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# Pikoela Liwu: Unveiling the Sustainability of Traditional Culture in the Era of Modernization

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#### **ABSTRACT**

This study aims to understand the implementation process of the Pikoela Liwu tradition, explore the reasons for its preservation, and analyze the impact of modernization on this tradition in Takimpo Village, Buton Regency. A descriptive qualitative approach was employed, utilizing primary data collected through observations and in-depth interviews with informants selected via snowball sampling, along with secondary data from related documentation. Data analysis was conducted using an interactive analysis model, involving data reduction, data presentation, and conclusion verification. The findings reveal that the Pikoela Liwu tradition is carried out over eight days, featuring a series of rituals including communal prayers, animal sacrifices, the installation of cultural attributes, and traditional dances. The continuity of this tradition is supported by strong community solidarity, ideological resistance to change, and reverence for ancestral cultural values. Modernization has influenced certain aspects, such as population migration, the use of modern materials for traditional house roofs, the shortened duration of rituals, and the replacement of traditional beverages with commercial products. Despite these changes, the tradition remains significant as a symbol of cultural and spiritual identity for the community. This study provides insights into the dynamics of cultural preservation amidst modernization challenges, contributing to the understanding of local cultural sustainability in the era of globalization.

Keywords: Culture Preservation; Modernization; Pikoela Liwu

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#### INTRODUCTION

Indonesia is known for its numerous ethnic groups and cultures. The cultural diversity in Indonesia is vast, ranging from simple and unique to mystical (Surya & Tedjakusuma, 2022; Achmad, 2022). Cultures with mystical elements are often beyond the realm of human logic and understanding (Rahmah, 2023; Cahyani & Kusdarini, 2021). However, their uniqueness and exotic appeal frequently spark curiosity and admiration, sometimes accompanied by a sense of fear among certain communities. Mystical elements can still be found today in arts, traditional ceremonies, harvest festivals, and cultural celebrations (Idris, 2024; Idi, 2023).

The diversity of ethnic groups and customs has given rise to a wide array of mystical stories across different regions (Fitri, et al., 2020). Mystical arts in the archipelago are deeply intertwined with animism and dynamism, beliefs from the past

that remain rooted in cultural performances, traditional rituals, harvest festivities, and ceremonial events in Indonesia. These ancestral beliefs have been passed down through generations, as reflected in the traditions that are still preserved to this day (Erwayani & Armansyah, 2023; Moenib, 2023; Hiswara, 2023). According to Abimanyu (2014) in his book "Mistik Kejawen", mysticism is a concept (mysticism) that can be interpreted as a belief system teaching all things mystical (for instance, teachings that are secretive, hidden, obscure, or veiled in darkness). Such teachings are often known, understood, or accessible only to certain individuals, particularly its adherents.

Meanwhile, modernization is seen as an exciting challenge to create new values and meanings. At the same time, it is feared as a threat to established patterns of values and meanings (Kalekin-Fishman, 2006). Traditional structures and well-established customs begin to erode, yet modern society is often perceived as alien and unappealing (Bellah, 2000; Naldo, 2023). The institutions of modernity are inherently global, as they open the possibility of separating space and time, detaching social relations that develop in one location, and reassembling them elsewhere. Globalization can only be understood as a local phenomenon, as a way for individuals to conceptualize what is referred to as universal (Sutrisno et al., 2004; Walter 2012; Ayaz; 2021). Global culture continuously expands, manifesting in new forms of particularism, including various forms of fundamentalism that strive to assert their identity (Turner, 2012).

The influence of modernization amid the challenges of globalization is felt to impact deeply ingrained cultural values in society. However, globalization is also seen as adaptable to the local context, a concept referred to as glocalization. Glocalization can be defined as the interpenetration of global and local influences, which produces unique outcomes in different geographical areas. The concept of glocalization emerges as an important framework for understanding how globalization interacts with local contexts, referring to the fusion of global and local influences that results in cultural outcomes that reflect both global trends and local traditions. This interpenetration can be observed in various fields, including public relations, where Valentini argues that a cultural approach is more effective in managing relationships in different national contexts because it respects local values while integrating global practices (Valentini, 2007). Similarly, Andrews and Ritzer highlight that the global and local should not be viewed as opposing forces, but rather as interdependent elements that shape cultural expressions (Andrews & Ritzer, 2007). This perspective underscores the adaptability of local cultures in the face of global influence, showing that globalization can produce diverse cultural expressions rather than a monolithic global culture. Thus, while globalization poses challenges to local values, the phenomenon of glocalization demonstrates that the interaction between global and local can result in a richer and more varied cultural form (Ritzer, 2014; Herawati, 2024).

