

National Institute of Science and Technology of Timor- Leste



Final Scientific Report INCT 2023

**“AKADIRU PRODUCT DIVERSIFICATION IN OFFERING NEW PRODUCTS IN
TIMOR-LESTE ”**

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Area of expertise: Economy, Agriculture, Tourism, Commerce and Industry.

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1. Introduction

1.1 Contextualization

The result of the agriculture census 2019 indicated that 66% of the households are mostly farmers, and in total, 141,141 of the population and 213,417 homes. It means the agriculture sector is essential in the development of Timor-Leste because the majority of the households depend on this sector. The total area for farmers or agriculture is 216 180 hectares, and the number for the institution is 3,070 hectares. This information is essential to analyze the utilization of agricultural products. On the other hand, there is 28.2% of farmers' households do not have formal schools or uneducated, 27.6 are having primary school, 13.5% of farmers are graduated from pre-high school, 15.8 of farmers are graduated from high school, 2.2% of farmers have their diploma degree, and 3.9 % of farmers graduated their bachelor degree (Ministério da Agricultura e Pescas, 11 Nov 2019).

Furthermore, the minister of agriculture and fishery of Timor-Leste officially informed that "The result of the agriculture 2019 census would be the guide for the ministry of agriculture, ministry of finance, and all ministries relevant to follow it for all activities related to developing agriculture in Timor-Leste. Besides following the government program, the Minister of Finance Internal Mrs. Brites also mentioned that "This agriculture census of 2019 is essential to define the national strategic plan for the program extension and mechanism to enhance the productivity in the agriculture sector and to not only depends in import products (Ministério da Agricultura e Pescas, 11 Nov 2019).

The Ex-president of CCI (Camara Comercio de Timor-Leste), Mr. Oscar Lima, mentioned that Timor-Leste had gained 20 years of independence but still depended on importing products from other governments. (Tatoli, 2019). The majority of the product is from other countries, and this is because Timor-Leste's private capital sector industry is still weak in terms of facility and human resources. There are also no exceptions for the imported products made by "Akadiru" of palm trees.

The "Akadiru (*Borassus flabellifer*) mostly grows in Asia, particularly in Southeast Asia. Most "Akadiru" or palm trees in Indonesia grow in Java, Bali, and *Nusa Tenggara* (Syakir *et al.*, 2011). There are six types of "Akadiru", such as 1. *Borassus aethiopium*; 2. *Borassus akeassii*; 3. *Borassus flabellifer*; 4. *Borassus heineanus*; 5. *Borassus madagascariensis*; 6. *Borassus*

sambiranensis (Tambunan, 2010). The palm trees of Akadiru of *Borassus flabellifer* mostly grow in Timor-Leste.



Figure

1: Akadiru or Palm Trees grow in the Asia and Papua region (Tambunan, 2010)

Akadiru can grow in dry land (Fajeriadi *et al.*, 2019). If we are referring to the land conditions of Timor-Leste, the majority of all places can grow the “Akadiru”. In ancient times, people used Akadiru as a book for writing and drawing. The “Akadiru” or palm tree is a tree that has many beneficiaries and can be used in varieties. The role of this palm tree is considered essential because it starts from the stem until the fruits. Also, it can be managed and innovated for other creativities and innovation into food products, beverages, and other products.

There are three main reasons why the palm tree is chosen to be developed for a new product in this study; It is based on these aspects as follows: 1) The Palm tree or *akadiru* is the cultural heritage of Timor-Leste. Any traditional ceremonies conducted in Timor-Leste mostly used palm attributes. For example, palm products that often used for cultural activity, whether it is a happiness ceremony (*lia moris*) or a funeral ceremony (*lia mate*), and products such as (food, drinks, and equipment); 2) Women’s empowerment capabilities. Many years ago, women were hand weaving and are still hand weaving it now with the capabilities of waving palm leaves to support their family income and identity. Besides, men take palm fruits to make traditional white wine; 3) The ability to sell products. After men sold the palm's white wine, women weaved the palm leaves. The women would bring it to the market to sell because palm tree products or *akadiru* products are necessary for cultural and basic materials for community needs.

Furthermore, it is also the main reason why choosing palm trees for the research is because based on the previous study conducted by Bernhard (2007) has found that palm trees provide essential benefits as plants for the community, starting from the palm leaves, fruits, stem, and palm roots. Based on the previous study conducted by the expert Akadiru, namely Morton, 1988), (Zulharman and Aryanti, 2016), (Flach and Paisooksantivatana, 2019), Age et al. (2020) (www.youtube.com) found that there are varieties of innovative products of Akadiru to be as food, beverages, and other products as follows:

1. The Palm “Akadiru” fruits liquid or water can be produced as white arak
2. The palm “Akadiru” leaves can be made as hand-made bags, “lafatik” or trays, and “bote.”
3. The palm “Akadiru” fruits can be produced as food
4. The palm “Akadiru” leaves can be made into musical instruments.
5. The palm “Akadiru” also can be made as skin medicine.

