Yusuf, a master sailor from Tanjung Bira, explained, "Before each new season, we always inspect every part of the boat, especially the hull and sails. Any weak part could mean disaster at sea." This meticulous approach to boat preparation aligns with the findings of maritime studies, which emphasize the role of preventive maintenance in ensuring the safety and longevity of seafaring vessels (Darmawan, 2020). Sailors often reported that the preparation phase could take up to a month, depending on the extent of repairs required. Younger members of the community assist in these repairs, learning the craft from their elders as part of the intergenerational transmission of maritime knowledge (Iskandar, 2022).

Social and Cultural Activities

While the boats are being rested and repaired, the sailors and their families engage in significant social and cultural activities. During field observations, it was noted that many sailors used this time to renovate their homes. Local materials such as bamboo, palm leaves, and timber are used to repair or extend their houses, often with the help of neighbours in a communal effort known as *gotong royong*. Additionally, the post-sailing period is commonly referred to as the "wedding season" in Tanjung Bira. Interviews with local families revealed that weddings are strategically planned during this time to coincide with the sailors' return, allowing for large family gatherings. During one such ceremony observed in November 2023, over 200 guests from neighbouring villages attended the wedding of a sailor's daughter. The ceremony reflected the close-knit nature of the community, where marriages between families help to solidify kinship ties. As explained by Pak Ahmad, a village elder, "The ties between our families are strengthened through marriage. It ensures that our children carry on the traditions of the sea and the values of our ancestors." This observation mirrors anthropological research that highlights the importance of kinship in maritime societies, where economic cooperation and social bonds are essential for survival (Basri, 2019). Moreover, the sailors often reported that these months were a time for reconnecting with their families after long periods at sea. Many sailors, such as Pak Yusuf, expressed the sentiment that "after months at sea, returning home is like returning to another world, where family and community become the focus of our lives again." The weddings and communal activities observed during field visits serve as celebrations of the sailors' safe return and are vital for maintaining social cohesion within the community (Sudirman, 2018).

DISCUSSION

The results of this study reveal the complexity and depth of *Pa'lopian* knowledge, a traditional maritime system sustained by the seafarers of Tanjung Bira. This indigenous navigation framework demonstrates a sophisticated integration of environmental awareness, spiritual belief, and technical maritime expertise, forming a holistic system of knowledge transmission and resilience. The ability of these seafarers to navigate vast and unpredictable waters using only natural cues such as wind direction, ocean currents, wave patterns, star positions, and sea color illustrates a form of ecologically grounded intelligence that parallels scientific reasoning. These practices affirm what Agrawal (1995) describes as "situated knowledge"—knowledge embedded within local environments and acquired through long-term interaction with nature.

The role of spiritual and psychological preparation, particularly embodied in the Bugis-Makassar seafaring philosophy *Kuallengi Tallanga na Toawalia* ("Better to Sink than to Return"), emphasizes the moral and emotional commitment of the sailors to their journey. This worldview is not symbolic alone; rather, it strengthens cognitive resilience and social cohesion—factors that are critical in high-risk maritime environments. Rituals such as *tolak bala* prayers and intimate ceremonies with family members before departure serve as psychological anchoring practices that align personal faith with collective duty. Similar phenomena have been observed in other maritime cultures, where spiritual beliefs and symbolic practices play a central role in shaping navigational behavior and reinforcing safety protocols (Sudirman, 2018; Basri, 2019).

Furthermore, the technical aspect of *Pa'lopian* knowledge is demonstrated through the sailors' acute ability to manipulate sails and adjust the vessel's position relative to complex and often changing marine conditions. Their expertise in reading meteorological indicators—such as wave height, current strength, or wind classifications—exemplifies what Dekker (2013) refers to as "maritime tactility," a bodily and sensory skill developed through experience and transmitted across generations. Notably, these sailors operate with limited or no access to modern navigational tools such as GPS, instead relying on cues from stars, sea color gradients, and the sound of water against the hull—methods that remain consistent with studies on indigenous navigation practices globally (Rahman, 2021; Iskandar, 2022).

The post-sailing phase offers equally important insights. The maintenance of vessels through dry-docking practices like *sanggah perahu*, and seasonal repairs prior to the next voyage, reflects a vernacular form of maritime conservation rooted in deep ecological understanding. These methods significantly extend the lifespan of wooden boats and reflect best practices in heritage-based maritime engineering (Darmawan, 2020). Meanwhile, the return of sailors marks a seasonal shift in village life, often coinciding with major social events such as weddings. These gatherings function as mechanisms for reinforcing kinship, redistributing economic gains, and transmitting cultural knowledge to younger generations, aligning with anthropological theories that view knowledge as socially embedded and relational (Basri, 2019).

Taken together, the *Pa'lopian* system illustrates a multi-dimensional knowledge framework where environmental perception, spiritual conviction, technical acumen, and communal life intersect. As the tourism industry in maritime Southeast Asia expands and the challenges of marine sustainability intensify, this study argues for the formal recognition of indigenous maritime knowledge systems within educational and policy frameworks.

The proposed development of a Community University for maritime education represents an innovative step toward integrating local wisdom into contemporary knowledge infrastructures. Such integration is not only an ethical imperative but also a pragmatic strategy for ensuring the resilience of maritime cultures in the face of globalization and ecological change (Rahman, 2021; Abdullah, 2023).

CONCLUSION

The indigenous maritime knowledge systems of the Tanjung Bira community, particularly their mastery of phinisi boat navigation, represent a profound integration of local expertise with environmental awareness. These systems, passed down through generations, enable the sailors to navigate the treacherous waters of Indonesia's archipelago using natural cues such as winds, ocean currents, waves, and celestial bodies. The Tanjung Bira sailors' philosophy of "better to sink than to return" underscores the cultural significance of meticulous preparation, both technically and mentally, before setting sail. The pre-sailing rituals, the technical adjustments made during the journey, and the post-sailing practices highlight the holistic approach these sailors take toward maritime navigation.

In comparison to modern navigation systems, which rely heavily on technology, the Tanjung Bira's indigenous practices offer a sustainable and resilient alternative that blends practical experience with spiritual and cultural elements. This traditional knowledge system not only supports the preservation of cultural heritage but also offers valuable insights for contemporary maritime education and tourism. However, as modernization continues to marginalize such knowledge systems, it becomes imperative to recognize and integrate these indigenous practices into modern frameworks to ensure their survival and continued relevance in the evolving maritime landscape.

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