Simply put, culture is the product of human creativity and intellect aimed at improving, simplifying, and enhancing the quality of life. Culture encompasses everything acquired and learned through normative patterns, which include ways or patterns of thinking, feeling, and acting (Ranjabar, 2014). Culture evolves in response to or as an adaptation to the living environment, life circumstances, and human conditions. Culture is recognized through its results or elements. Humans develop culture, and culture evolves because of humans. Humans are considered cultural beings if they can live within or in harmony with their culture. Being a cultural being not only means preserving past cultural values or ancestral heritage but also includes developing cultural outcomes (Tongdhamachart & Alwi, 2023; Baloyi, 2017).

The presence of a dominant culture inevitably brings changes to communities with smaller or minority cultures. As a result, the dominant culture remains prevalent, while the smaller culture may face marginalization or even extinction within society (Koentjaraningrat, 2010). Humans, in their interactions, possess norms, values, and inherited habits referred to as traditions. Traditions are typically preserved as they are, although they may undergo slight modifications due to external influences on the community practicing them, such as the impact of religion and modernization on specific cultural and traditional communities (Qin et al., 2019). Culture and being cultured, by definition, do not change; what evolves are the outcomes or elements of culture. There is a tendency within society to perceive that the outcomes and elements of culture can lead to cultural transformation (Barker, 2004). However, this notion can be countered by a strong collective desire within the community to maintain the existence of their culture.

As in the research conducted by Khoiriyah & Syarif (2019) on the Existence of Tembang Mamaca (Mamacat) in the Cultural, Mystical, and Religious Dimensions: An Ethnographic Study in Serabi Barat Modung, Bangkalan, it was found that the Tembang Macapat culture still exists and is trusted by the local community. The elements that support the existence of Tembang Mamacat consist of: 1) personal or individual belief in old teachings as a truth, 2) public belief in always upholding ancestral heritage, 3) the teachings of goodness in Macapat are relevant to the community's culture, 4) customs with mystical tendencies influenced by ancient cultures that are still passed down through generations, and 5) the values of guidance and entertainment for the community that bring benefits both individually and for the wider society.

In addition, there is also a study conducted by Astuti (2019) on the existence of the Rimpu culture among the Mbojo Tribe in Bima Regency. The results of the research indicate that this culture still has a strong presence in the daily life of the community. A study on the existence of culture was also conducted by Raihan et al. (2023) titled The Existence of Tabuik Culture among the Millennial Generation in Pariaman City. Tabuik is a cultural heritage that has existed in Pariaman for two centuries. This tradition is a ritual or customary ceremony. The findings of the study show that the participation of the younger generation is very important in preserving and developing the Tabuik culture. The involvement of the younger generation in maintaining and developing the Tabuik tradition can ensure that the Tabuik celebration will continue to exist and not fade away with the advancement of time.

This is not much different from the Pikoela Liwu culture in Takimpo Village, Pasarwajo District, Buton Regency, which still exists to this day. This culture is a village feast (traditional ceremony) that holds the meaning of wishing for the village to be better than before, in terms of prosperity, health, and longevity. It is considered one of the most sacred traditions in the Buton region. This culture is also viewed as mystical by a large portion of the community in the Buton area.

The *Pikoela Liwu* tradition is held annually. This cultural practice takes place at the end of the year as an expression of gratitude for the blessings received throughout the year and as a hope for a better year ahead. The implementation process lasts for eight days. If it is not carried out, it is believed that disaster will befall the village because the purpose of this ritual is to cleanse the village of all sins, bring increased fortune, and ensure the safety of the residents of Takimpo Village. Despite the current wave of modernization, the people of Takimpo Village do not view this phenomenon as a reason to abandon the tradition. This is what makes it fascinating: in an era of advanced and

modern technology like today, the residents of Takimpo Village still hold on to beliefs rooted in mysticism or concepts beyond human reasoning.