However, the main problem in Timor-Leste is still the minimum of the product innovation of Akadiru itself to enhance the local economy income and minimize the imported products from other countries that have relevant with the “Akadiru” product such as food and beverages. as everyone knows that “Akadiru” is easy to grow in Timor-Leste.

So far, the aspects of the “Akadiru” product in Timor-Leste are as follows:

1. The product of Akadiru leaves is less.
2. The production of Akadiru fruits is not well known yet in the community, mainly in restaurants and hotels.
3. Producing Akadiru fruits’ water or liquid is only for white arak. There is no other variation yet.

All these aspects happened because there is still minimum knowledge of the community regarding the varieties of Akadiru and their good impact on Timor-Leste export and import products. The contribution of the export and import of products in the global market has a significant effect on the economy of a nation (Ramos, 2001), (Usman et al., 2012) and (Syed, 2017).

The general statistics director Mr Elias dos Santos Ferreira mentioned that the expenditure for the import in 2017 was 552 million USD, and the total budget for export was 16 million USD (Tatoli. 2019). Moreover, in the post covid-19 in 2021, His Excellency Minister of

Coordinator Economic Affairs, Mr. Joaquim Amaral, illustrated that Timor-Leste is required to increase product production in the country to receive imports from other countries (Tempo Timor, 2021).

Enhancing new products is a way to minimize the import of products through product innovation and diversification. For example, a group, namely “Grupus koperativa Fuan Ida Neon Ida”, has produced local soap in Tasi Tolu Dili to reduce the imported product of soaps.

Furthermore, the Minister of Tourism of Timor-Leste, Mr. Jose Lucas do Carmo da Silva, also highlighted in the exhibition event in the Dili Port started on 20th December 2022 to 20th January 2023 to the participants the events, His Excellency mentioned that all vendors have obtained for a day \$200 to \$800 per night in the event (Tempo Timor, 2023). This event means Timor-Leste products also could compete with international products. Thus, we could reduce the import of products from other countries.

Therefore, action is needed to develop the Akadiru products diversification, which could lead to minimizing the imports. Diversification refers to the ability to make a movement or modification to a product that can enhance its value (Tjiptono et al., 2008).

The product diversification that this study will produce such as:

1. Akadiru leaves (to be created as souvenirs, dresses, Accessories, and other materials).
2. The Akadiru fruits (to be made to be an appetizer and dessert food and fresh fruits).
3. Akadiru fruits water (to be produced as cocktails drinks)

The previous study by Tambunan (2010) indicated that the development and diversification of Akadiru could enhance the local economic income.

1.2. Theoretical Framework

Diversification of products within a community or industry can have significant positive impacts on economic stability and growth. Communities that rely on a single product or industry are often vulnerable to market fluctuations and external shocks. By diversifying their product offerings, they can mitigate these risks and build a more resilient economy. For instance, a community known for producing a specific agricultural crop could explore the cultivation of complementary crops or the development of value-added products to expand their income streams (Drechsel et al., 2020).

Furthermore, product diversification can lead to innovation and the creation of new markets. When communities invest in research and development to diversify their product range, they can discover new opportunities for growth. This can involve developing unique variations of existing products, exploring niche markets, or even entering entirely new industries. Such diversification can lead to increased competitiveness and a stronger economic foundation for the community (Eisenhardt & Martin, 2000).

Other research conducted by FAO (2018) states that there is strong evidence of the importance of diversification to increase production and food security in the future in the face of climate change. Additionally, diversification can enhance a community's economic self-sufficiency by reducing reliance on external sources and markets. For example, a community that diversifies its agricultural products can become less dependent on imports and global market fluctuations. This self-sufficiency not only bolsters economic stability but also fosters a sense of empowerment and independence among community members (Kaplinsky & Jansen, 2014).

1.3. Problematization

The Akadiru tree, scientifically known as *Borassus flabellifer*, is a species of Akadiru tree that grows abundantly in various regions of Asia, including Timor Leste. In Timor Leste, the Akadiru tree has a special place in the hearts of the people and is considered a symbol of their identity. This extraordinary tree plays an important role in the lives of many Timorese people, as it serves as the basis of their livelihood which has been passed down from generation to generation.