Therefore, this research aims to examine the process of implementing the *Pikoela Liwu* tradition, to understand why the *Pikoela Liwu* tradition is still preserved and practiced by the community of Takimpo Village, Pasarwajo Subdistrict, Buton Regency, and to analyze the impact of modernization on the *Pikoela Liwu* tradition in Takimpo Village, Pasarwajo Subdistrict, Buton Regency.

#### **METHOD**

The study employed a qualitative approach to understand the cultural practices and community dynamics surrounding the Pikoela Liwu tradition. The research was conducted in Takimpo Village, Pasarwajo District, Buton Regency, chosen through purposive sampling based on the prevalence and significance of the tradition in the region. Informants were selected using the snowball sampling method, focusing on community elders, ritual practitioners, and local leaders.

Data collection occurred over a three-month period, coinciding with the annual Pikoela Liwu rituals. Ethical considerations, such as informed consent and confidentiality, were upheld throughout the study. Data were analyzed using an interactive model consisting of reduction, presentation, and verification, ensuring an iterative and comprehensive analysis process. Triangulation of methods and sources was employed to validate findings.

#### **DISCUSSION**

## The Implementation of the Pikoela Liwu Culture

The traditional ceremony (*Pikoela Liwu*) is an annual cultural ritual carried out as an expression of gratitude to Allah SWT for the blessings and gifts bestowed upon the community. It is also a prayer for the preservation of faith, strength, and health both physically and spiritually, for safety, and to be protected from harm and disaster, whether from within or outside the community. The implementation of this celebration is marked by the slaughtering of sacrificial animals in rotation, year by year. In the Year of the Rooster, two male and female chickens are sacrificed, while in the Year of the Goat, two male and female goats are sacrificed.

The Pikoela Liwu tradition unfolds over eight days, each marked by unique rituals and ceremonies. On the first day, the activities begin with the Pihatoa, involving the addition or replacement of the roof of the traditional house (galampa) and the installation of cultural banners. A red banner is placed outside the village (wandingi direction), a white banner is positioned behind the baruga (traditional house), and a red-and-white banner is affixed to the poporoki (ridge beam) at the front of the traditional house. This is followed by a collective prayer known as Pihanduriano Sumanga and Piganda'a, which involves the rhythmic playing of drums, traditional songs, and performances such as linda and cungka, accompanied by preparations for the Tadhea ceremony.

The second day continues with Piganda'a Kamancuana, a similar chanting of traditional songs with drumming, linda, and cungka, but specifically performed by the elders. On the third day, the focus shifts to Piganda'a Anamohane, where the younger

generation takes the lead in the traditional chants and associated activities.

The fourth day, Poandea, marks a significant moment as the Takimpo customary leaders receive their relatives from the Kambula-bulana Pasarwajo customary group, taking them to their homes in preparation for the peak night event, Tadhea. This day also includes the ritual slaughtering of one male and one female goat, known as Kabhincingi, where offerings are made at the four corners of the village, followed by a collective prayer seeking protection from harm. The day concludes with Piganda'a, featuring drumming and chanting.

On the fifth day, Wheano Bhobha takes place, an event fulfilling a vow, where a baby is ceremonially taken in and out of the traditional house using the Papatala (drum) by the youth. The sixth day is considered the peak of the ceremony, attended by all customary leaders, followers, and invited guests from government institutions and the local community.

The seventh day, known as Tadhea, includes several key rituals. Pidhaowa'a is a barter ceremony between guests and hosts, while Piliwua involves a respect-giving ritual performed first by the religious group and later by the elders. Posanga'a is a farewell ceremony where the younger group, Parabela Anamohane, asks for permission from the elders to continue ritual activities through the night until early morning.

#### The Objectives of the Pikoela Liwu Culture

The Pikoela Liwu culture serves multiple objectives, reflecting its deep cultural, social, spiritual, and patriotic significance. Culturally, it aims to preserve the customs and traditions rich in noble values that have been passed down through generations. This cultural heritage is particularly significant to the Takimpo community and the broader Buton region, where it continues to be highly valued and respected.

Socially, the tradition fosters harmonious relationships and mutual respect among various social strata within the community, as well as with outsiders, emphasizing the principles of love and compassion. From a spiritual perspective, the culture instills a profound sense of awe and reverence for Allah SWT, the Almighty Creator, as a way to express gratitude for His blessings and gifts. This aspect also underscores the importance of maintaining a balanced relationship with nature while fulfilling daily needs. Finally, the Pikoela Liwu tradition embodies a patriotic dimension, perpetuating the ancestral legacy of sacrifice for the common good. This patriotic spirit is grounded in steadfast adherence to the principles of truth and justice, ensuring the preservation of collective values for future generations

## The Causes of the Existence of the Pikoela Liwu Culture

There are several factors that have contributed to the continued survival and existence of the Pikoela Liwu culture amidst an increasingly modernized era. These factors include:

## 1. Strongly Embedded Collective Interests

The strong sense of shared interests within the community has led to the perseverance of the principles and values that have been passed down by ancestors. These principles remain firmly entrenched in society, and they are not easily swayed, even by those who have received higher education. The local community takes pride in their cultural heritage and tends to preserve these traditions as a way of maintaining unity and their unique identity.

#### 2. Ideological Barriers

Ideological factors can play a key role in the persistence of a culture. A shared ideology among the members of a community can create strong bonds, uniting people and reinforcing the cultural values they hold dear. When an ideology is upheld, no matter how strong external influences may be, they will not be able to undermine a culture that has become a core part of a community's identity. In the case of the Takimpo community, there is a belief that performing the *Pikoela Liwu* ritual brings blessings, purifies the village, and ensures prosperity.

## 3. High Solidarity and Mutual Respect

The solidarity and mutual respect within the Takimpo community have played a crucial role in ensuring the continued existence of the *Pikoela Liwu* tradition, which is held annually. This solidarity has created strong unity among the members of the community. Despite the many external influences that may impact the community, these influences do not weaken the cultural traditions but rather serve as motivation for the community to strengthen and preserve their culture even further.

## The Impact of Modernization on the Pikoela Liwu Culture

The influence of modernization is inevitable and has affected many cultural practices, including the *Pikoela Liwu* ritual, which has long been performed by the community. There are four key changes in the *Pikoela Liwu* culture due to modernization:

## 1. Migration of the Population

The Takimpo community originally lived in *Liwu Towa* Takimpo (now called Takimpo Lipuogena, about 6 km from the coastline). As the population grew, there was an initiative to establish a new settlement that was more strategic and adequate, which became the village of Kambula-bulana, the precursor to Takimpo Pasarwajo. In 1961, the Takimpo Lipuogena village moved to the coastal area and became the village of Takimpo Lipuogena. The Lipuogena Fortress, located in the village, was originally a defensive structure and is now a tourist attraction.

## 2. Replacement of Traditional Roofs

Traditionally, the roofs of the *Baruga* (the traditional house) were replaced annually during the *Pikoela Liwu* ritual using thatched grass as the material. However, with modernization, this practice has changed. The roof replacements now use corrugated iron, which is more durable and does not degrade as easily as thatched grass. This change has made the roof replacement process more of a formal requirement rather than a necessity for functionality.

#### 3. Number of Days for the Ritual

In the past, the *Pikoela Liwu* ritual would last up to forty days. Today, it has been shortened to eight days. This change is due to the growing number of activities and responsibilities the Takimpo community now faces. With the influence of modernization, people have different occupations and commitments, making it difficult to devote forty days to the cultural ritual. Despite the shortened duration, the core elements of the ritual remain intact.

## 4. Use of Beverages in the Ceremony

Traditionally, *arak* (a local alcoholic beverage) was used during the ritual ceremonies, as it was a product of the community's own agricultural produce. However, with modernization, *arak* has been replaced by bottled mineral water. This shift occurred because the community no longer produces *arak*, and the availability of agricultural products has been redirected to purchasing bottled water instead. This change reflects the practicality and availability of modern goods.