Akadiru trees provide a large number of important products that are woven into everyday life in Timor Leste. From the leaves and fruit to the sap and wood, every part of the tree is used. People in Timor Leste make various kinds of products from akadiru trees, including traditional handicrafts, thatched roofing materials, food and drinks such as palm wine, and even building materials for sale, but the main problem faced by the people of Timor Leste is that the production of products made from akadiru is still very minimal. Therefore, diversification of Akadiru products is very necessary to increase people's income and reduce imports

1.4. Hypothesis

In this qualitative research, we hypothesize that diversifying the variety of products from akadiru among local communities will make a positive contribution to increasing community income and lead to a reduction in imports of similar products. We anticipate that through in-depth interviews and participant observation, our questionnaire will reveal valuable insights into the economic and environmental implications of akadiru product diversification, as well as its potential to empower local economies

1.5. Objective Research

1.5.1 General objective

The general objective of this research is to diversify Akadiru products

1.5.2 Special objective

1. To find out how people diversify akadiru products in Timor-Leste.
2. Analyze the income obtained from the diversification of akadiru products in Timor-Leste.
3. Explore and perfect it in transforming into a new product.

1.6. Importance of the Research

This research is research that describes the form of utilization of akadiru leaves and their products and also the economic value they provide. The lontar population in Likisa and Metinaro has experienced a drastic decline due to logging in areas where many lontar trees grow for development, both tourist attractions and housing. Apart from that, the majority of people use lontar palm fruit based on their knowledge. The form of use of lontar by the community is more in making tua mutin drinks compared to its use in other forms such as making cocktails drinks with various flavors. Apart from that, there are also other forms of use by the community, namely akadiru fruit and making wickerwork which are still consumed by themselves, only sold close to home, and have not been introduced to the outside world. Thus, it is necessary to diversify products originating from akadiru

1.7 Work Organization

This research is structured as follows:

1. Introduction: In the first part, the main focus is the introduction, which provides a general description of the research problem and its aim to answer or provide a solution to the research problem.
2. Geographical Context: In the second part, we discuss the geographical context, especially in the two sub-districts of Likisa and Dili
3. Research Methodology: The third section discusses the research methodology. This research uses a method qualitative method in terms of the diversification of akadiru products
4. Data Analysis: In the fourth section, we discuss data analysis and present research results based on research objectives.
5. Conclusions and Recommendations: Finally, in the last section, we present the conclusions and recommendations obtained from this research.

1.8. Geographic Location

This research was carried out by the municipalities of Dili, Metinaro subdistrict, Likisa Municipality, Maubara subdistrict. Research in these two sub-districts focuses on Akadiru trees which produce Akadiru leaves, Akadiru fruit, and Tua Mutin



2. Methodology

Types of Research. This research applies a method quantitative which is based on the research problems. Creswel & Plano (2018).

2.1. Population and Sample

In this research, two types of sampling methods were used. For the sample of respondents who directly made akadiru products in Maubara sub-district and Metinaro sub-district, a purposive sampling method was used because respondents knew more about making products about akadiru (Etikan & Alkassim; 2016; p. 1). In Maubara sub-district, three groups make akadiru products. The core respondents were the leaders of each group. Meanwhile, for Metinaro, the respondents were 2 makers of tua mutin and 2 people of akadiru fruit. The second sampling technique is to use a random sampling method which is applied to an undefined population because this sampling is aimed at Akadiru consumers in general. In taking this sample using Cochran's formula (1977) in Bartlett, Kotrlik, & Higgins (2001, p. 47) as follows:

$$n = \frac{z^2 \cdot p \cdot q}{e^2} = \frac{z^2 \cdot p \cdot (1-p)}{e^2}$$

$$(1.96 * 1.96) * (0.10) * (0.10)$$

$$n = \frac{\quad}{\quad}$$

$$(0.10 * 0.10)$$

$$n = 38$$

2.2 Data Collection Techniques

Techniques and processes for collecting data using the mixed method, namely qualitative and quantitative. In collecting data using:

- a) Observation, by seeing directly the place where Akadiru products are made and sold
- b) Direct interviews with informants who run the Akadiru product business every day
- c) Questionnaires were distributed directly to respondents about Akadiru products

2.3 Data Analysis Techniques

Because this research uses a mixed method, there are two types of methods used in analyzing research data, namely qualitative methods using narrative methods in data analysis (Herman & Vervaeck, 2019). For description results, we use SPSS V.21. (Ghozali, 2018)

3. Results and Discussion

3.1. Results

3.1.1. (Qualitative Data Results).

Informants in the table below

Tabela 3.1 key informant

No	Informants	Position	Place
1	Maria Cabral	Coordinator	Maubara
2	Martina da Costa	Coordinator	Maubara
3	Jacinta Soares	Coordinator	Maubara
4	Antonio Martins	Owner	Metinaro
5	Joao da Silva	Owner	Metinaro
6	Carlos de Jesus	Owner	Metinaro
7	Angelita Baptista	Owner	Metinaro
8	Cipriano Goncalves	Owner	Metinaro

1. How do I get akadiru leaves, akadiru fruit, and tua mutin (buy or own)?

Respondents from Maubara said that they obtained palm leaves from their gardens, if their needs for palm leaves were not met then they would buy them elsewhere. If there isn't enough in Maubara, they usually go to Metinaro to buy. Maubara does not produce and sell akadiru and tua mutin fruit. They only focus on akadiru leaves.

For Metinaro respondents, they usually take the leaves, fruit, and tua mutin from their garden because they have a large amount of akadiru so they produce and sell it in front of their own house.

2. What is the quantity of production of the Akadiru leaves, Akadiru fruits, and Tua Mutin akadiru per day?

Based on informants, the three coordinators from Maubara said that producing products from akadiru leaves is not fixed because everything depends on several things such as: 1). Demand/orders from consumers; if consumers order, then they will make according to the

orders from consumers. If there are no orders, then sometimes within one to three days they do not produce/make a single product from akadiru leaves. 2). In producing they adjust to the number of products they have produced and are in the process of selling, if the product has not been sold then they will not produce similar products.

Meanwhile, for akadiru and tua mutin akadiru fruit products, informant Maubara said that they do not produce and sell products from akadiru and tua mutin fruit. They from Maubara only produce and sell products made from akadiru leaves.

Meanwhile, five informants from Metinaro said that they produce and sell products from akadiru leaves, akadiru fruit, and akadiru tua mutin. For akadiru leaves, they only produce a few types that consumers need and production is very limited because there are not too many consumers. From our observations, researchers, between Maubara and Metinaro, Maubara has more choices and there are various types of colors for akadiru products, while Metinaro only makes one color, namely the original color of Akadiru leaves, while the types of products from Metinaro are limited.

Informa Maubara and Metinaro explained that production and sales were highest when school children and students carried out orientation activities for accepting new students at the start of the school year, while not too many foreign tourists came to buy products made from akadiru.

3. Have you done some diversification products of Akadiru?

Informants from Metinaro explained that they did not diversify their akadiru products from akadiru leaves, akadiru fruit and Tua Mutin akadiru. For the akadiru fruit, the informant from Metinaro explained that they picked the akadiru fruit took out the contents of the akadiru fruit and sold it as usual without changing the shape and taste of the akadiru fruit. As for Tua Mutin, the informant from Metinaro explained that they sell Tua Mutin according to its original color and taste without changing the color and taste of Tua Mutin.

For akadiru leaves, informants from Metinaro explained that they produce according to the original form that has been used by the Timor Leste consumer community in general, such as biti, bote, lafatik, luhu ho sapeo products and other products that have been used by the

Timor Leste community. They also don't change the color of products made from akadiru leaves, they remain the same as the original color.

Meanwhile, the informant from Maubara explained as in the second question above that in Maubara they do not sell akadiru and tua mutin akadiru fruit, therefore they do not diversify into akadiru products which come from akadiru and tua mutin fruit. Meanwhile, for akadiru leaves, informants from Maubara explained that they had diversified the model from akadiru leaves to various types of products. Initially, akadiru leaves were only used to make Biti, sapeo, Bote, luhu and lafatik, but now they from Maubara have made various forms of diversification, such as : Eskola pasta, laptop pasta, osan fatin pasta, lapijera fatin, kelu, bringkus, dosi fatin, kopu fatin and others. The products made are also given various colors according to consumer tastes.

4. Why are you doing the diversification?

In this question point, the informant from Metinaro explained that they did not diversify Akadiru products, including Akadiru leaves, Akadiru fruit, and Tua Mutin, but the informant from Maubara explained that they diversified Akadiru products only in Akadiru leaves, while for Akadiru fruit and Tua mutin, They don't diversify because they don't produce and sell.

For akadiru leaves, their goals are diversified for several reasons as follows:

- a) By diversifying they have various kinds of akadiru products, in this way they can reduce the risk of being completely dependent on one product so that if there is a change in consumer demand they still have other products that can support them.
- b) Diversification can help increase your sources of income because different products can attract different customers.
- c) Diversification can help them stay competitive in the market
- d) By diversifying, increasing their Customer Loyalty. Customers who are satisfied with one of their products are more likely to try other products.

5. What kind/type of diversification products of Akadiru leaves, Akadiru fruits, and Tua Mutin akadiru you have made?

For informants from Metinaro, they did not diversify into akadiru products, including akadiru leaves, akadiru fruit, and tua mutin, whereas informants from Maubara diversified only into akadiru leaves, while for akadiru fruit and tua mutin they did not diversify.

For akadiru leaves, informants from Maubara diversified from the usual products Biti, Sapeo, Bote, luhu, and lafatik to Osan Fatin Pasta, Lapijera Fatin, Kelu, Bringkus, and others.