#### **CONCLUSION**

The Pikoela Liwu tradition, practiced over eight days, serves as a cornerstone of cultural identity for the Takimpo community. Its preservation is supported by strong collective interests, ideological resistance to change, and a high degree of solidarity and mutual respect. These factors have helped the tradition remain relevant despite the challenges posed by modernization. However, the impacts of modernization reveal both adaptive efforts and emerging challenges, such as population migration, the replacement of traditional roofing materials with modern alternatives, shortened ritual durations, and changes in ceremonial beverages. While these adaptations reflect the community's attempt to balance tradition with modern needs, they also raise concerns about the preservation of symbolic and cultural values.

Despite these challenges, the Pikoela Liwu tradition continues to play a vital role in the spiritual and social welfare of the Takimpo community, serving as a source of identity, unity, and continuity. Some adaptations, such as shortened durations and modernized practices, have helped sustain the tradition by making it more feasible for the community amidst changing lifestyles. To ensure its sustainability, it is crucial to strengthen community engagement, particularly among younger generations, while utilizing modern tools to document and adapt the tradition without compromising its essence.

This study highlights the importance of balancing traditional practices with contemporary adaptations to preserve cultural heritage amidst modernization. These findings contribute to broader discussions on cultural sustainability in the face of globalization, offering valuable insights for other cultural practices facing similar challenges. Future research could explore how technology can be leveraged to document traditions, as well as investigate strategies to strengthen intergenerational connections in preserving cultural identity.

## REFERENCES

- Achmad, Z. (2022). Construction of Indonesian local wisdom and tradition in "delivery sustainable tourism" advertising. *Josar (Journal of Students Academic Research)*, 7(1), 12–26. <a href="https://doi.org/10.35457/josar.v8i1.2118">https://doi.org/10.35457/josar.v8i1.2118</a>
- Andrews, D., & Ritzer, G. (2007). The grobal in the sporting glocal. *Global Networks*, 7(2), 135–153. <a href="https://doi.org/10.1111/j.1471-0374.2007.00161.x">https://doi.org/10.1111/j.1471-0374.2007.00161.x</a>
- Astuti, A. (2019). Eksistensi budaya Rimpu masyarakat Suku Mbojo di Kabupaten Bima. *[UPE: Jurnal Pendidikan Mandala, 4*(5). https://doi.org/10.58258/jupe.v4i5.843
- Ayaz, S. (2021). Globalization phenomenon and its effects. *Kafkas Üniversitesi İktisadi ve İdari Bilimler Fakültesi Dergisi*, 12(24), 1199–1217.