But researchers (We) asked them to make products like the following: Pasta Eskola, Dosi Fatin, pasta laptop, Kopu Fatin, and these products are the first time they have made them.

6. How much income do you get from the Akadiru leaves product, Akadiru fruits product, and Tua Mutin akadiru product ?

Informants from Maubara and Metinaro said that the income obtained from selling akadiru products was erratic, sometimes in one day both Metinaro and Maubara did not receive any money at all because no one was buying, but sometimes there was income. When asked by researchers about the range of income they earn per day, the answer from informants from both Maubara and Metinaro was a range between five dollars to fifty dollars because according to them the akadiru products they sell start from the lowest price of fifty cents to ten dollars. But they continued that during the new school year for pupils and students, they could earn up to two hundred and fifty dollars per day.

7. Any recommendations for the development of the Akadiru leaves, Akadiru fruits, and Tua Mutin akadiru products ?

Recommendations from informants from Maubara and informants from Metinaro are as follows:

- a) The government through the agricultural ministry needs to cultivate Akadiru because Akadiru is our cultural heritage and customs.
- b) Government through the state secretary for arts and culture need to protect Akadiru if it is necessary to make it into government regulations because Akadiru is a heritage and cultural asset of Timor Leste.

- c) The government, through the Ministry of Tourism, needs to promote and include Akadiru products in every event held at both national and international levels.
- d) The government through the Ministry of Trade and Industry needs to assist in marketing every product made from akadiru, starting from products made from akadiru leaves, akadiru fruit, Tua Mutin akadiru, akadiru stems to the roots of akadiru, marketing domestically and abroad. to increase people's income and reduce imports of products that have benefits and are similar to akadiru products
- e) The SEFOPE state secretary needs to establish special training for products from the akadiru tree. The Akadiru tree has all the benefits starting from the roots, stems, fruit, leaves, and Tua Mutin (Water).

3.1.2. Results (Results of Research Description).

3.1.2.1 Respondents Demographics (121 Respondents)

Gender	Male	Female	
	28%	72%	
Educational Background	High School	Graduates	University Students
	8%	21%	71%
Age Group	17-27 years	28-38 years	39-49 years
	79%	7%	14%

3.1.2.2. Results of Research Description

No	Question	Answers				
		Strongly disagree	Disagree	Neutral	Agree	Strongly Agree
1	I like akadiru leaf products which have been diversified with various models	3%	5%	19%	41%	32%
2	I love eating akadiru fruit which has been diversified into other forms and flavors.	1%	8%	17%	34%	40%

3	I love drinking tua mutin which has been diversified into other drinks	6%	5%	22%	29%	38%
4	Diversification of akadiru leaf products is very important in increasing people's income.	2%	2%	14%	38	44%
5	Diversification of akadiru fruit products is very important in increasing people's income	1%	3%	14%	31%	51%
6	Diversified Akadiru Tua Mutin Products Increasing People's Income.	1%	4%	16%	30%	49%
7	Diversified Akadiru Products Compete in the International Market	1%	3%	5%	27%	64%

3.2. Discussion

There was unanimous agreement among the respondents regarding the need for diversification of akadiru products. This consensus highlights the potential for increased revenue. The findings of this research highlight three key aspects of diversification: akadiru leaves, akadiru fruit, and akadiru grapes, each of which has unique contributions to economic growth and sustainability.

One of the main findings of this research centers on the diversification of akadiru leaves. Respondents realized that harnessing the versatility of akadiru for a variety of applications, such as handicrafts, and packaging, could significantly improve the local economy. This diversification not only provides new income streams for the community but also reduces dependence on foreign products and materials. Diversification of akadiru leaves is a promising opportunity for economic growth and environmental sustainability. Adams et al. (2020).

This research also highlights the diversification of akadiru grapes as an integral aspect of increasing community income. Respondents agreed that modernizing akadiru wine production methods and expanding the product range could increase economic growth while preserving cultural traditions. By offering a variety of Akadiru wine products, people can reduce their dependence on imported alcoholic drinks. Adebayo et al. (2010). Diversification of akadiru wines involves modernizing production methods, expanding the product range, and improving

packaging and distribution. By doing this, people can increase the marketability of akadiru wine products, thereby increasing local and international demand.

Another important result of this research is the importance of diversification of akadiru fruit. Respondents acknowledged the large potential of akadiru fruit which can be processed into various products such as cakes and snacks made from akadiru. Diversification in this field not only adds value to local agriculture but also helps promote self-sufficiency.

Diversifying akadiru fruit products is a strategic and economically viable approach to improving the local economy. A number of studies highlight the importance of exploring the maximum potential of akadiru fruit, especially those from akadiru fruit trees. According to research by Ni Putu (2019). This diversification not only adds value to local agriculture but also increases food security and reduces the need for these products from abroad.

4. Conclusions and Recommendations

4.1. Conclusions

In conclusion, the consensus among business actors and consumers strongly advocates for the diversification of Akadiru products, encompassing Akadiru leaves, Akadiru fruit, and Akadiru wine. This strategic move is perceived as a vital means to achieve two key objectives: firstly, to bolster individuals' income, and secondly, to decrease the dependency on imported goods. Diversification presents a multifaceted solution that addresses economic and self-sufficiency concerns simultaneously.

For business actors, diversifying Akadiru products opens up a realm of opportunities. It broadens their revenue streams and minimizes risks associated with a single-product focus. Furthermore, it allows for the exploration of niche markets and varying consumer preferences, potentially leading to higher profit margins. By tapping into the potential of Akadiru leaves, fruit, and wine, entrepreneurs can create a resilient business ecosystem that not only benefits their bottom line but also strengthens the local economy by generating employment opportunities and fostering growth within the sector.

On the consumer side, diversification translates into a richer and more diverse set of Akadiru offerings, catering to a wider range of tastes and needs. This variety can enhance consumer satisfaction and loyalty while reducing the need to rely on imported alternatives. With the increased availability of Akadiru products in various forms, consumers can support local businesses, enjoy high-quality products, and contribute to the reduction of imports, thereby fostering economic sustainability and self-reliance within their community.

4.2. Recommendations

4.2.1. Recommendations to the Government

1. The government through the agricultural ministry needs to cultivate Akadiru because Akadiru is our cultural heritage and customs.
2. It is necessary to protect Akadiru if it is necessary to make it in a government regulation from the secretary of state for arts and culture because Akadiru is a cultural asset of Timor Leste.
3. The government, through the Ministry of Tourism, needs to promote and include Akadiru products in every event held at both national and international levels because Akadiru is an asset and culture of the Timor Leste nation.
4. The government through the Ministry of Trade and Industry needs to assist in marketing every product made from akadiru, starting from products made from akadiru leaves, akadiru fruit, Tua Mutin akadiru, akadiru stems to the roots of akadiru, marketing both within the country and abroad. country in order to increase people's income so as to reduce imports

4.2.2. Recommendations to the Private Sector (Entrepreneurs)

1. To entrepreneurs to start supporting hand industries engaged in the akadiru tree business so that the expected diversification of akadiru products in akadiru leaves, akadiru fruit and tua mutin will be better and of better quality so as to reduce imports and increase income for small entrepreneurs.
2. It is hoped that entrepreneurs will help receive Akadiru products for sale in your shop

Bibliography

- Adams, E., Caccavale, L. J., Smith, D., & Bean, M. K. (2020). Food insecurity, the home food environment, and parent feeding practices in the era of COVID- 19. *Obesity*, 0(0), 0–2. <https://doi.org/10.1002/oby.22996>
- Adebayo, A. H., Zeng, G. Z., Fan, J. T., Ji, C. J., He, W. J., Zhang, Y. M., Akindahunsi, A. A., Kela, R., and Tan, N. H., 2010, Biochemical, Haematological and Histopathological Studies of Extract of *Ageratum conyzoides* L. in Sprague Dawleys Rats, *J. Med. Plant Res.*, 4(21), 2264-2272.
- Age DL, Hendrik ACH, Rupidara AND, 2020. Ethnobotany study of lontar tree (*Borassus flabellifer* L.) at Raijua Island. *IOP Conf. Ser: Mater. Sci. Eng.* 823 012048.
- Azrianingsih R, Kusumahati A, 2019. Perception and Appreciation of Tenggerese of Medicinal Plants in Wonokitri Village, Tosari Subdistrict, Pasuruan Regency. *American Institute of Physics (AIP) Conference Proceedings*.
- Bartlett, J. E., Kotrlik, J. W., & Higgins, C. C. (2001). Organizational Research : Determining Appropriate Sample Size in Survey Research. *Information Technology, Learning, and Performance Journal*, 19(1), 43–50.
- Creswell, J. W. (2014). *Research Design: Qualitative, Quantitative and Mixed Methods Approaches* (4th ed.). Thousand Oaks, CA: Sage.
- Drechsel, P., Qadir, M., & Wichelns, D. (2020). Closing the rural-urban nutrient cycle in India through recycling of solid and liquid organic waste to agriculture: Implications for farm income and food security. *Environment, Development and Sustainability*, 22(3), 2567-2584.
- Eisenhardt, K. M., & Martin, J. A. (2000). Dynamic capabilities: What are they? *Strategic Management Journal*, 21(10-11), 1105-1121.
- Fajeriadi H, Dharmono, Anawar MR. 2019. Kerapatan Lontar (*Borassus Flabellifer* L.) di Hutan Pantai Desa Tabania, Kalimantan Selatan. *EnviroScienceae*; 15 (2): 190-194.
- Flach M, Paisooksantivatana T, 1996. *Borassus flabellifer* L. In: Flach M and Rumawas F. (Editors): *Plant Resources of South-East Asia No 9: Plants yielding non-seed carbohydrates*. PROSEA Foundation, Bogor, Indonesia.
- Food and Agriculture Organization of the United Nations. FAO (2018). *The 10 Elements of Agroecology: Guiding the Transition to Sustainable Food and Agricultural Systems*
- Ghozali, Imam. 2018. *Aplikasi Analisis Multivariate dengan Program IBM SPSS 25*. Badan Penerbit Universitas Diponegoro: Semarang.