- Baloyi, G. (2017). When culture clashes with individual human rights: A practical theological reflection on the dignity of widows. *Verbum Et Ecclesia*, 38(1). https://doi.org/10.4102/ve.v38i1.1599
- Cahyani, A., & Kusdarini, E. (2021). Raising Islamic values tradition on the reading of Anbiya book. *Masyarakat Kebudayaan Dan Politik*, 34(3), 317. https://doi.org/10.20473/mkp.v34i32021.317-328
- Erwayani, D., & Armansyah, A. (2023). Pandemic mitigation based on local wisdom: The de javu of the ritual of rejecting the doom "dongkrek." *Proceedings of the 5th International Conference on Social and Political Sciences (IcoSaPS)*, 636–646. <a href="https://doi.org/10.2991/978-2-494069-93-0\_75">https://doi.org/10.2991/978-2-494069-93-0\_75</a>
- Fitri, M., Nur, H., & Putri, W. (2020). The commemoration of independence day: Recalling Indonesian traditional games. *Frontiers in Psychology*, 11. <a href="https://doi.org/10.3389/fpsyg.2020.587196">https://doi.org/10.3389/fpsyg.2020.587196</a>
- Herawati, N. (2024). The influence of globalization on family traditions and values. *JPRFC*, 2(2), 4–10. <a href="https://doi.org/10.61838/kman.jprfc.2.2.2">https://doi.org/10.61838/kman.jprfc.2.2.2</a>
- Hiswara, A. (2023). Cultural preservation in a globalized world: Strategies for sustaining heritage. *WSSHS*, *1*(3), 98–106. <a href="https://doi.org/10.58812/wsshs.v1i03.250">https://doi.org/10.58812/wsshs.v1i03.250</a>
- Idi, A. (2023). The role of religious moderation in Indonesian multicultural society: A sociological perspective. *AJESH*, 2(4), 246–258. <a href="https://doi.org/10.46799/ajesh.v2i4.55">https://doi.org/10.46799/ajesh.v2i4.55</a>
- Idris, M. (2024). Strengthening religious tolerance with Islamic views in the era of diversity in Indonesia. *WSiSS*, 2(2), 106–113. https://doi.org/10.58812/wsiss.v2i02.839
- Kalekin-Fishman, D. (2006). Studying alienation: Toward a better society? *Kybernetes*, 35(3/4), 522–530. https://doi.org/10.1108/03684920610653782
- Khoiriyah, F., & Syarif, Z. (2019). Eksistensi tembang Mamaca (Macapat) dalam dimensi kultur, mistik dan religius. *Jurnal Pemikiran Keislaman*, 30(2), 324–334. https://doi.org/10.33367/tribakti.v30i2.819
- Koentjaraningrat. (2010). Manusia dan kebudayaan di Indonesia. Djambatan.
- Moenib, J. (2023). Designing an illustrated book as an educational medium to introduce Ronggeng Gunung dance to the younger generation: An effort to preserve traditional dance. *Gelar Jurnal Seni Budaya*, 21(2), 187–200. <a href="https://doi.org/10.33153/glr.v21i2.5327">https://doi.org/10.33153/glr.v21i2.5327</a>
- Naldo, J. (2023). Dialectic of tradition's strength and demand for flexibility: A study of Minang families in Yogyakarta. *JSW (Jurnal Sosiologi Walisongo)*, 7(1), 13–24. <a href="https://doi.org/10.21580/jsw.2023.7.1.14101">https://doi.org/10.21580/jsw.2023.7.1.14101</a>
- Qin, Z., Song, Y., & Tian, Y. (2019). The impact of product design with traditional cultural properties (TCPs) on consumer behavior through cultural perceptions: Evidence from the young Chinese generation. *Sustainability*, 11(2), 426. <a href="https://doi.org/10.3390/su11020426">https://doi.org/10.3390/su11020426</a>
- Rahmah, L. (2023). Diversity of sambal types in Indonesia. *Food Systems*, *6*(3), 288–297. https://doi.org/10.21323/2618-9771-2023-6-3-288-297

- Raihan, A., Isnanda, R., Sukma, D. P., Adli, F., Qalbu, Z. K., & Hidayah, N. (2023). Eksistensi budaya Tabuik di kalangan generasi milenial di Kota Pariaman. *Jurnal Ilmiah Langue and Parole*, 7(1), 45–51. <a href="https://doi.org/10.36057/jilp.v7i1.616">https://doi.org/10.36057/jilp.v7i1.616</a>
- Ranjabar, J. (2014). Sistem sosial budaya Indonesia. Bandung: Alfabeta.
- Ritzer, G. (2014). Teori sosiologi modern. Jakarta: Kencana Prenadamedia Group.
- Silalahi, U. (2012). Metode penelitian sosial. Bandung: PT Refika Aditama.
- Surya, R., & Tedjakusuma, F. (2022). Diversity of sambals, traditional Indonesian chili pastes. *Journal of Ethnic Foods*, 9(1). https://doi.org/10.1186/s42779-022-00142-7
- Sutrisno, M., & Putranto, H. (2004). *Hermeneutika pascakolonial: Soal identitas*. Yogyakarta: Kanisius.
- Tongdhamachart, N., & Alwi, A. (2023). The cultural identity of Mien ethnic group in a digital era. *International Journal of Professional Business Review*, 8(1), e01256. https://doi.org/10.26668/businessreview/2023.v8i1.1256
- Turner, B. S. (2012). Teori sosial dari klasik sampai postmodern. Yogyakarta: Pustaka Pelajar.
- Valentini, C. (2007). Global versus cultural approaches in public relationship management. *Journal of Communication Management*, 11(2), 117–133. <a href="https://doi.org/10.1108/13632540710747352">https://doi.org/10.1108/13632540710747352</a>
- Walter, T. (2012). Why different countries manage death differently: A comparative analysis of modern urban societies. *British Journal of Sociology, 63*(1), 123–145. https://doi.org/10.1111/j.1468-4446.2011.01396.x