- Herman, L., & Vervaeck, B. (2019). Handbook of narrative analysis. U of Nebraska Press.
- Kaplinsky, R., & Jansen, T. (2014). What Is Economic Diversification? Synthesis Report. Food and Agriculture Organization of the United Nations.
- Morton JF, 1988. Notes on distribution, propagation, and products of Borassus palms (Arecaceae). Economic Botany; 42: 420-441.
- Ni Putu Widhyawaty (2019) Study of The Diversification Potential Of Integrated Agricultural Yields Supporting Food Security In Kerta Village, Payangan Sub-District Of Gianyar Regency. Jurnal Manajemen Agribisnis Vol.7, No.2, Oktober 2019 E- ISSN: 2684-7728
- Phillips O, Gentry AH, Reynel C, Wilkin C, Galves Durand GB. 2014. Quantitative Ethnobotany and Amazonian Conservation. Conservation Biology; 8 (1): 225-248
- Ramos, F.F.R. 2001, "Exports , imports , and economic growth in Portugal : evidence from causality and cointegration analysis".
- Sensus Agrikultur (2019) Ministério da Agricultura e Pescas, 11 Nov 2019
- Smith, J. et al., "Harnessing Palm Tree Leaves for Sustainable Income Generation," Journal of Sustainable Agriculture, (2020)
- Syakir M, Karmawati E, Bermawie N, Prastowo B, Soetopo D, Effendi DS, Hadipoentyanti E, Siswanto, Hartati RSS, Yusron M, 2011. Inovasi Teknologi Perkebunan Indonesia. <https://www.litbang.pertanian.go.id/buku/bahan-bakar-nabati/lontar.pdf> asesu iha 3 Marsu 2023.
- Syamsuri, Hafisah, Hasria Alang (2022). Entrepreneurial Opportunities for Diversification of Traditional Food Processing Based on Local Wisdom by the Mandar Tribe in Polewali Mandar Regency, West Sulawesi, Indonesia . Agricultural Journal e-ISSN 2655-853X Vol. 5 No. 2: 313-321, July 2022 <https://doi.org/10.37637/ab.v5i2.959>
- Syed Ali Raza Mohd Zaini Abd Karim. 2017, "Influence of systemic banking crisis & currency crisis on the relationship of export & economic growth : evidence from China", Journal of Chinese Economic and Foreign Trade Studies, Vol. 10 No. 1.
- Tambunan, P. (2010). Potensi dan kebijakan pengembangan lontar untuk menambah pendapatan penduduk. (Jurnal Analisis Kebijakan Kehutanan Vol. 7 No. 1, April 2010 : 27 – 45.
- Tjiptono, F., G. Chandra dan D. Adriana. 2008. Pemasaran Strategik. Cetakan ke-1. Yogyakarta: Penerbit ANDI.
- Usman, M., Ashfaq,S. & Mushtaq, N. 2012, "Relationship of export and economic growth; an empirical study of Pakistan", Far East Journal of Psychology and Business, Vol. 6 No. 3, pp. 1–10

Zulharman, Aryanti NA, 2016. Etnobotani Tumbuhan Penghasil Bahan Bangunan, Kerajinan dan Rumah Adat Masyarakat Suku Sambori Kabupaten Bima NTB. Seminar Nasional dan Gelar Produk. Hal : 256-265.

<https://www.youtube.com/watch?v=8WiVI9xxL54&feature=youtu.be>. Asesu iha 8 Marsu 2023.

<https://tatoli.tl/2022/05/21/tinan-20-restaurasaun-independensia-timor-leste-sei-depende-importasaun-husi-rai-liur/>

<https://tempotimor.com/ekonomia/8284-timor-leste-presiza-hasa-e-kuantidade-produsaun-hamenu-importansaun> 11 Outubru 2021. Asesu iha 1 Marsu 2023

<https://tempotimor.com/ekonomia/12952-feira-produtu-lokal-negosiante-hetan-rendimentu-us-200-800-iha-kalan-ida>. 17 Janeiru 2023. Asesu iha 3 Marsu 2023

<https://www.jornalbisnistimor.com/lalenok-sidade-dili/1232-produs-sabaun-tradisional-hanesan-meius-hamenu-importasaun> Asesu iha 2 Marsu 2023

<https://tatoli.tl/2019/04/02/tl-nia-esportasaun-barak-liu-kafe-kamii-no-besi-sukata/>. Asesu iha 1 Marsu 2023

Closed Question

We kindly ask for time to fill out this questionnaire, this research questionnaire with the title **AKADIRU PRODUCT DIVERSIFICATION IN OFFERING NEW PRODUCTS IN TIMOR-LESTE** all the information you provide will only be used for this research. The confidentiality of your data will be maintained.

with the following answer: 1 Strongly disagree. 2 Disagree. 3 Neutral. 4 Agree. 5 Strongly agree

Gender :

Age :

Education :

Number	Statement	Answer				
		1	2	3	4	5
1	I like akadiru leaf products which have been diversified with various models such as school bags, laptop bags, work bags, pencil cases and others.					
2	I like to eat akadiru fruit that has been diversified into other forms and flavors. Like cakes and snacks.					
3	I like drinking tua mutin which has been diversified into other drinks such as juice cocktails and others.					
4	Diversification of akadiru leaf products is very important in increasing people's income.					
5	Diversification of akadiru fruit products is very important in increasing people's income					
6	Diversification of tua mutin products is very important in increasing people's income					
7	I would be very happy if Timor Leste's diversified akadiru products could compete in the international market					

Open Question.

Gender :

Sub-District :

- 1) How do I get akadiru leaves, akadiru fruit, and Tua Mutin (buy or own)?
- 2) What is the quantity of production of the Akadiru leaves, Akadiru fruits, and Tua Mutin akadiru per day?
- 3) Have you done some diversification products of Akadiru?
- 4) Why are you doing the diversification?
- 5) What kind/type of diversification products of Akadiru leaves, Akadiru fruits, and Tua Mutin akadiru you have made?
- 6) How much income do you get from the Akadiru leaves product, Akadiru fruits product, and Tua Mutin akadiru product?
- 7) Any recommendations for the development of the Akadiru leaves, Akadiru fruits, and Tua Mutin akadiru products?

INGREDIENT OF PALM FRUIT (AKADIRU FUAN)

Akadiru Jelly

Portion size: 10 portions

Ingredient

Palm fruit (akadiru)	500 g	
Pearls sago		1 sachet
Liquid milk		250 g
Condensed milk	200 g	
Sugar		1 spoon
Grenadine syrup of coco	2 spoon	
Water		3 litter

Method to how Process

1. Prepare all ingredient like palm fruit, liquid milk, pearls sago, condensed milk, sugar and grenadine syrup of coco.
2. Peel and clean the palm fruit and cut it as cube model.
3. Boil water on stock pot until it boils and add the pearl sago and sugar 1 spoon and let it during 20 minute or until cook
4. Take it and let it cold and add the palm fruit mixed with grenadine syrup, condensed milk.
5. Put it on the refrigerator until 30 minutes and serve it on the sorbet glass or cocktail glass.
6. It's better serve with cold condition.

AKADIRU CRACKERS

Portion size : 4 portions

Ingredient

Palm fruit	300 gram	
Flour		250 gram
Tapioca flour	200 gram	
Salt		1 tsp
Coriander	1 tsp	
Water	500 gram	

Method How to Process

1. Prepare the ingredient like palm fruit, flour, tapioca flour, salt and coriander;
2. Prepare the equipment like bowl, blender, spoon, balloon whisk, and wooden spatula;
3. Clean and peel the palm fruit and blend it with water;
4. Take it out from the blender and mixed it with flour, tapioca flour salt and coriander
5. Stir it until mixed;
6. Add it on the cake mold and steam on the stove until 10 minutes;
7. Cut into small pieces or according to taste;
8. Let it dry until 2 days and fried it and serve on plate.

INGREDIENT OF PALM LIQUID (AKADIRU BEN) AS TIMORESE COKTAIL

1. Akadiru Mutin

Method: Shaking

Palm liquid	3 Oz
Lime juice	½ Oz
Simple syrup	½ oz
Ice cube	3 pcs

Serve on old fashion glass

Garnish with cherry

2. Akadiru Matak

Method: Shaking

Palm liquid 3 oz

Lime juice ½ oz

Simple syrup ½ oz

Melon liquor 1 oz

Ice cube 3 pcs

Serve on cocktail glass

Garnish with cherry

Photo of Research Activities





